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# CHEAPER! BETTER!

# 40

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WAYS TO  
MAKE YOUR  
PC DO MORE**

GREAT **HARDWARE** UNDER \$50  
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# To the power of wireless imagination



## Save \$180 on Cordless Freedom and Faster Internet Access<sup>7</sup>

Gateway introduces the ultimate wireless connectivity bundle – everything you need for a wireless network.

Sign up for a new cable broadband account and multiple PCs in your house can share a high-speed internet connection.

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(\$287 regular price – \$69 instant savings – \$119 mail-in rebate)<sup>8</sup>

Gateway Wireless Connectivity bundle includes:

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- RCA Cable Modem



### \$1599

or as low as \$56 per month for 36 months at 14.9% APR<sup>3</sup>

## Gateway<sup>®</sup> 450x Notebook

- Intel<sup>®</sup> Centrino<sup>®</sup> Mobile Technology
- Mobile Intel<sup>®</sup> Pentium<sup>®</sup> M Processor
- Intel PRO/Wireless Network Connection 802.11b
- 15" SXGA+ TFT Active-Matrix Display
- 256MB DDR Memory
- 30GB Ultra ATA Hard Drive<sup>4</sup>
- Internal V.92 56K Modem<sup>5</sup> and 10/100 Ethernet
- Microsoft<sup>®</sup> Windows<sup>®</sup> XP Professional
- 3-Year Limited Warranty<sup>6</sup>



### \$1399

or as low as \$49 per month for 36 months at 14.9% APR<sup>3</sup>

## Gateway 400s Notebook

- 15" XGA TFT Active-Matrix Display
- Intel<sup>®</sup> Pentium<sup>®</sup> 4 Processor 2.40GHz
- 256MB DDR SDRAM
- 30GB Ultra ATA Hard Drive<sup>4</sup>
- Integrated DVD/CD-RW Combo Drive
- Internal V.92 56K Modem<sup>5</sup> and 10/100 Ethernet
- Internal IEEE 1394 FireWire
- Microsoft<sup>®</sup> Windows<sup>®</sup> XP Home Edition
- 1-Year Limited Warranty<sup>6</sup>



### Gateway recommends Microsoft<sup>®</sup> Windows<sup>®</sup> XP Professional for Mobile Computing.

All offers subject to change without notice or obligation and may not be available through all sales channels. Consumer desktop and laptop prices include shipping and handling charges for continental U.S. orders except AK. All other prices exclude shipping and handling charges unless otherwise noted. Applicable taxes extra. <sup>1</sup>Limited time only. Major credit card required. Promotional period begins from date of sign up. To avoid being charged a monthly fee, cancel before promotional period ends. At the end of the promotional period, Rhapsody will charge \$9.95 per month. For details log onto [www.gateway.com/rhapsody](http://www.gateway.com/rhapsody). <sup>2</sup>Online training: Instructor-led courses subject to availability. Course material purchase and internet access required. In-store training: Courses subject to change, may vary by location and are not offered as vocational or job training. Club memberships nontransferable. Refunds not allowed for upgrades. All training: Gateway training is not offered as vocational or job training. <sup>3</sup>Monthly payment estimated, based on standard system price (excluding shipping/handling/taxes), 36-month term and 14.9% APR. The APR is not guaranteed and may change. Actual payment amount and repayment term may vary. Offer subject to qualification. <sup>4</sup>Hard drive accessible capacity varies; GB = 1 billion bytes. <sup>5</sup>For more information about rebate offer, log onto [www.gateway.com/products/gca/rebates.asp?seg=hm](http://www.gateway.com/products/gca/rebates.asp?seg=hm). <sup>6</sup>Limited warranties and service agreements apply; visit [gateway.com](http://gateway.com) or call 1-800-846-2000 for a free copy. <sup>7</sup>Offer not available for AOL Broadband and Direct Way. RCA Cable modem not included w/ Earthlink. Savings based on total cost of Intel wireless base station, Intel PRO/Wireless PC Card or USB adaptor and cable modem, which are all included with offer. Offer available to new broadband cable residential customers located in broadband cable wired and serviceable areas only. Call 1-800-846-2000 for details. Offer ends 5/31/03. <sup>8</sup>Actual speeds may vary. Copyright ©2003 Gateway, Inc. All rights reserved. Gateway, the Spotted G Gateway Logo, the Spotted G Logo, the Black-and-White Spot Design, Gateway Profile and "A better way." are trademarks or registered trademarks of Gateway, Inc. in the U.S. and other countries. Gateway Terms and Conditions of Sale apply. Intel, Intel Inside, the Intel Inside logo, Pentium and Centrino are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the U.S. 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: 112603

AOL Keyword: Gateway



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Gateway's Media Center PC featuring the Intel® Pentium® 4 Processor is a full-featured computer and entertainment center. One button technology lets you record TV to your hard drive, keeping all of your entertainment options at your fingertips.

Starting at  
**\$1699**

or as low as \$59 per month for 36 months<sup>1</sup>

Includes 17" LCD flat panel display (not pictured)

RF receiver and Media Center PC remote are standard. Wireless keyboard/mouse are optional. 42" Plasma Digital TV shown sold separately. Ask your sales representative for complete configuration details.



## Need answers? Go Gateway.

In a recent *Computer Shopper* magazine survey of top retailers, only Gateway was awarded a perfect score for store associate knowledge of critical system configuration and connectivity issues.

*"Unlike other locations, the Gateway store lived up to our expectations with a knowledgeable associate who knew the products and answers to all our questions."*

*Computer Shopper*, February 2003

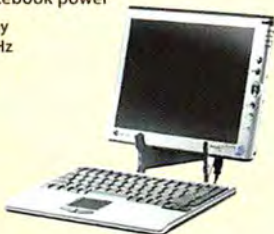
**\$2799**

or as low as \$97 per month for 36 months<sup>1</sup>

## Gateway® Tablet PC

Innovative notepad ease with notebook power

- 12.1" XGA TFT Active-Matrix Display
- Intel® Pentium® III Processor 866MHz
- 256MB SDRAM
- 40GB Hard Drive<sup>4</sup>
- Flex Docking Station
- External DVD/CD-RW Combo Drive
- External Mobile Keyboard with Touchpad
- Microsoft® Windows® XP Tablet PC Edition



**\$1599**

or as low as \$56 per month for 36 months<sup>3</sup>

## Gateway Profile® 4x

All-new, all-in-one PC for stylish performance

- 17" TFT LCD Display
- Intel® Pentium® 4 Processor 2.53GHz
- 256MB DDR SDRAM
- 80GB 7200RPM Hard Drive<sup>4</sup>
- 24X CD-RW/DVD-ROM Combo
- Integrated 10/100 Ethernet
- Microsoft® Windows® XP Home Edition
- 1-Year Limited Warranty<sup>6</sup>





# Rip, Burn, Respect.

Gateway digital media. Enjoy freely, use responsibly.

Protect your rights. Respect their music.

Gateway's Rip Burn Respect™ believes that digital music can be enjoyed legally and responsibly. Respecting the rights of musicians means protecting the rights of digital music consumers.

Purchase any Gateway PC today and get the Gateway Rip Burn Respect audio pack for only a dollar more.

- 30-day subscription to Rhapsody™ online music service<sup>1</sup>
- 30 FREE Rhapsody song burn credits
- 20 blank CD-R media, CD labeling kit and leather CD wallet
- 280-page training guide with CD-ROM and online training offer<sup>2</sup>
- Access over 20,000 albums from over 6,000 popular artists in every genre
- Create custom playlists, enjoy CD-quality radio and burn songs for personal enjoyment

That's real music appreciation. Made possible with Gateway.



## \$1399

or as low as \$49 per month for 36 months at 14.9% APR<sup>3</sup>

### Gateway® 500s Music PC

- Intel® Pentium® 4 Processor 2.40GHz with 512K L2 Cache
- 256MB DDR SDRAM
- 80GB 7200RPM Hard Drive<sup>4</sup>
- 48X/24X/48X CD-RW Drive
- 16X DVD-ROM Drive
- 15" LCD Flat Panel Display (1024 x 768 resolution)
- Microsoft® Windows® XP Home Edition
- Sound Blaster Audigy Audio with IEEE 1394 FireWire®
- Boston Acoustics® BA745 Speakers with Subwoofer
- CD Creator Pack
- Portable CD/MP3 Player (Limited Time Only)

Gateway recommends Microsoft® Windows® XP.

All offers subject to change without notice or obligation and may not be available through all sales channels. Consumer desktop and laptop prices include shipping and handling charges for continental U.S. orders except AK. All other prices exclude shipping and handling charges unless otherwise noted. Applicable taxes extra. <sup>3</sup>Monthly payment estimated, based on standard system price (excluding shipping/handling/taxes), 36-month term and 14.9% APR. The APR is not guaranteed and may change. Actual payment amount and repayment term may vary. Offer subject to qualification.

AOL Keyword: Gateway



# Gateway values every creative expression

[www.gateway.com/digitalzone/photopro](http://www.gateway.com/digitalzone/photopro)

## See What Develops

The Gateway 500s Photo PC featuring the Intel® Pentium® 4 Processor is the picture-perfect system for your photos.

### \$1399

or as low as \$49 per month for 36 months at 14.9% APR<sup>3</sup>

## Gateway® 500s Photo PC

- Intel® Pentium® 4 Processor 2.40GHz
- 512MB DDR SDRAM
- 120GB 7200RPM Hard Drive<sup>4</sup>
- 48X/24X/48X CD-RW Drive
- VX930 19" Color Monitor (18" viewable)
- Microsoft® Windows® XP
- Integrated Audio
- GCS 300 Speakers
- Gateway Mid Tower Case
- 10/100 Ethernet
- Survive and Thrive Training<sup>2</sup>
- Dazzle 6-in-1 Reader
- Adobe Photoshop Elements 2.0



### \$39999

FujiFilm® FinePix 3800 Zoom Digital Camera

6X optical zoom brings the action up close



### \$19999

HP® PhotoSmart 7350 Inkjet Photo Printer

Crisp detail and borderless photos

Minolta® DiMAGE F100

\$449.99

Canon Powershot G3 Digital Camera

\$799.99

Gateway recommends Microsoft® Windows® XP.

[www.gateway.com/digitalzone/video](http://www.gateway.com/digitalzone/video)

## Definite Marquee Value

The Gateway 500s Movie Creator PC featuring the Intel® Pentium® 4 Processor is your own personal DVD movie studio.

### \$1599

or as low as \$56 per month for 36 months at 14.9% APR<sup>3</sup>

## Gateway 500s Movie Creator PC

- Intel® Pentium® 4 Processor 2.40GHz w/512K L2 Cache
- 256MB DDR SDRAM
- 120GB 7200RPM Hard Drive<sup>4</sup>
- DVD-R/RW/CD-RW Drive
- 15" LCD Flat Panel Display (1024 x 768 resolution)
- Microsoft® Windows® XP
- Sound Blaster Audigy Audio with IEEE 1394 FireWire
- Boston Acoustics BA745 Speakers with Subwoofer
- Movie Creator VCD/DVD



### \$49999

 with PC purchase

NEW! Canon® ZR65

Quality video and stills day or night, with color-night shooting mode and image stabilization system



### \$79999

 with PC purchase and rebate<sup>5</sup>  
(\$999.99 regular price; \$899.99 after \$100 Canon mail-in rebate)

Canon Elura 40

Portable powerhouse with 4 shooting modes delivers digital impact in a compact design

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Enhance your memories and bring them to life. Create your own DVD movies with your videos, digital photos and music.



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**SAMSUNG**





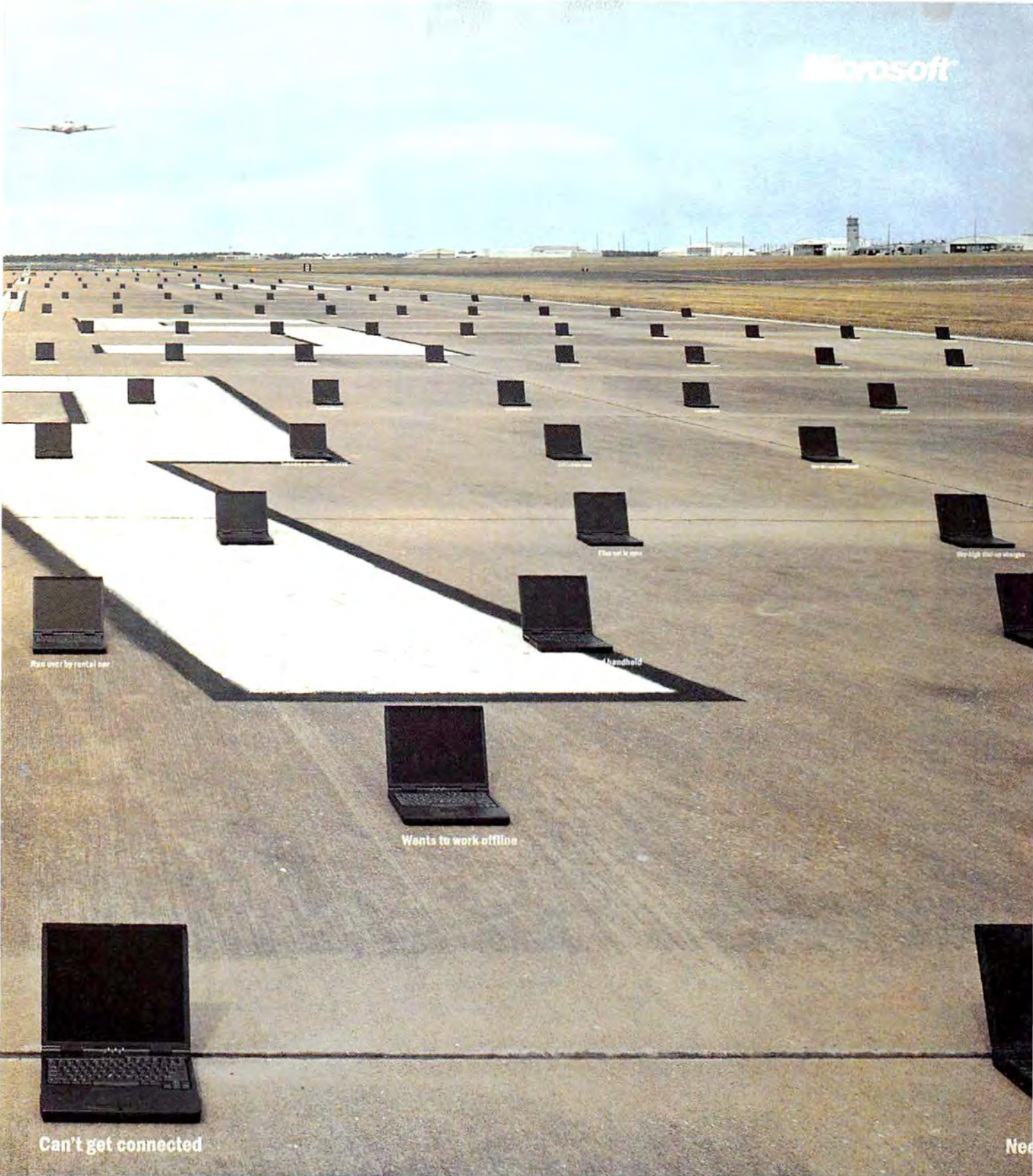
etitive configuration problem

**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



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](http://microsoft.com/desktop)





## M A D E W I T H N O L I M I T S I N M I N D

They're a total knockout. RADEON™ 9200 and RADEON™ 9600 visual processors are your best choices, whether you're upgrading your graphics card or buying a new PC. RADEON™ 9200 is the fastest graphics accelerator in its class, powering incredible 3D characters and effects. RADEON™ 9600 delivers killer performance, real-time cinematic effects at maximum quality settings, and full Microsoft® DirectX® 9 support so you can power the latest 3D games and applications. Whichever one you choose, you'll be getting performance that's, well, unbeatable.

RADEON™ 9200 and RADEON™ 9600 visual processing technologies are featured in boards built by ATI and other leading graphics board makers.

# RADEON 9200 RADEON 9600

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## COVER STORY

### 86 Cheap Tweaks

Are budget constraints forcing you to make do with older equipment? You can still strengthen your software, boost your PC's performance, pep up your peripherals, and heighten your online experience, if you know where to look. Here are dozens of thrifty steps you can take to get more out of your system—most of them free, and none over \$50.

Cover graphics by Greg Silva



# PCWORLD

20<sup>TH</sup> ANNIVERSARY YEAR  
M A Y 2 0 0 3  
VOLUME 21 ♦ NUMBER 5  
AOL KEYWORD: PCWORLD  
WWW.PCWORLD.COM

## FEATURES

### RECORDABLE DVD

#### 100 Put It on DVD

Want to burn your own DVDs? A profusion of affordable video editors and DVD authoring packages beckon from store shelves. We look at nine such programs, identify desirable features in PCs and DV camcorders, and name the top 10 DVD rewritable drives.

### SPAM FIGHTERS

#### 113 Natural-Born Spam Killers

If junk mail is flooding your PC, check out our review of six leading spam stoppers. Whether they integrate with your e-mail client or operate independently, these tools promise to keep your in-box clean.

### CONSUMER ADVICE

#### 121 Public Opinions: Inside User Reviews

Learning from other people's experiences with a tech product or a merchant can be a big help when you're shopping. But can you trust online user reviews to give you the straight story? We went behind the scenes to find out.

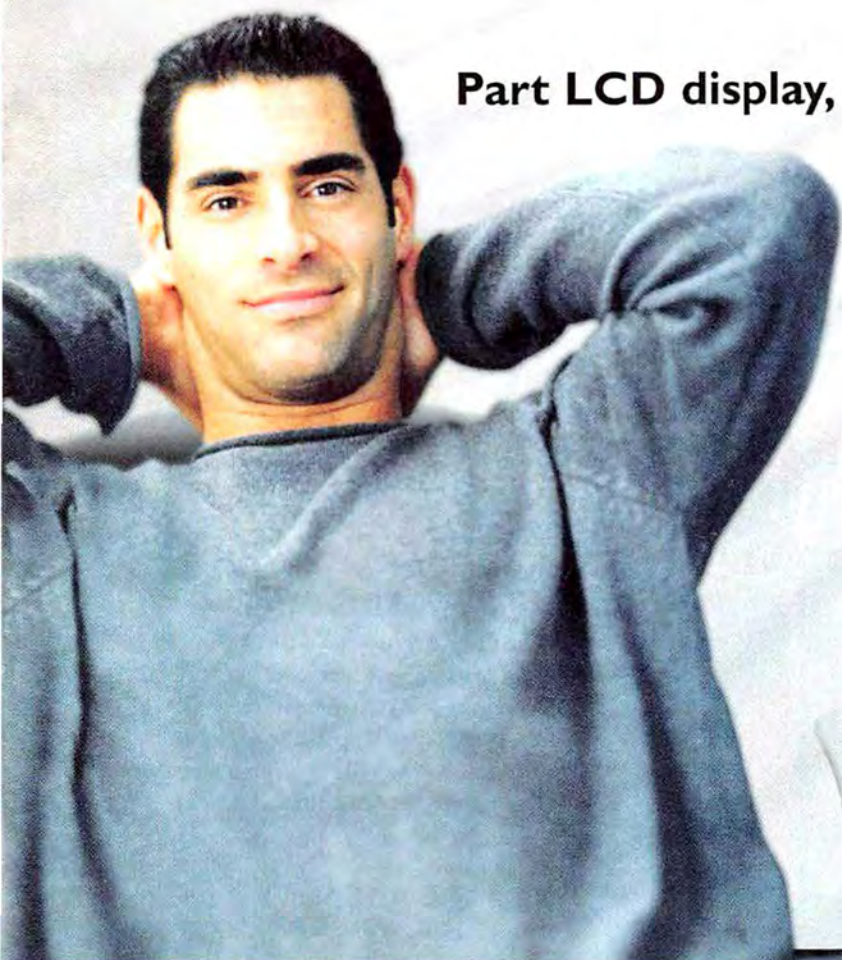


## ON THE COVER





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A+ panel quality delivers colorful, lifelike images. Your computer display is more than a monitor; it's a window to your world. Every BenQ LCD display features an A+ panel inside. That means you're buying a display that rates near the top of the industry's stringent panel quality ranking standards. Colors are vibrant, images are brilliant, the experience is breathtaking. A lightning fast 16ms response time also means that video playback is razor sharp and ghost-free – perfect for multimedia and DVD viewing. Backed by a rock solid, three-year warranty, BenQ LCDs are the perfect tools for viewing, reflecting, and dreaming.

For more information, visit [www.benq.com/2003/PCWorld-FP767](http://www.benq.com/2003/PCWorld-FP767)

Email us at [ProdInfo.us@BenQ.com](mailto:ProdInfo.us@BenQ.com) or call (866) 700-2367

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**BenQ**

Enjoyment Matters



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A business-class laptop.
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## NOW AT PCWORLD.COM

### DOWNLOADS

#### Internet Privacy Utilities

Use these top tools to erase the tracks that you've left online.

[find.pcworld.com/34634](http://find.pcworld.com/34634)

### REVIEWS

#### Top CD-RW Drives

New 52X burners arrive, and four models land in our Top 10.

[find.pcworld.com/34637](http://find.pcworld.com/34637)

## COMING UP IN JUNE

**Troubleshooting Tips:** Solve the catastrophic problems that can afflict your PC, devices, and apps.

**Entertaining Computers:** We see how well Media Center PCs and their competitors perform.

**Multifunction Devices:** Our tests reveal how the latest units stack up against stand-alone machines.

**Google Guide:** Find out how to get the most out of the world's most popular search engine.

## NEWS & TRENDS

- 22 **Hard Drives Exposed**  
The files you deleted from your old hard drives may not be gone. We tried to recover erased data from ten discarded drives—and succeeded.
- 26 **Dawn of the Superworm**  
Future Internet pests may be far more harmful than last January's Slammer worm, experts say.
- 30 **Centrino Notes Raise the Bar**  
Notebooks equipped with Intel's Centrino technology perform well and offer long battery life.
- 32 **Radeon 9800 Pro Stumbles at Gate**  
A preproduction graphics card carrying the 9800 Pro chip isn't as fast as expected, our tests show.
- 34 **Notable New Office App**  
Microsoft's new suite adds OneNote, an electronic note-taking application that looks promising.

## NEW PRODUCTS

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Brother MFC-4420c, Hewlett-Packard OfficeJet 7130, Lexmark X5150
- 66 **Notebook**  
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- 74 **PDA Phones**  
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- 78 **Display**  
Philips DesXcape 150DM Detachable Monitor  
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## HERE'S HOW

- 146 **Windows Tips**  
Avoid Windows problems before they occur; a utility to keep track of system changes.
- 150 **Internet Tips**  
Fix one unwanted side effect of installing an IE 6 security update; back up Outlook folders easily.
- 152 **Step-By-Step**  
Use your old PC as a network file server, network print server, or Net connection sharing point.
- 154 **Hardware Tips**  
Partition your hard drive to best utilize the space; learn more about your PC through a free utility.
- 156 **Answer Line**  
Employ keyboard shortcuts in Windows apps; restore .jpg thumbnails; alter Internet Explorer's AutoComplete settings; change a drive letter.



## Adobe® Acrobat® 6.0 Professional

- ▶ Reliably and efficiently exchange business-critical documents
- ▶ Create electronic forms
- ▶ Create graphically complex documents
- ▶ Document merge: convert and combine any documents into one PDF
- ▶ For business, creative and engineering professionals



**Adobe**

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CDW 471796

## Maxtor Personal Storage 5000DV Hard drive

- ▶ Capacity: 200GB
- ▶ FireWire and high-speed USB 2.0 interface ports
- ▶ 7200 rpm
- ▶ 8MB cache buffer
- ▶ OneTouch™ push-button backup



**Maxtor®**

**\$409.85**

CDW 457485

## MPC ClientPro 325D Series minitower computer

- ▶ 2.0GHz Intel Pentium 4 processor
- ▶ Memory: 256MB RAM
- ▶ 40GB hard drive
- ▶ 52X Max CD-ROM drive
- ▶ 10/100 Ethernet
- ▶ Windows 2000 Professional



**mpc™**

**\$779.08**

CDW 467756

## SimpleTech 256MB MPC Millennia Max

- ▶ 256MB
- ▶ DIMM 184-pin form factor
- ▶ DDR SDRAM
- ▶ Branded system specific solutions
- ▶ Supported by unlimited, toll-free technical support



**SimpleTech**

**\$79.82**

CDW 339958

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We have more brands, so you have more choices.



### Sony VAIO V505

- ▶ 1.8GHz Mobile Intel® Pentium® 4 Processor-M
- ▶ Memory: 256MB RAM
- ▶ 30GB hard drive
- ▶ 8X4X24X CD-RW/8X DVD-ROM combo drive
- ▶ 56Kbps modem
- ▶ 10/100 Ethernet
- ▶ 12.1" XGA active-matrix display
- ▶ Windows XP Professional

**\$1836.00**

CDW 456660



### Compaq ProLiant DL380 G3 rack-mount server

- ▶ 2.4GHz Intel Xeon™ processor
- ▶ Memory: 512MB RAM
- ▶ 24X Max CD-ROM drive
- ▶ 2 x 10/100/1000 Ethernet



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more patience than others.

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## This Month We Look at Multifunction Devices, Video/DVD Software, and More

PHOTO-FRIENDLY multifunction devices and video editing/DVD authoring software highlight May's newcomers. A list of all newly reviewed products and services follows, along with each item's star rating, if any (some are ineligible for a rating). Visit [find.pcworld.com/10860](http://find.pcworld.com/10860) for more on PC World's Star Ratings.



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### DESKTOP PCs

- 130 ABS Awesome 3380 ★★★★★
- 132 Dell Dimension 2350 ★★★★★
- 130 Dell Dimension 4550 ★★★★★
- 130 Emachines T2460 ★★★★★
- 130 FreewayTech Gaming Predator PI440-R ★★★★★
- 132 Gateway 300S ★★★★★
- 132 Nutrend Mega 2 ★★★★★
- 132 Polywell Poly 880NF2-2000 ★★★★★
- 80 Stealth LPC-401 ★★★★★
- 130 Sys Performance 3000+ ★★★★★

### NOTEBOOK PCs

- 66 Apple PowerBook G4 ★★★★★
- 30 Dell Latitude D600
- 134 Gateway 600XL ★★★★★
- 134 IBM ThinkPad R40 ★★★★★
- 30 IBM ThinkPad T40
- 134 Sharp Actius MV12W ★★★★★
- 134 Toshiba Satellite 5205-S503 ★★★★★
- 30 Toshiba Tecra M1

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- 137 Canon i70 ★★★★★

### LCD MONITORS

- 139 Eizo Nanao FlexScan L565 ★★★★★
- 139 Hansol H750 ★★★★★
- 139 Hitachi CML174SXW ★★★★★
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- 139 NEC MultiSync LCD1760V ★★★★★
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### DIGITAL

#### CAMERAS

- 143 Canon PowerShot S230 Digital Elph ★★★★★
- 143 Fujifilm FinePix 2650 Zoom ★★★★★
- 66 Nikon Coolpix 3100
- 143 Olympus Stylus 300 Digital ★★★★★

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#### SCANNERS

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- 141 Epson Perfection 3200 Photo ★★★★★
- 141 HP Scanjet 5550c ★★★★★
- 141 Microtek ScanMaker 6800 ★★★★★

#### MULTIFUNCTION DEVICES

- 64 Brother MFC-4420c ★★★★★
- 64 HP OfficeJet 7130 ★★★★★
- 64 Lexmark X5150 ★★★★★

#### DVD-REWRITABLE DRIVES

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- 108 LaCie DVD/CD-RW USB 2.0 and FireWire Drive ★★★★★

#### SPAM FILTERING SOFTWARE

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- 116 Firetrust MailWasher Pro 3 ★★★★★
- 114 I Hate Spam for Outlook 3.2 ★★★★★
- 114 I Hate Spam for Outlook Express 3.2 ★★★★★

#### 118 Lyrus MailShield

Desktop 3 ★★★★★

118 McAfee SpamKiller 4 ★★★★★

115 Spamnix for Eudora ★★★★★

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- 102 Adobe Premiere 6.5 ★★★★★
- 102 CyberLink PowerProducer ★★★★★
- 102 Intervideo WinDVD Creator Plus ★★★★★
- 102 Mediatech NeoDVD 4 Plus ★★★★★
- 102 Pinnacle Expression ★★★★★
- 102 Pinnacle Studio 8 ★★★★★
- 102 Roxio Easy CD & DVD Movie Creator 6 ★★★★★
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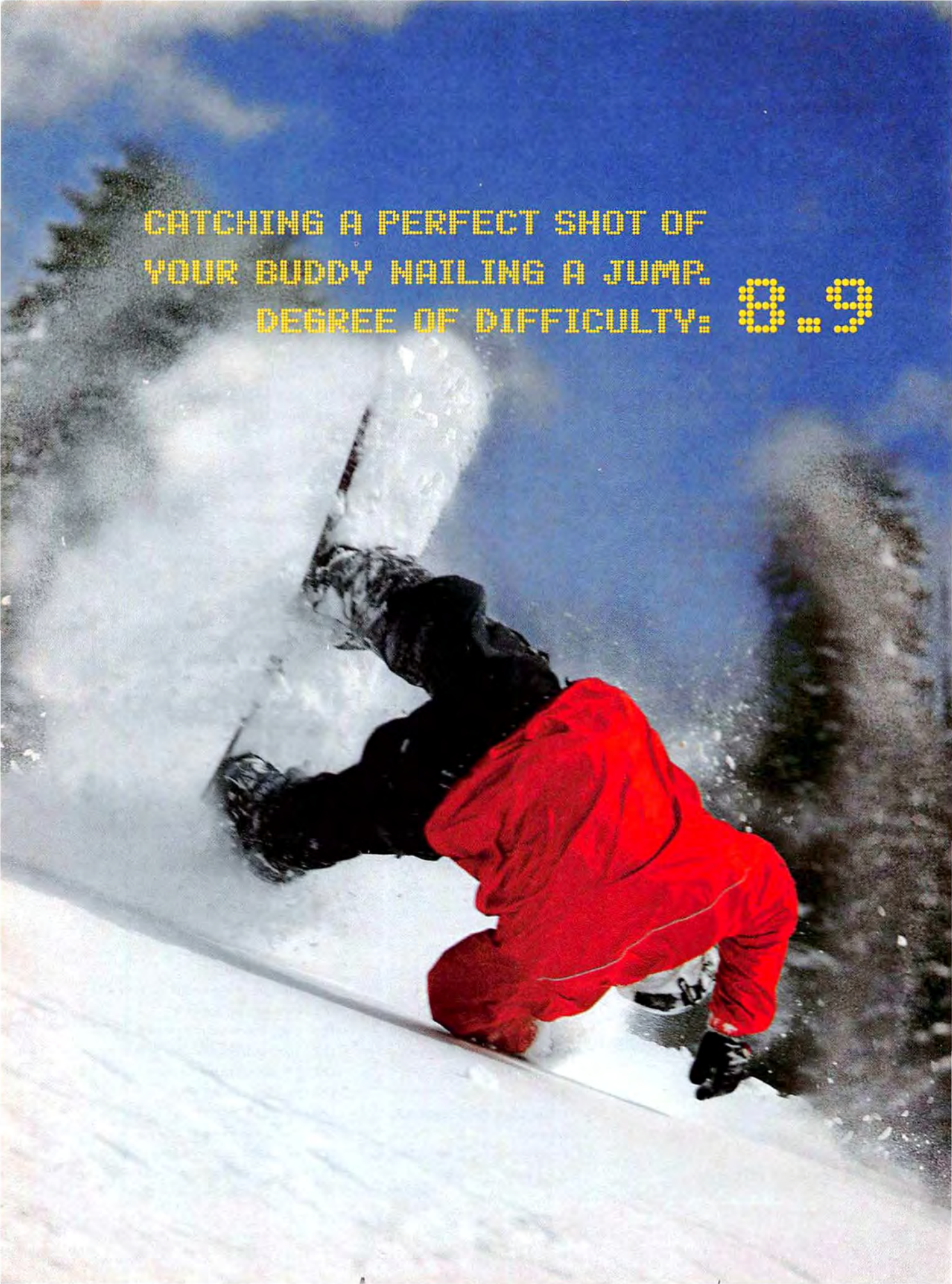
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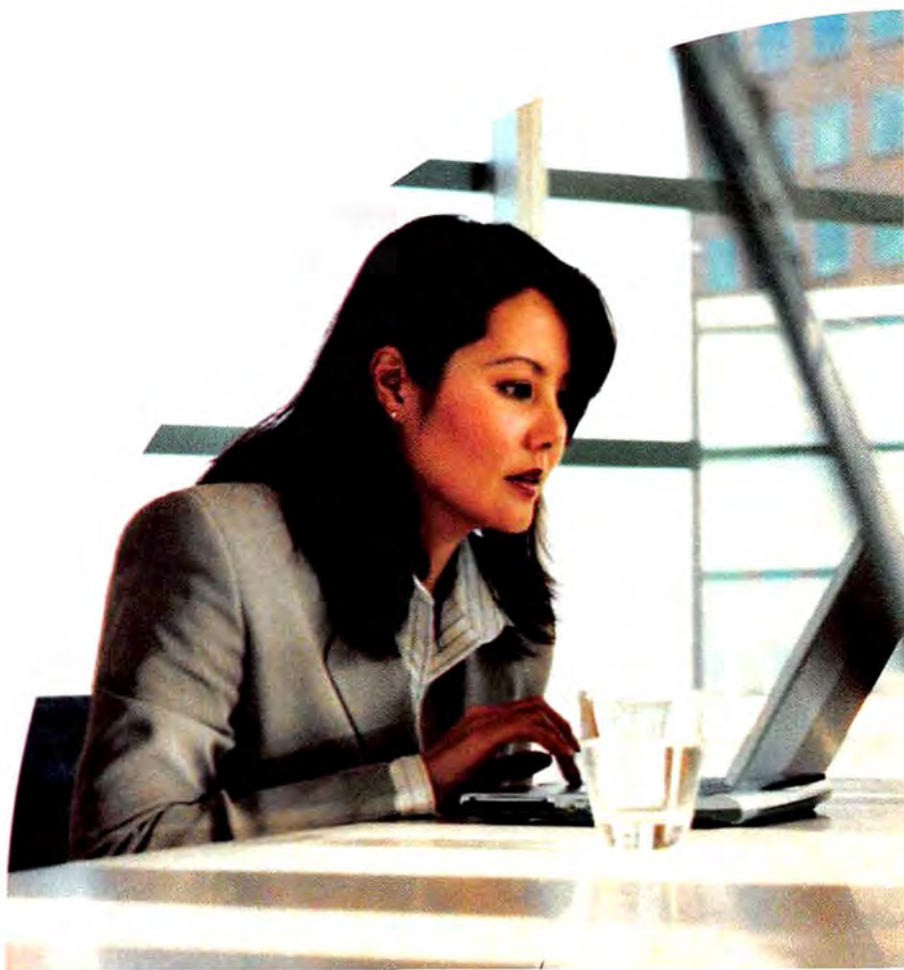
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# UP FRONT

HARRY MCCRACKEN

## Cheap Tweaks Tech Firms Should Make

Free advice on some little changes that would make a big difference.

CHEAPER AND BETTER. That's the idea behind this issue's cover story, "Cheap Tweaks" (page 86). We sent longtime *PC World* contributor—and self-professed tightwad—Robert Luhn in search of products and tips that make computing better without much cost or effort. He returned

with a wealth of affordable solutions—40+ items, including something for everyone.

Consider it self-help for the smart PC user. But technology companies could simplify our work and play by introducing a few low-cost tweaks of their own.

Herewith, my two cents (cheap!) on a handful of nagging problems that are just begging to be resolved.

**Harness the wondrous power of long file names:** Windows has supported long file names for the better part of a decade. So why do software companies insist on employing vague monikers like the classic SETUP.EXE and mystifying obscurities like PSP704EV.EXE? Names along the lines of Paint Shop Pro 7.04 Evaluation Copy would go a long way toward taking the mystery out of file management.

**Make menus make sense:** Whenever I want to use Microsoft Word's thesaurus, I have to swoop my mouse pointer up to Tools•Language and then drag it past Set Language (which I've never needed) to get to Thesaurus. And each time I perform this ritual, I wonder why software companies



require users to bypass obscure menu items to get to everyday ones.

**End the curse of anonymous serial numbers:** My office is awash in cards and stickers that list software serial numbers and carry stern warnings to file the number in a safe place. But an astounding percentage of these notices don't mention the product they're associated with.

**...And the tragedy of orphaned power bricks:** Speaking of inadequate labeling, consider AC adapters (often called wall warts). They almost never identify which device

they're designed to power. Detach a few of your peripherals from their power supplies, and you may be hard-pressed to remember what goes with what; plug the wrong product into a brick, and you could fry your equipment but good. (Note to self: Find the time to label my adapters with a Magic Marker or sticky note.)

**Don't treat my drive like a wastebasket:** If there's one thing worse than buggy software, it's litterbuggy software—apps that dump files willy-nilly around your system, or that don't completely vacate your drive when you try to uninstall them. You get the feeling that some programmers graduated with honors from the Oscar Madison School of Software Engineering.

**Stay out of Windows' system tray:** Mine is currently populated by 11 little applets, all of which bog down my PC's performance—and few of which I ever asked for. Some of the culprits, like the RealOne Player's Message Center ad window (the bane of my existence at the moment) do nothing but get on my nerves. A simple solution here: Software should not install anything in a user's system tray without asking permission. Period.

Got any cheap tweaks you'd like to see technology merchants make? Drop me a note at [mageditor@pcworld.com](mailto:mageditor@pcworld.com). ■

Harry McCracken is editor of *PC World*.

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# NEWS & TRENDS

EDITED BY RAMON G. McLEOD

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## HARD DRIVES EXPOSED

WE BOUGHT OR SALVAGED TEN USED DRIVES AND FOUND SENSITIVE BUSINESS AND PERSONAL DATA ON ALL BUT ONE.

BY TOM SPRING

IT'S A CHILLY March Saturday at the Pit, a concrete holding pen for abandoned computer parts at the Needham, Massachusetts, town dump. Nearby, three locals wait patiently in their idling cars.

An SUV pulls up. Driver James Curtin grabs an old PC from the back and puts it into the Pit alongside other CRT monitors and old computer chassis. Slowly the other men exit their cars and walk toward the discarded computer—one with a screwdriver in hand.

For these PC scavengers, the Pit is a gold mine for memory chips, processors, and other components that they use to build PCs on the cheap. But they also routinely find something else: business and personal data that prior owners have left on discarded hard drives.

"[On] almost every hard drive I pull, I'll find a tax return or a résumé," says David Burns, who describes himself as a Needham regular.

The lesson for PC users?



**DRIVES BY THE DOZEN:** Ron Bay (top) checks out over 200 used hard disks at Joel Albert's International Computer Exchange booth (center, bottom) at the Super Computer Sale in Collinsville, Illinois.



Old hard drives don't always die—or fade away. Often they are salvaged and reused in other computers. And when that happens, the data and sometimes-grimy secrets of previous users go with them.

Properly sanitizing a hard drive before giving away or reselling a computer requires only a small investment of time and an inexpensive or free disk-erasing tool (see "Data Killing 101" on page 24). But many people don't even do minimal cleanup.

### DATA GALORE

AN EXAMINATION of ten used hard drives we bought or salvaged in the Boston area disclosed a wealth of sensitive data. On all but one of them, we found data, including confidential business, medical, and legal records; Social Security, credit card, and bank account numbers; e-mail; and even pornography.

Most of the information was easy pickings—even on four drives whose previous owners had attempted to erase data, either by deleting files and emptying the recycle bin or by reformatting the disk—measures that simply conceal the data from the operating system. Not surprisingly, the equipment's former owners were shocked to learn that strangers had accessed their information.

"I went through my PC and thought I had thoroughly deleted everything," Curtin said of his old TriGem 486.

A Boston computer store sold us a hard drive previously

owned by an accountant—and crammed with four years' worth of his clients' payroll and tax information and employee Social Security numbers. The accountant said that his nephew, who worked at a computer store, had removed the drive while upgrading his



**AT THE PIT:** Regulars prowl the Needham, Massachusetts, town dump for used computer components.

old computer several months earlier. The accountant said that he never thought to ask his nephew what had become of the hard drive.

Similarly, a Salvation Army store in Cambridge, Massachusetts, sold us a PC that had once belonged to an attorney; it still contained bank account numbers, an active America Online account (and a stored password), and draft legal documents on its hard drive.

"I most certainly never expected my personal information would ever be more than just that—personal," said the

attorney. He said his firm's IT consultant had promised to properly destroy the data.

Our samples confirmed the findings of a study conducted earlier this year at the Massachusetts Institute of Technology. Two graduate students, Simson Garfinkel (who is also a prolific technology writer) and Abhi Shelat, bought 158 hard drives on EBay and from online shops. Of 129 drives that worked, 69 had recoverable files and 49 contained personal information, including 3700 credit card numbers, medical data, and pornography. Only 12 of the usable drives had been properly purged.

"This is a serious problem," Shelat says. Businesses become vulnerable when they unwittingly share sensitive information. And individuals leave themselves open to identity theft, a potentially ruinous crime that the Federal Trade Commission received nearly 162,000 complaints about in 2002—almost double the 2001 total.

### RESURRECTED DRIVES

TOSSING YOUR old drive out with the trash is no guarantee that it—and your data—will find a quiet resting place in a landfill. And scavengers like those at the Needham Pit are only part of the picture. As more towns and cities ban PCs from their landfills, businesses are cashing in.

Computer Salvage of New England collects old PCs and cannibalizes them for parts ▶

## IN BRIEF

### Product Pipeline



**TALK IS CHEAP:** Internet telephony is moving into the mainstream with Five Star Telecom's Earthphone, a device that connects to your PC via USB to provide no-cost long-distance calls. The company promises the days of dropped lines, echoes, and muddled connections are in the past. Earthphones cost from \$120 to \$240, and calls are free only if you're talking to another Earthphone user. [find.pcworld.com/34571](http://find.pcworld.com/34571)

**DATA RECOVERY:** Think the data on your damaged CD or DVD is gone forever? Think again. CD/DVD Inspector from Arrowkey lets forensic and data-recovery professionals recover otherwise inaccessible information from CD-R, CD-RW, and DVD discs. A single-user license for the software costs \$350. [find.pcworld.com/34568](http://find.pcworld.com/34568)

### Did You Know?

IT MAY SEEM as though cell phones are everywhere, but they're not yet. Fifty-nine percent of Americans own a mobile phone, according to a new study. Sales are slowing, but almost 25 percent of people who don't own a cell phone plan to buy one, the study found.

COURTESY: FIVE STAR TELECOM AND ASSOCIATES AND TSPC.



"I went through my PC and thought I had thoroughly deleted everything." —James Curtin



that it then sells. Similarly, the city of Cambridge pays a recycling company called Onyx Environmental Services to haul off PCs left for curbside pickup. Onyx salvages the parts and resells them.

Research firm Gartner Dataquest reports that businesses and individuals took about 150,000 hard drives out of service in 2002. Meanwhile, reported incidents of data security compromised by improper disposal of unwanted PCs have increased exponentially, says Gartner research director Frances O'Brien.

"Companies don't think twice about giving hard drives a simple reformat and handing the PCs out to employees, charities, or whoever else can save them a buck on disposal costs," O'Brien says.

#### DELETED OR HIDDEN?

EVEN WHEN people reformat the hard drive, a motivated sleuth can retrieve data using tools such as Norton SystemWorks' Disk Editor ([find.pcworld.com/34559](http://find.pcworld.com/34559)) or the free Disk Investigator ([find.pcworld.com/34592](http://find.pcworld.com/34592)).

We did this on a drive pur-

chased at the Super Computer Sale (a traveling computer fair), and uncovered research, e-mail messages, and a log of Web sites visited by employees at Fairfax Financial Holdings of Ontario, Canada.

"It shouldn't have happened," said Brad Martin, Fairfax's vice president of investor relations. "We are going to make sure that something like this never happens again."

Another used hard disk we bought at the computer fair had no operating system. But we identified the previous owner—and extricated 20MB of data documenting activities unprintable in this magazine.

Being able to recover deleted data can be useful: Ask anyone who's ever accidentally trashed a file. Hard drive data can help nail criminals, says Tom Galligan, owner of Electronic Evidence Recovery of Tiverton, Rhode Island.

But honest PC users have a legitimate interest in destroying data when they discard an old PC. Curtin wishes he had been more careful with his old drive. "I'll never make that mistake twice," he says. ■

## DATA KILLING 101: TOOLS AND TIPS

THE ONLY SURE way to destroy data on your hard disk is to overwrite it. Here are some programs and tips that will help you do the job right.

- ◆ Access Data's \$40 **WipeDrive** (available at [find.pcworld.com/34562](http://find.pcworld.com/34562)) creates a floppy boot disk that you use to overwrite your hard drive—operating system included.

- ◆ LSoft Technologies' **Active@ KillDisk** ([find.pcworld.com/34502](http://find.pcworld.com/34502)), a free DOS utility, also overwrites data but lacks extras such as a tool to verify that a disk has been wiped clean.

- ◆ To purge individual files, Symantec's \$70 Norton SystemWorks 2003 ([find.pcworld.com/34559](http://find.pcworld.com/34559)) includes a utility called **WipeInfo**.

- ◆ Two free options you can try are **Sure Delete**

([find.pcworld.com/34505](http://find.pcworld.com/34505)) and **Eraser** ([find.pcworld.com/34508](http://find.pcworld.com/34508)).

- ◆ Low-level formatting does destroy data on a drive. The procedure, designed to return a hard disk to its factory-issue condition, is typically performed in a DOS environment, and Microsoft does not make or provide tools for low-level formats. However, most hard disk manufacturers provide low-level formatting tools at their Web sites. To identify your hard disk vendor from within Windows, go to the Device Manager window and double-click **Disk drives**.

Note that performing a high-level format on a drive using the utility included with Windows obliterates practically none of the previous data.

#### IN BRIEF

##### Tidbyte

**PIRACY PREVENTION:** The Recording Industry Association of America is expanding its antipiracy efforts. Last year, the group asked colleges and universities to limit file swapping on their networks; now the organization is also targeting businesses. The RIAA and the Motion Picture Industry Association of America recently sent copies of a "Copyright and Security Guide" to Fortune 1000 firms, asking the companies to ensure that their PCs and networks are not used to illegally share copyrighted items.

**NET SPEEDS:** Scientists at the Stanford Linear Accelerator Center set a new Net speed record. They transmitted 6.7GB of data (that's about 4 hours of DVD-quality movies) across 6800 miles in just 58 seconds. The uncompressed data was sent at a speed of 923 megabits per second—about 3500 times the speed of a home broadband connection.

##### Did You Know?

CONSUMERS ARE willing to make the jump from free to fee online, a new study found. In 2002, people spent

**\$1.3 BILLION** for online content, up 95 percent from 2001, the Online Publishers Association says. What do consumers spend the most on? Online dating and personal ads topped the list, surpassing business and investing as well as entertainment and lifestyles.

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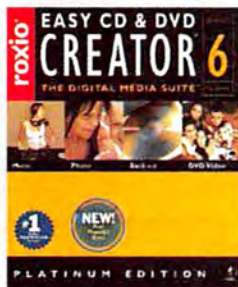
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## NET THREATS

# DAWN OF THE SUPERWORM

## EXPERTS WARN THAT THE SLAMMER WORM IS A HARBINGER OF WORSE STRAINS TO COME.

THE ATTACK came swiftly and without warning. At 12:30 a.m. eastern standard time, January 25, a single packet of data containing the Slammer worm began spreading across

McGee, product marketing director at McAfee Security in Santa Clara, California.

Nevertheless, all three experiments were "successes." And that success is likely to



the Internet. Within 10 minutes the worm reached 90 percent of the Net and infected more than 75,000 machines. At its peak 30 minutes later, it disrupted one out of five data packets. The result: service blackouts, canceled flights, and disabled ATMs.

Next time around, we might not be so lucky.

Slammer (also called Sapphire or SQL Hell) was a piece of code about the length of the first paragraph of this story. It created havoc but destroyed no data, and network managers could easily stop it by blocking a port or turning off an infected server, say security experts.

Like Nimda and Code Red before it, Slammer was probably just an experiment rather than a deliberate attempt to hobble the Internet, says Ryan

encourage cyberterrorists to build new "superworms" that blend the most potent features of proven worms, and to then use them against specific targets or even as weapons of cyberwar, analysts say.

"If this new era of worms plays out the same way other eras have, the next phase of development will be to see what they can do to damage computers, delete files, and steal personal information," McGee says. In fact, the U.S. Department of Homeland Security warns that terrorists may launch cyberattacks as well as physical ones.

### A ZOMBIE ARMY

BUILDING SUCH a superworm is not difficult, says Dan Ingevaldson, team leader for X-Force, the research-and-

development arm of Internet Security Services in Atlanta.

"All you really need is to take an existing worm and mate it with a new head to create a new method of attack," he says.

Worse, hybrid worms could be stealthier than Slammer and its ilk. One could nest in millions of systems and lie dormant until activated for a distributed denial-of-service attack, bombarding a specified server with requests from those many infected systems, says Stuart Staniford, chief executive of Silicon Defense in Eureka, California.

"A worm can create millions of zombies, because it spreads so fast," Staniford says. "Sapphire made an enormous amount of noise." A worm that spread quickly and then deactivated would be tougher to combat, he notes.

### HOLEY SOFTWARE, BATMAN

LIKE MOST worms, Slammer attacked a vulnerability known to hackers and security wonks alike: a flaw in Microsoft SQL Server 2000, the database program used by hundreds of thousands of servers.

Symantec estimates that more than 2500 new vulnerabilities were found in common applications last year, an 81.5 percent jump over 2001. About 80 percent are severe flaws, meaning they could allow remote control of a program or a computer.

Awareness accounts for part of the jump: Software security is under greater scrutiny, explains Symantec. Back in ►

## IN BRIEF

## Product Pipeline



**DELL DOES PRINTERS:** Dell is introducing its first line of printers. Based on Lexmark technology, the \$139 Dell A940 ink jet/scanner/copier (shown), the \$289 P1500 personal laser, and the \$499 S2500 workgroup laser (\$839 with a built-in network adapter) should ship by the time you read this. Dell will provide refill cartridges only via mail, but all three printers' drivers will nag you when ink or toner is running low. [find.pcworld.com/34547](http://find.pcworld.com/34547)

**PORTABLE PHONE:** Mitel Networks' new Internet Protocol phone, the 5230 IP Appliance, lets you take your personal phone settings with you wherever you go. Only for Mitel-designed corporate networks, the phone features a built-in slot for a Pocket PC PDA (not included). The handheld stores your phone settings, which you can install on any similar Mitel phone. You can see voice-mail details on the PDA as well, including names of senders, phone numbers, message lengths, and more. [find.pcworld.com/34439](http://find.pcworld.com/34439)





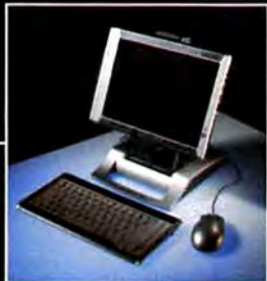
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March, for example, ISS announced a 15-year-old critical flaw in Sendmail, which handles about 50 to 75 percent of e-mail traffic transmitted over the Net. A day after the flaw was exposed, a group called the Last Stage of Delirium released code that hackers could use to exploit it and control certain types of servers (see [find.pcworld.com/34607](http://find.pcworld.com/34607)).

Despite rising concern about security, most software vendors focus on adding features rather than fixing existing products—partly because the market demands it.

"Everyone wants to be on the cutting edge," remarks Richard Forno, who is a noted security consultant and author based in Washington, D.C. "The problem is that when we buy the latest and greatest products, we also acquire the latest and greatest vulnerabilities."

Sometimes software users ignore fixes, considering them too complex or costly to implement. Microsoft issued a patch for SQL Server more than six months before Slammer's attack.

Yet thousands of computers—including some at Microsoft—were unpatched, allowing Slammer to spread.

### SILVER BULLETS

SO FAR, WE'VE gotten off cheap. Worldwide, Code Red caused \$2 billion in damage, and 2000's Love Bug virus hit \$9 billion. They were merely cybervandalism on a grand



STUART STANIFORD,  
chief executive officer  
of Silicon Defense.

scale. But deliberate assaults on our electronic infrastructure could do damage that dwarfs both of those figures.

In February, the White House issued the National Strategy to Secure Cyberspace, which calls for private and public sector cooperation in

the fight against cyberterror (see "A Strategy to Protect Cyberspace," below).

Forno says that the government guidelines are a good start, with one big problem. "Nobody is held accountable," he says. "Until you can force accountability for security failures, there's no incentive for anybody to make any real improvements."

In the meantime, businesses must fend for themselves, juggling intrusion-detection systems, firewalls, and software patches. Individuals have to rely on personal firewalls and antivirus software, and hope the Net's built-in redundancies and overall resilience will shield them from permanent damage in an attack.

"Worms might upset us, make us lose some data or the use of our PC for a day," says Fred Felman, vice president for marketing at Zone Labs, a San Francisco firewall developer. "But if people lose their trust in the Net, then we really have a problem."

—Daniel Tynan ■

## A STRATEGY TO PROTECT CYBERSPACE

IN FEBRUARY the White House released the final draft of the National Strategy to Secure Cyberspace, a set of guidelines establishing broad targets for Internet security in the public and private sectors. (See [find.pcworld.com/34601](http://find.pcworld.com/34601) for the full document.) Here are its primary goals:

- ◆ Establish a **security response system** by expanding the federal Cyber Warning and Information Network and increasing communication with private companies.
- ◆ Reduce online vulnerabilities by increasing **prosecution of cybercrime** and encouraging Internet users to adopt improved security protocols, policies, and practices.

- ◆ Encourage **security awareness and training** through a public service campaign; launch a joint public and private task force to help technology companies promote security to small businesses and to consumers.
- ◆ Secure **government-controlled cyberspace** through greater use of security-assessment and policy-enforcement tools; review the need for stronger and expanded access-control and authentication devices.
- ◆ Seek **international cooperation** in combating cyberterror, work with Canada and Mexico to make North America a "Safe Cyber Zone," and promote a global "culture of security."

### IN BRIEF

#### Product Pipeline



**BIGGER BACKUPS:** CMS Peripherals recently announced two external hard drives that make backing up your data easier than ever via bundled software that performs the function automatically. They don't come cheap, however: The 200GB unit costs \$499, while the 250GB model goes for \$599. [find.pcworld.com/34550](http://find.pcworld.com/34550)

#### Tidbyte

**RECYCLING:** Epson has launched a recycling program aimed at people who don't have local centers that take electronics. A prepaid UPS shipping label costs \$10; you must package the product. The catch: For now, only Epson products are accepted (go to the site for a list). [find.pcworld.com/34589](http://find.pcworld.com/34589)

#### Downloads

Head to [find.pcworld.com/34436](http://find.pcworld.com/34436) to find these files.

##### TOP 5

1. **PC World 20th Anniversary Screen Saver** 4.65MB  
Remember when DOS ruled and 10MB hard drives were king?
2. **Norton AntiVirus 2003** 40.53MB  
Defend your PC against all virus types with this stalwart veteran.
3. **FreeRAM XP 1.22** 517KB  
Is your PC acting sluggish? Free up memory with this tool.
4. **Microsoft Office XP Service Pack 2** 14.7MB  
Repair Office XP's speller, Word's handling of pictures, and more.
5. **DirectDVD 4.47** 10.7MB  
Play DVDs on a PC with this app.



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## MOBILE PCs

CENTRINO NOTES  
RAISE THE BAR

TESTS SHOW TOP BATTERY LIFE, PERFORMANCE.

INTEL'S LATEST notebook technology is more than just a new processor. Called Centrino, it's made up of a CPU, a chip set, and wireless hardware. Judging from our first tests, notebooks with some or all of Centrino's parts are winners, setting new records for performance and battery life.

The only hitch: The convoluted name game surrounding the technology. Intel offers the Pentium M chip (not to be confused with its Pentium III-M and Pentium 4-M predecessors), along with the 855 chip set and the Intel Pro/Wireless 2100 Network Connection hardware. To call a laptop a Centrino, and to reap the benefits of Intel's marketing muscle behind that name, vendors must use all three parts. Notebooks with only the

CPU and chip set will carry the Pentium M label. That's the case for the 6.2-pound, \$3395 IBM ThinkPad T40 and the 6.5-pound, \$2267 Dell Latitude D600 we tried out. We also tested a 7.1-pound, \$3500 Toshiba Tecra M1 Centrino model. All three were preproduction units; weights include AC adapter and cord.

## EXTRALONG LIFE

FOR FREQUENT travelers, a notebook is only as good as its battery life. Our thin-and-light test systems—combined with high-capacity batteries—posted marathon run times. Toshiba's 1.6-GHz Tecra M1 lasted an eye-popping 7 hours, 6 minutes, and IBM's 1.6-GHz ThinkPad T40 an impressive 6 hours, 33 minutes in PC World Test Center battery



IBM'S THINKPAD  
T40 (left) and Dell's  
Latitude D600 performed well.

tests. The 1.6-GHz Dell lasted 3 hours, 15 minutes, but used a significantly smaller battery.

How does Centrino help battery life? For starters, the 1.3-, 1.4-, 1.5-, and 1.6-GHz Pentium M chips draw an average of less than 1 watt of power. (Also offered are 1.1-GHz and 900-MHz versions, which average 0.5 watts.) The older Pentium 4-M processors gobble an average of 2 watts.

Intel also improved its SpeedStep technology, which adjusts the notebook's processor speed according to application need. Plus, its Mobile Voltage Positioning 4 lowers the voltage based on current CPU activity. Finally, Centri-

no and Pentium M machines use a 400-MHz bus that can power down different sections when they're not in use.

## POWERFUL, TOO

MOST MOBILE users don't want to sacrifice performance to get long battery life. That won't be an issue for Pentium M-based notebooks, thanks to a more efficient processor architecture built from the ground up to be a mobile part (Intel's previous mobile chips are reconfigured desktop parts). The Pentium M completes more instructions per clock cycle than today's P4 chips (which favor higher MHz instead), and the new chip has a 1MB Level 2 cache (twice that of the current P4's 512KB L2 cache). The result: Our 1.6-GHz test notebooks earned impressive PC World-Bench 4 scores, outpacing notebooks with faster-running P4 and P4-M processors.

The Dell Latitude D600, the highest-performing notebook we've tested to date, scored 125, a noteworthy 13 points higher than our previous top mobile performer, a 9.5-pound desktop replacement from Toshiba with a 2.5-GHz desktop P4 processor. That's about 12 percent faster, a performance gain any user would notice. The ThinkPad T40 ►

## TEST REPORT

## PENTIUM M OFFERS DAZZLING PERFORMANCE

WHETHER THEY'RE CENTRINO UNITS or not, the latest notebook PCs run longer, too.

SYSTEM	Processor	PC WorldBench 4 performance score <i>Faster</i>	TIME (IN SECONDS) REQUIRED TO RUN TEST OF					Battery life (hours:minutes)
			AutoCAD AUGI Gauge	Premiere 6	Nero Burning ROM 5.5	Photoshop 7.0.1	VideoWave DivX	
Dell Latitude D600	1.6-GHz Pentium M	125	251	405	490	351	93	3:15
IBM ThinkPad T40	1.6-GHz Pentium M	124	253	375	533	341	82	6:33
Toshiba Tecra M1	1.6-GHz Pentium M	111	288	372	652	352	101	7:06
Gateway 600XL	2.4-GHz Pentium 4-M	107	341	502	782	364	103	3:00
Toshiba Tecra 9100	2-GHz Pentium 4-M	95	456	507	766	389	104	2:27



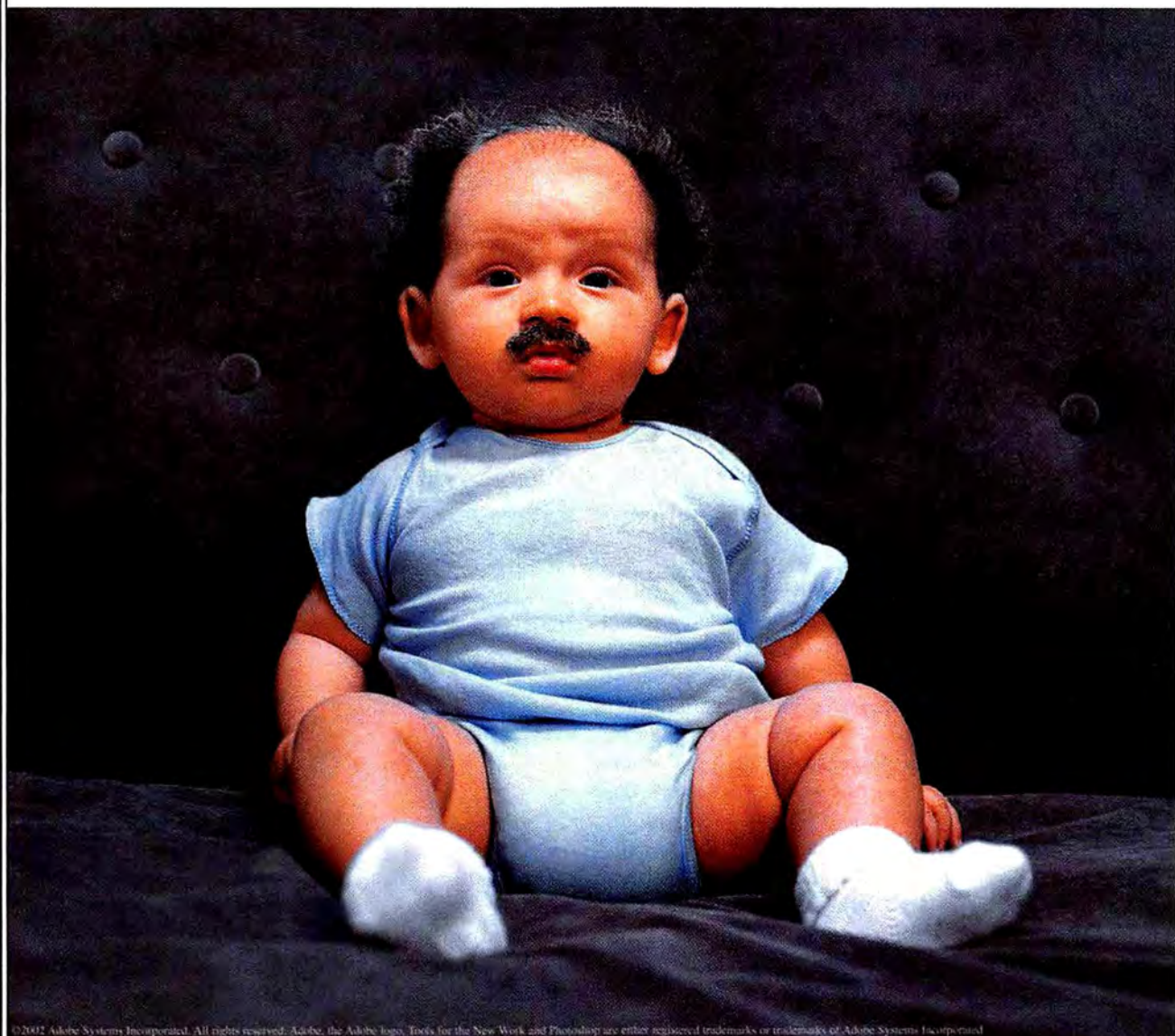
**HOW WE TEST:** All machines ran Windows XP Professional and included 512MB of DDR266 SDRAM. All were tested with PC WorldBench 4, PC World's applications-based benchmark, in which a higher score is better. In all other tests, except battery life, a lower score is better. For a complete explanation, visit [find.pcworld.com/34646](http://find.pcworld.com/34646). Tests developed and conducted by the PC World Test Center. All rights reserved. **CHART NOTE:** Bold numbers indicate best performance.





## He's got his father's eyes.

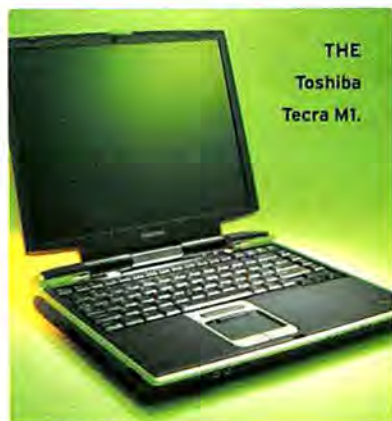
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THE  
Toshiba  
Tecra M1.

was close behind at 124, and Toshiba's Tecra M1 landed a zippy 111—notably quicker than a previous P4-M Tecra model, a 2-GHz 9100 that scored a 95. Another comparison system, Gateway's 600XL desktop replacement with a 2.4-GHz P4-M, notched a 107.

In additional tests running processor-intensive applications, the Pentium M notebooks did well with AutoCAD

AUGI Gauge, Nero Burning ROM 5.5, and Premiere 6 tasks. The Dell Latitude flew through AUGI Gauge in a cool 251 seconds (the 2.4-GHz P4-M Gateway took 341). The Toshiba Tecra M1 completed the test in 288 seconds, versus 456 seconds for its older sibling, the 9100. The differences between the Pentium M and Pentium 4-M notebooks were not as dramatic in our Photoshop 7.0.1 and VideoWave DivX tests, however.

### THE WIRELESS LOWDOWN

BEFORE YOU choose your next notebook PC, you need to understand the wireless options—confusing as they

may seem. Intel's Pro/Wireless 2100 Network Connection, the third piece of Centrino, provides Wi-Fi-compliant 802.11b connectivity.

But not all notebook makers favor Intel's implementation of 802.11b technology; still others prefer different standards entirely. The corporate-oriented 802.11a standard provides faster connections—up to a maximum of 54 megabits per second, or 20 mbps average, compared with a maximum of 11 mbps, or 6 mbps average, for 802.11b. Unfortunately, the two technologies don't work together.

A third variant of Wi-Fi, 802.11g, delivers the same speed as 11a, but is backward-compatible with 11b.

The IBM notebook we tested has hardware that supports both 11a and 11b. Dell offers Intel's wireless by default, but

also has an 802.11g option available at no extra charge.

Despite confusing names and messy wireless standards, early Pentium M-based notebooks show great promise. Excellent battery life and unprecedented mobile performance mean any road warrior should be pleased to travel with one of these laptops.

—Laurianne McLaughlin ■

#### ThinkPad T40

IBM

Street: \$3395

[find.pcworld.com/34520](http://find.pcworld.com/34520)

#### Latitude D600

Dell

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#### Tecra M1

Toshiba

Street: \$3500

[find.pcworld.com/34526](http://find.pcworld.com/34526)

## GRAPHICS

# RADEON 9800 PRO STUMBLES AT GATE

## DRIVERS SUSPECTED IN HIT-AND-MISS RESULTS.

**TEST CENTER** MOST GRAPHICS enthusiasts expected ATI's Radeon 9800 Pro to easily outrun NVIDIA's recently launched GeForce FX 5800 Ultra, as well as ATI's still-competitive Radeon 9700 Pro. But exclusive *PC World* tests indicate otherwise.

The PC World Test Center benchmarked a preproduction board carrying the 380-MHz Radeon 9800 Pro graphics chip, 128MB of 680-MHz DDR memory, and support for DirectX 9 and OpenGL 2. The retail price for 9800 Pro boards will be about \$400.

In tests using the game

Unreal Tournament, set at 1024 by 768 resolution with 32-bit color, the 9800 Pro card hit 174 frames per second—faster than a preproduction 5800 Ultra board's 168 fps, but slower than a production Radeon 9700 Pro card's 176 fps. The 9800 Pro did perform best at 1280 by 1024 resolution, but trailed the 5800 Ultra at 1600 by 1200.

Similarly, in our Return to Castle Wolfenstein test the Radeon 9800 Pro lagged at 1024 by 768, reaching 62 fps versus 66 fps for both competing boards. It hit 61 fps at 1600 by 1200; the others nailed 63 fps.



ATI'S  
Radeon 9800 Pro  
failed to outrun NVIDIA's  
GeForce FX 5800 Ultra in tests.

The 9800 Pro's one clear edge was in antialiasing. For testing purposes, ATI recommends 4X antialiasing, while NVIDIA suggests 2X (to maintain higher frame rates). Despite the 9800 Pro's resulting lower frame rates, testers preferred its image quality.

ATI's preproduction drivers could be to blame for the 9800 Pro's relatively weak scores; retail boards should perform better. If you want the best combination of price and performance on today's games, seek out a 9700 Pro board.

—Alexandra Krasne ■





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## PREVIEW

# NOTABLE NEW OFFICE APP

## OFFICE 2003 BETA FEATURES PROMISING NOTE-TAKING SOFTWARE.

THE NEWEST member of the Microsoft Office family certainly doesn't lack ambition. It's called OneNote, and it wants to be the repository for all of your notes, scribbles, sketches, lists, and just about anything else that you might normally commit to paper during a meeting.

The OneNote beta we examined was part of the second prerelease version of Office 2003. We're already intrigued by what we've seen.

Microsoft has said that OneNote will be available as a stand-alone product later this year, but hasn't decided for sure whether it will be included in the final version of Office when the suite ships this summer. Prices have not been set.

The same uncertainties apply to another new application called InfoPath, an XML document creator that's central to Microsoft's suite-wide XML enhancements (for more, see [find.pcworld.com/34442](http://find.pcworld.com/34442)).

Also new in Office 2003: Outlook has new junk-mail filtering features and a business contact-management add-on. Publisher, Office's desktop publishing program, is beefier and now focuses heavily on business materials.

But the star of the beta is clearly OneNote.

### ONENOTE WONDER?

IT'S OBVIOUS that OneNote is aimed at paper users who take lots of notes and want to retrieve and reuse that data quickly. Employing a paper

notebook-style interface, OneNote lets you type or draw anywhere you like on customizable electronic pages. The software makes it easy to add tabbed sections for quick categorization of your material. Can't remember where you put a note? Move the cursor over page markers to browse your pages on the fly. It's much faster than opening and

closing Word documents. You can drag and drop Web content to your pages, too, or record audio clips that you can link to whatever you're writing at the moment.

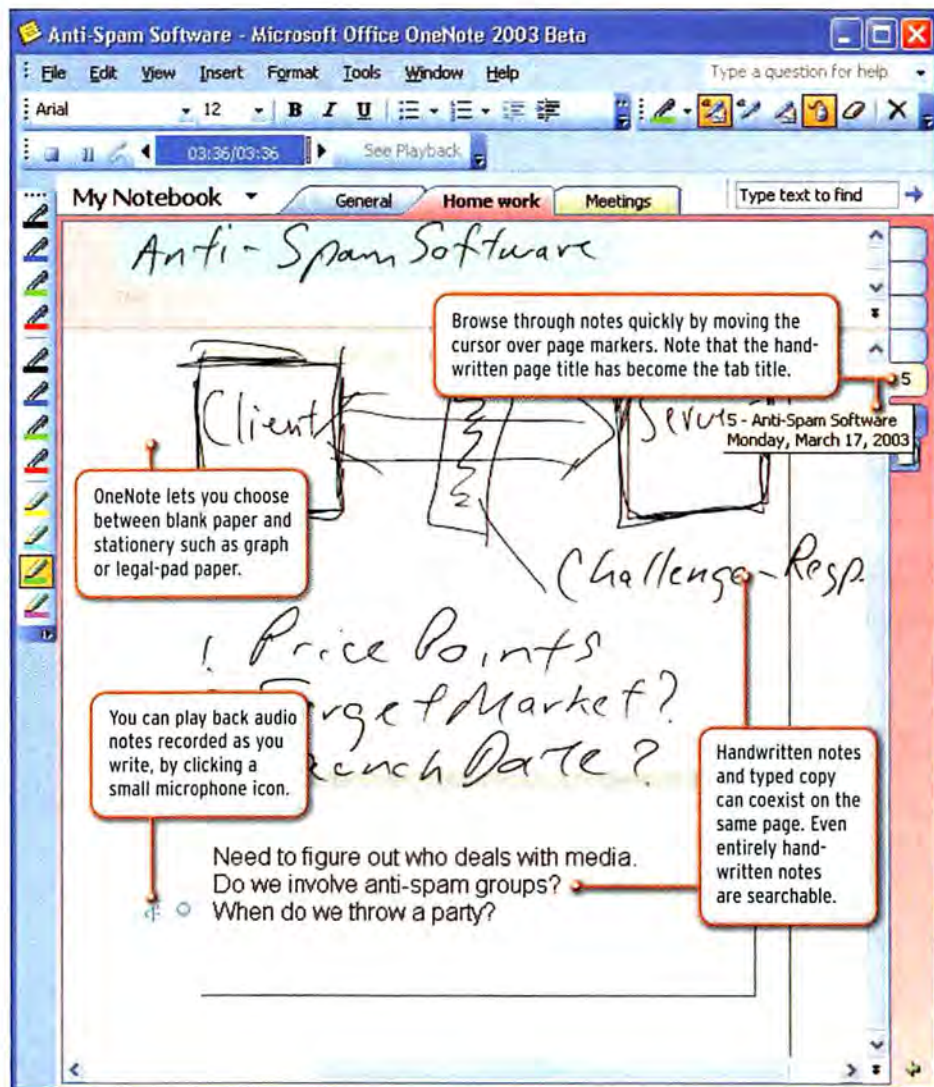
OneNote can run on any desktop or notebook PC. But when used on a portable device running Windows XP Tablet PC Edition, it offers a wealth of digital-ink features,

including the ability to create searchable handwritten notes. OneNote automatically preserves everything you scribble or type—no need to click Save.

On the minus side, we missed the basic drawing tools you get with Word. We also wished the app would index your notes to speed up keyword searches (Microsoft says searches will be fast without indexing).

Nevertheless, we look forward to the final version of OneNote. Watch this space for further updates on the Office suite and add-ons.

—Yardena Arar ■







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Rapid Response	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Thin Frame	Yes	Yes	Yes	Yes	Yes	Yes	Yes
No Touch Auto Adjust	Yes	Yes	Yes	Yes	Yes	Yes	Yes
LiquidView Software	No	No	No	Yes	Yes	Yes	No
Multimedia	No	No	Yes	No	No	Yes	No
Vacation Switch	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Cable Management	Yes	Yes	Yes	Yes	Yes	Yes	Yes
Input Interface Connectors	VGA	DVI-D & VGA	DVI-D & VGA	VGA	DVI-D & VGA	DVI-D & VGA	DVI-D & VGA





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# LETTERS

LETTERS@PCWORLD.COM

## MISLEADING WEB SEARCH RESULTS

## THREAT OF NET TAXES STIRS IRE

## 'SHOW ME' GREET'S NEXT WINDOWS



### 20-PLUS YEARS OF USING PCs

YOUR TERRIFIC 20th Anniversary issue [March] inspired a wave of nostalgia in this longtime PC user. I think I have been with *PC World* pretty much since your first issue in 1983.

In 1981, even before the IBM PC's debut, I was the first reporter on the daily *Honolulu Advertiser* to buy a home computer. My machine was a Xerox 820, with two 8-inch (not 5.25-inch) floppies, using the CP/M operating system. I took out a bank loan for the \$7000 I needed to get the Xerox and a noisy but trusty NEC

Spinwriter printer I used for years.

I soon discovered that my computer often let me work from home. Prior to the Internet and e-mail, I sent my stories to the newspaper by direct modem-to-modem transfer, at 300 bits per second—about talking speed. By 1982—before many other writers—I was freelancing that way, sending articles to newspapers all over the United States and Canada via direct modem.

In 1984 I quit my reporting job, freelancing ever since. And with the help of *PC World*, I have been upgrading my hardware and software regularly.

I am at this moment working with my twin screens, used as *PC World* describes on page 148 of the March issue, still ahead of many of my colleagues—and sometimes even ahead of *PC World*!

*Bob Bone, Honolulu*

### WEB SALES TAXES DECRIED

SO SALES TAXES are coming ["Sales Taxes Hit the Web," *News and Trends*, March]? I say bring them on! And after all those states pass this unified sales tax plan, I'll

be waiting for the mass exodus of online-only companies to the states of Alaska, Delaware, New Hampshire, Montana, and Oregon—all of which do not have a general sales tax.

As the market has shown in the past, the companies that have the lower costs and hassles of doing business usually win. Why do you think so many corporations are set up in Delaware, or so many credit card companies are based in Arizona and South Dakota?

*William "Ike" Eisenhower,  
Portland, Oregon*

PERHAPS THE unkindest feature of an online tax is this: It gives the impression that, once again, the government has stuck its nose into a sweet deal and screwed it up for everyone. Just once—sometime, somewhere—it would be great to steal a march on the tax man.

*Phil L. Scott, Jr., Austin, Texas*

YOUR ARTICLE overlooks the constitutional issues that are bound to arise if such taxes are passed. According to Article I, Section 9 of the U.S. Constitution, "No Tax or Duty shall be laid on Articles exported from any State." And it takes more than just a vote of Congress to amend the Constitution.

*Rob Stalder, Lakewood, Colorado*

### LONGHORN SKEPTIC

REGARDING YOUR March issue's sneak peek at Microsoft's Longhorn ["Windows XP's Successor," *News and Trends*]: Ho hum, another Windows interface for users to learn—most features of which will immediately be denied to those users so that network administrators need manage only one standard desktop. And a new file system that will give users a single route to data? Gosh, I can't wait—to ►

### HOT BUTTON

## Tripping Over False Hits in Searches

I DID A SEARCH recently on Yahoo, looking for "microsoft project viewer". I eventually concluded that there is no such animal, but I was amazed at the number of very convincing-looking hits I received, although about 90 percent of the hits dumped me into one particular site.

Especially interesting was that despite the alluring titles in my hits, the URLs printed discreetly below them included such unlikely sites as mad4fashion.net, valentinecookies.com, 1happyhome.com, babesontheWeb.com, and paintings1.com

(subsequent search results may differ).

So why on earth are these sites registering as hits from the search engine? My theory (unproven) is that when the Web crawler from Yahoo visits certain sites, the sites somehow respond by providing false information about what they contain.

I don't know whether this is possible or how it might be done, but it is getting really annoying. Sometimes there are so many imitation hits in my search results that real hits get lost in the shuffle.

*Elizabeth McKenney, Altadena, California*



see how digital thieves will exploit that capability. And being able to drag running applications from one virtual desktop to another? I swoon at the thought of how much the new hardware that can take advantage of it is going to cost me.

Bob McFadden, Alexandria, Virginia

### E-MAIL SPOOFERS

THANKS FOR the article on e-mail impersonators ["Net Tricks That Muddy Your Reputation," *Consumer Watch*, March]. I received such a false request for America Online account information when I was having some billing problems. I remembered AOL's rule about not asking for this kind of information. I immediately contacted its customer service, and the operator said that the e-mail was not from AOL and to report it to TOSReports. I am glad that I didn't bite, but I wonder how many people did.

Angela Fay Lyshe, Cincinnati

### TIME TO LEAVE?

AFTER ALL THESE years, I am finally not renewing my subscription to your excellent magazine. As I am fairly happy with Windows 98 SE, I have decided that I have suffered through Bill Gates's machinations to constantly upgrade my operating system for the last time.

Reading *PC World* was a wonderful ride; you offered tips and solutions to a myriad of problems starting with [the original] Windows up through my Win 98 SE. But it is now time for me to retire from this madness.

Gary Huygen, Petaluma, California

### THE ONLINE ADDICTION

YOUR ARTICLE ON going without a computer ["20 Days Without a PC," March] reminded me of people who refuse to borrow money or to use credit cards, or who refuse to have a TV in their home. All these individuals are trying to avoid the addictions that these conveniences can bring about, and somehow feel more in control of their lives because of it.

The computer is not the addiction. It is a means to some activity that becomes addictive, be it porn, gaming, socializing, shopping, or research. You can find all

these addictions without ever touching a PC. However, its power as a research and communication tool—in conjunction with the Internet—is unparalleled. And there are very few limits on this capacity.

Jason McMahon, Dolgeville, New York

### THE BOOK ON QUICKBOOKS

I CONCUR WITH your reviewer on the priciness of QuickBooks 2003 [*New Products*, March]. I was just forced by Intuit to upgrade my 2001 version in order to keep using its basic payroll tax service. However, I have found few if any changes useful to a self-employed consultant. In fact, of the more than 100 new forms, not one is specifically for a consulting business. While the tax-table downloads are convenient, they're a bit costly at \$129 per year. Therefore, the new price of \$169 that will be charged when my subscription renews next month adds insult to injury.

Ann Degenshein, Eagan, Minnesota

### 'GETS EVEN BETTER'

CHEERS FOR YOUR redesigned site: The best gets even better. Yours is still far and away the most useful PC technology site on the Net for both consumers and professionals. The magazine is great too—it keeps "disappearing" from my office.

Joe Farulla, President and CIO  
GRA Computers, West Paterson, New Jersey

**Editor's note:** Our site's new look—with added functionality—debuted in February. ■

### CORRECTIONS

IN APRIL'S "The Whole Drive Guide," we should have stated that Seagate offers a three-year warranty on retail hard drives with 8MB buffers.

In April's *Windows Tips*, we should have said that the tip on using Windows' volcano screen saver works only in Windows 98 and Windows Me.

In March's "20 Years of Hardware" (page 91), the item "It's a Removable Storage Feast" should have said that the original IBM PC used 5.25-inch floppy disks, forgoing support for their 8-inch predecessors.

PC World regrets the errors.



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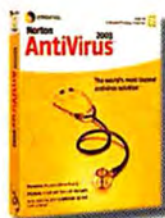


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STEVE FOX

## Sneaky Charges Hassle Online Tax Filers

Plus: Floppies go away, graphics boards go to war, and SMS goes to Canada.



### 1 Many Unhappy Returns

**The Buzz:** The idea behind electronic filing was to make paying taxes simpler and to ensure that 60 percent of all people who filed could do so for free. Though a staggering 54 million people are expected to e-file this year, not everyone is satisfied. Some taxpayers are griping about sluggish Web response and software bugs that forced them to start over or give up altogether. Others have reported being charged for services they had assumed were free. IRS spokesperson Nancy Mathis acknowledges that changes in the criteria that private tax firms use to determine who's eligible to file for free had

caused some confusion—but she promises that “Next year, the criteria will be more stable.”

**Bottom Line:** What's the old saying? “Nothing is certain except death and taxes.” Yeah, that and buggy software.

### 2 Farewell, My Floppy

**The Buzz:** Move over, kangaroo rats, spotted owls, and shortnose sturgeons. The floppy disk is about to join you on the endangered species list. Though most people stopped using the 3.5-inch disks at least five years ago—roughly when Apple gave floppies the boot—the drives have lingered on in most PCs. Until now. In March, Dell stopped including floppy drives as standard equipment on its high-end Dimension systems. Other vendors are sure to follow.

**Bottom Line:** Hello, *Antiques Roadshow*? Any interest in my vintage collection of America Online disks, circa 1995?

### 3 Graphics Wars Heat Up

**The Buzz:** Graphics chip maker NVidia has been king of the hill for years among the gaming set. But that's all

changing. First ATI's Radeon 9700 Pro came out last year to smashing reviews. Then NVidia stumbled with its GeForce FX 5800 Ultra, which got dinged for being noisy and bulky. ATI hopes to open up its lead with the new Radeon 9800 Pro—at least until NVidia's next counterstrike.

**Bottom Line:** High-end graphics boards are about bragging rights, not sales. Right now, ATI's doing all of the bragging.

### 4 Text Messages Take Off

**The Buzz:** Cell phone-to-cell phone text messaging (called SMS, or short message service) is finally making inroads in North



America, horrifying good spellers and ergonomic specialists everywhere. Domestic SMS usage should receive another boost with the recent agreement among six major U.S. carriers (AT&T Wireless, Cingular, Nextel, Sprint PCS, T-Mobile, and Verizon Wireless) and Canada's four national phone service providers that allows wireless finger twiddlers to send text messages between the two countries. **Bottom Line:** It's about time we got SMS in the States—it's huge in Europe. Then again, so is David Hasselhoff. ■

## NAGGING QUESTION

### Why Is the Linux Mascot a Penguin?

When Linux Kernel Mailing List habitués were hunting for a logo to represent their brave young OS, Linux creator Linus Torvalds mentioned that he liked penguins, and Tux the penguin was born. Still, why a penguin? “No good reason, really,” Torvalds ex-



plained in a 1996 e-mail message. “But a logo doesn't really have to mean anything—it's the association that counts. And I can think of many worse things than...being associated with penguins.” It's a good thing Torvalds wasn't a fan of turkeys or weasels.

*Contributing Editor Steve Fox covers buzz-worthy products, ideas, and trends. Contact him at [steve\\_fox@pcworld.com](mailto:steve_fox@pcworld.com). Visit [find.pcworld.com/31643](http://find.pcworld.com/31643) for more Plugged In.*



# Quick.

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



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*Microsoft® Certified Professional Magazine, November 2002*



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## Is It Time for a High-Definition TV?

Your next monitor could double as a sophisticated entertainment device.



in a much crisper, clearer picture. HDTV sharpens displayed images to 920 by 1080 resolution, up from analog's 720 by 486.

Better resolution makes high-definition screens the best kind of TV for viewing your PC desktop. That's useful if you live in a small place and need one screen to do double duty. It also helps for combining the talents of your PC and television to record TV programs or show digital video—a growing trend with new technology devices designed for the living room. And the idea of a monitor that does two jobs may help you justify paying the \$1800 to \$4000 that an integrated HDTV set costs.

### THE BIG SCREEN

HDTV BROADCASTS update the aspect ratio from the old television standard of 4:3 (4 units of width for every 3 units of height) to 16:9. That's the ratio most movies use, and it's a better fit with our horizontally oriented field of vision. HDTV includes other goodies—such as Dolby 5.1 surround sound—to make prime time even more irresistible.

Of course, you'll enjoy the full impact of HDTV only with programs broadcast in that format. And though the networks are expanding their HDTV offerings, few programs now broadcast over the air in high definition. Satellite TV providers such as DirecTV also offer HDTV viewing options, including movie channels and sports.

Even shows not broadcast in high definition should look and sound better on an HDTV set than on an analog one; but the images may look slightly stretched or distorted, since they're formatted for a standard 4:3 television screen. Most wide-screen sets let you reformat the image. ►

YOU'VE SEEN THEM at your local electronics store, their picture-perfect displays lighting the way to couch potato nirvana. Maybe you've even experienced one firsthand at a Super Bowl party. HDTV converts say that once you've soaked in the splendor of a high-definition broadcast, you can't go back to your father's TV set.

High-definition television is so alluring that manufacturers are building HDTV capability into an increasing number of PC monitors, such as the Samsung SyncMaster 240T (\$3169, [www.samsungusa.com/monitor](http://www.samsungusa.com/monitor)) and Sony SDM-V72W/B

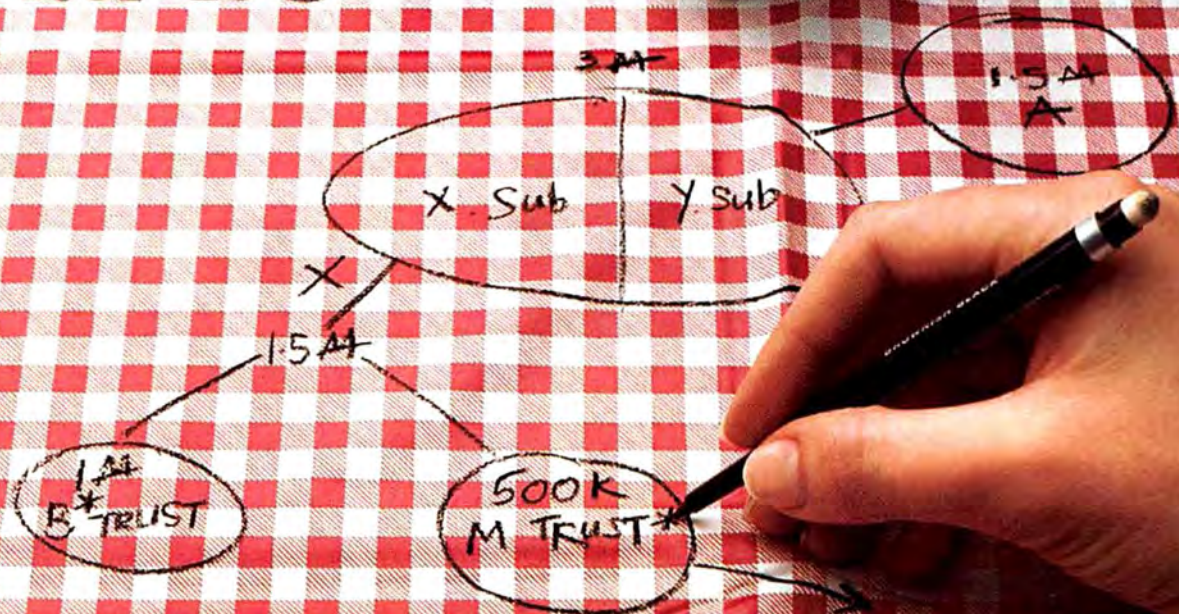
(\$1000, [www.sony.com/displays](http://www.sony.com/displays)). And high-definition televisions make great PC monitors, too. Which makes selecting a TV or a monitor tougher.

High-definition television images really are strikingly sharp—richer and more detailed than you'll see on even the best analog TVs. Some viewers compare watching a high-definition broadcast to looking out a window instead of viewing a TV screen.

Why does HDTV look so much better than analog television? Simple: resolution. HDTV displays contain up to three times more pixels than analog, resulting



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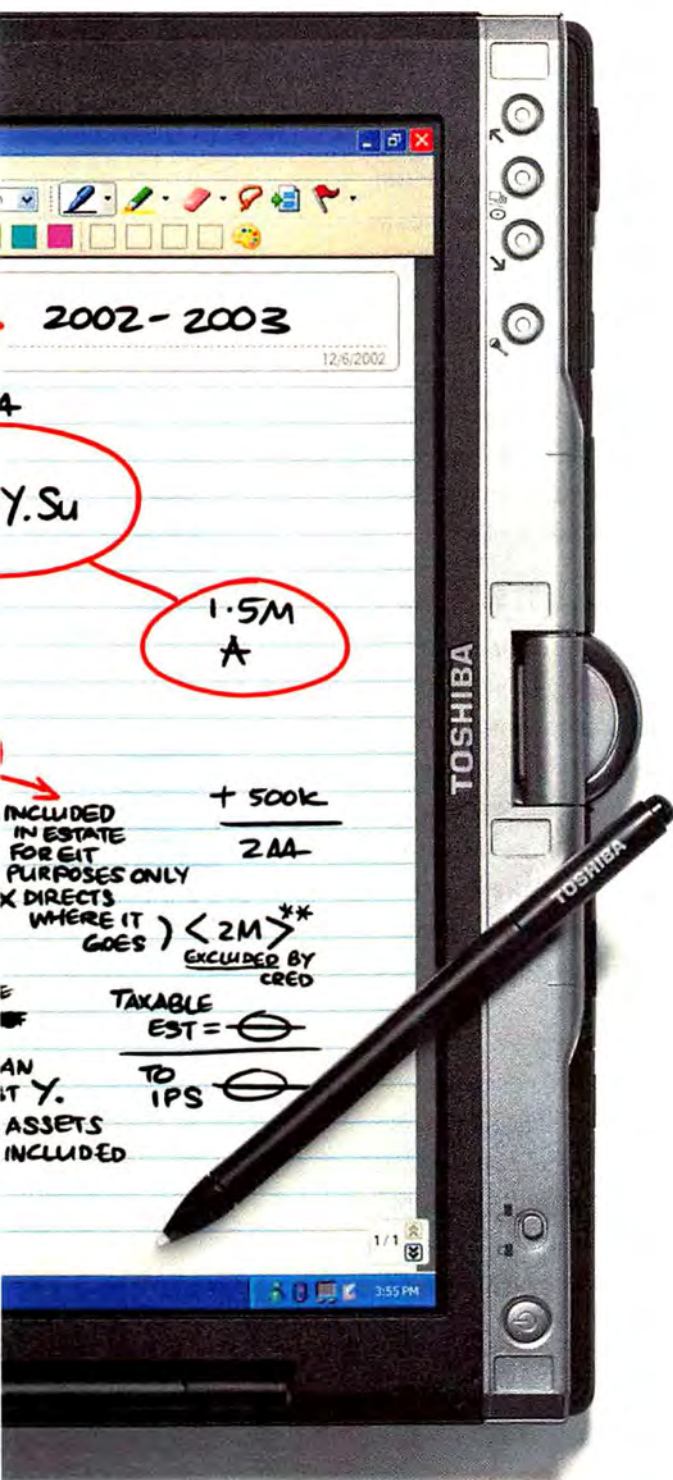
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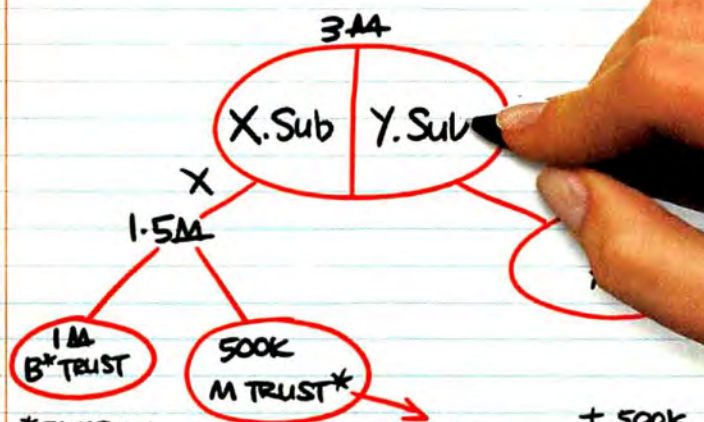
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So far, about 2 million viewers have bought a digital set. Maybe you'd sooner sit through a *Fear Factor* marathon than fork over serious cash to watch Ray Romano whine in high definition. But eventually you'll need an HDTV.

Under FCC plans, only after digital television achieves 85 percent market penetration will it be time to get rid of analog signals. When will that happen? Perhaps not until 2014.

If you're in the market for a new TV, should you go with HDTV? That depends first on your budget. Though HDTV prices are dropping, they're still up to three times higher than the price you'd pay for a top-of-the-line analog set of comparable size.

You must also decide whether to buy an integrated HDTV—shipped with a

digital receiver installed—or a digital-ready monitor. In theory, you can plug in an integrated HDTV and enjoy high-definition broadcasting right away. You'll need a set-top box to see HDTV on a digital-ready monitor, but such monitors start at less than \$1000.

### EXPENSIVE OBSOLESCENCE

THE PROBLEM with choosing an integrated HDTV, besides its higher price tag, is the chance that the installed receiver will become obsolete as digital television broadcast standards evolve and as cable and satellite providers add digital service. For example, if you currently subscribe to satellite TV and want to receive its HD broadcasts—or if your cable company starts offering HDTV service—you'll likely have to

purchase or rent an additional set-top box to replace the receiver in the set.

Also consider how you'll get your high-definition television signal: via satellite, via cable, or over the air. Subscribing to a digital cable or satellite service is no guarantee that you'll receive a high-definition TV broadcast. Cable and satellite companies use the term *digital* to describe how the analog television signal is encoded and compressed when it arrives at your house; it has nothing to do with the format the signal was broadcast in. In fact, with the exception of Time Warner, cable companies have been conspicuously slow to board the HDTV bandwagon.

Of course, you can receive HDTV signals over the air via an antenna, but that can be tough. Digital signals ►

### PRIVACY WATCH

## What Your Antivirus Software Won't Tell You

THERE MAY BE SOFTWARE on your PC that hides itself like a virus, silently keeps tabs on your PC like a virus, and e-mails the data to the person who planted it like a virus. So why does your antivirus program not tell you about it? Good question.

For years, some people have used PC surveillance products to keep tabs on other people, much of it for legitimate purposes—by businesses that want to enforce computer policies, for instance. But they're becoming popular with jealous spouses and data thieves for spying on people.

These programs can run hidden from the user, recording every keystroke, taking pictures of the desktop, and quietly sending the information to another party on the Internet.

For a long time, applications like Symantec's Norton AntiVirus and Trend Micro's PC-cillin have found and removed hacker tools that perform the same functions. But these anti-virus apps won't warn you about commercial spy software. Only Kaspersky Anti-Virus claims to trap both spyware and viruses.

The core problem here is philosophical, not technological. Antivirus companies guard against viruses by obtaining a sample of the malicious application, examining the underlying code, and then telling their programs to look for the virus's unique signature. Obtaining a copy of any of these snoopware apps shouldn't be tough—after all, the software is on sale every day.

"Traditionally it was very black-and-white—if [a suspect file] wasn't replicating, it wasn't a virus," says Vincent Weafer, senior director of Symantec Security Response. But it's not so easy to draw a line that separates legitimate from shady use of retail snoopware. Weafer, at least, is changing his view. The

next version of Norton Antivirus will detect and block spying utilities.

In his book, *The Art of Deception*, hacker-turned-consultant Kevin Mitnick decries the double standard that antivirus companies seemingly apply to viruses and to spyware.

"Antivirus software [treats spyware] as not malicious, even though the intent is to spy on people," Mitnick writes. That creates "the risk that each of us might be under illegal surveillance at any time."

Until antivirus companies change their tune, you can ferret spyware out in other ways. Most firewalls

can alert you when a program seeks to access the Internet, stopping spyware that e-mails data about you. And SpyCop (\$50, [www.spycop.com](http://www.spycop.com)) is one of the few tools that scans specifically for all commercial snoopware applications.

But let's face it: Antivirus programs are the only protection that many PC users have. Shouldn't the creators of these programs make their shields as strong and complete as possible?

—Andrew Brandt





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have trouble evading tall buildings. So be sure to test the local waters before you jump in. Try searching the AVS Forum ([www.avsforum.com](http://www.avsforum.com)) for nearby HDTV fanatics. TitanTV.com can help you find the right antenna for your location.

Is HDTV worth the investment? At this point, that depends entirely on how much you love television. I'm convinced that digital is the way to go—eventually. So when my two-year-old 27-inch analog TV bites the dust, I'll probably go with a high-definition set. But I can think of things I'd rather do with two grand now than watch Letterman's Top Ten List in HD. ■

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](mailto:consumerwatch@pcworld.com). To read more Consumer Watch, Privacy Watch, or On Your Side columns, go to [find.pcworld.com/31703](http://find.pcworld.com/31703), [find.pcworld.com/31706](http://find.pcworld.com/31706), or [find.pcworld.com/31709](http://find.pcworld.com/31709), respectively.

## ON YOUR SIDE

## Unreadable DVD+RW Discs

**I** PURCHASED a Sony DVD rewritable drive, model DRU-120A (a DVD+R/+RW CD-RW combo drive). When I used the drive to burn data files on a rewritable disc, the files were readable only on my Sony DVD burner, not on the generic DVD-ROM drive on my PC. Sony tech support said the problem has to do with the +RW media and said to try another manufacturer. I tried media from HP and Memorex, but had the same problem. Sony tech support also suggested that I use only +R discs, not +RW. Are +RW discs only playable in the burner that they were recorded on? What good is a +RW disc for storing data if you can't access it on another computer? And what happens if the original burner dies?

Mark Tamayose, Yuma, Arizona

*On Your Side* responds: Robert DeMoulin, marketing manager of Sony Electronics' storage division, says that Tamayose's DVD-ROM drive may have older firmware that won't let it read +RW discs. Sony ultimately offered Tamayose one of three options: a new DVD-ROM drive certain to be compatible with +RW media; a new DVD rewritable drive; or a full refund for his unit. Tamayose returned his DRU-120A drive to Sony for a full refund.

If you run into similar drive problems, a firmware update at the drive manufacturer's Web site may help. Sony also recommends that you use DVD+R media when sending discs to others. These discs cost less than +RW discs, and they generally have better compatibility, too.

—Grace Aquino

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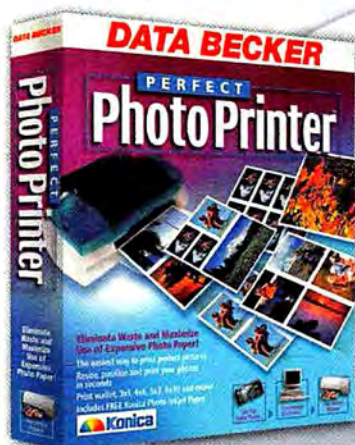


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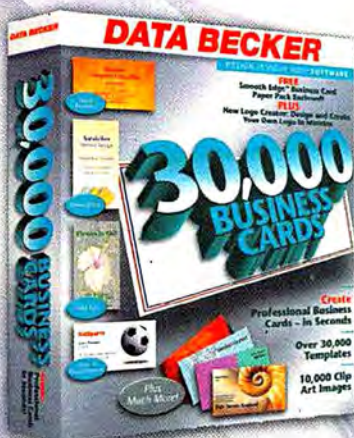
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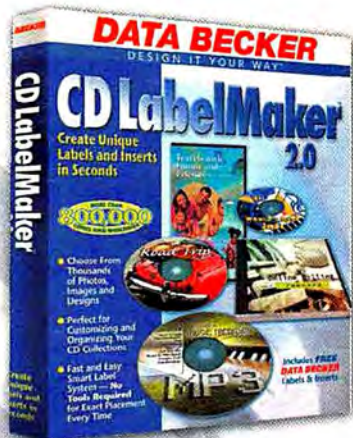
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STEVE BASS

## A New Way to Tame Your Paper Tiger

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MY DESK WAS a paleontologist's dream—stacks of paper, some of it from the Pleistocene epoch (well, okay, maybe just since 1995). But a super scanning program helped me clear away several strata without lifting a shovel. Folks, I haven't been this productive in years. I also have a nifty scanner freebie and a couple of scanner buying suggestions to share with you.

When was the last time you really got excited over software? You will again once you try ScanSoft's PaperPort Deluxe 9, a versatile tool for managing and manipulating paper and electronic documents, images, PDFs, faxes, and other files. For the first time in ages, my desk is clear—I've scanned in hundreds of scraps of paper, given each a file name and a few keywords, and stored them in PaperPort folders on my PC.

Once you've scanned a file into PaperPort, you can clean, straighten, or otherwise massage it (handy for faxes), even to the extent of annotating it and attaching sticky notes. PaperPort's optical character recognition is terrific for most jobs. I scanned a smudgy faxed contract and ran the OCR app on it—and after 2 minutes of spelling checking for OCR errors, I had a perfect document. I scan and fill in forms using the program's Form Typer; and I use PaperPort's Copy to Text feature to select a region of text on a paper document, scan the region, convert it to digital, and then pop it onto the clipboard for pasting into any other document. Nifty, no?

I keep uncovering new ways to use the program: If I ask, PaperPort will OCR each document, add the words to an index, and let me perform quick searches. I did that to dozens of family recipes,



making it easy for my wife to organize and retrieve them quickly. Ditto for all of my expense receipts. After scanning, I burn copies of critical papers—like passports and birth certificates—onto a CD.

### SCAN AND DELIVER

NEW IN VERSION 9 is the ability to save or scan any document—say, an e-mail message or a photo—as a PDF file. For example, I can send monthly Quickbooks invoices to my editor as PDFs and know he'll be able to read them (and argue over my expenses). I can annotate and e-mail the PDF docs right from the program, too.

PaperPort supports over a hundred scanner models, so it likely will work with your scanner. Go to [find.pcworld.com/33962](http://find.pcworld.com/33962) for a list of compatible products.

As much as I like PaperPort, I dislike two things about ScanSoft's policies. First, you get just one free phone call for an incident; subsequent calls are \$20 a pop. E-mail support, at \$10 per incident, is a relative bargain. Second, there is no

trial version, though the company does offer a 30-day money-back guarantee.

**Quick tip:** Not every home office has a photocopier—but if you have a scanner and a printer, you do. I use ICarbon, a free tool that lets me fire a scanned document to my printer in seconds. ICarbon loads fast, and its black-and-white, gray-scale, and color presets make the conversion a breeze. Go to [find.pcworld.com/33965](http://find.pcworld.com/33965) to download ICarbon.

Finally, some scanner-buying advice: If you plan to scan more text pages than photos, and you work in a small office (mine feels like a converted broom closet), get a \$190 Visioneer Strobe XP100. A little bigger than a ruler, it weighs less than 0.75 pound. If you want to experience the ultimate in portability, try tucking the scanner into your jacket pocket. The Strobe comes with PaperPort, and its 600-dpi resolution and 36-bit internal color meet 90 percent of my needs.

Unfortunately, the Strobe can't scan books, high-quality photographs, slides, or negatives. To do that, you need a flat-bed scanner. My choice is HP's Scanjet 5500c (\$275 street), which scans at 2400 dpi and supports 48-bit color. The Scanjet uses USB 2.0, so when it's connected to a USB 2.0-equipped PC, it scans fast. This model has an automatic feeder for photos, as well as an adapter for scanning 35mm negatives and slides.

One more scanner benefit: Think of the money you'll make selling your old file cabinets on eBay! ■

*Contributing Editor Steve Bass runs the Pasadena IBM Users Group. You can send your comments to him at [homeoffice@pcworld.com](mailto:homeoffice@pcworld.com), and sign up for his online newsletter at [find.pcworld.com/25821](http://find.pcworld.com/25821).*

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# BUGS & FIXES

STUART J. JOHNSTON

## Fix Your Browser and Shop Safely

Yet another patch for Internet Explorer to keep your data secure.

SUPPOSE you're shopping online, and you click a link that opens another window at the same Web site—to check out shipping charges, say. Internet Explorer lets those two windows interact, because the browser grants them both the same security level. But if you open a window at another Web site or domain, IE is not supposed to allow that other window to share the same security privileges as the windows from the first site. So if you go from a merchant's site to a product-review page, for instance, the second site should not be able to let a malefactor access the credit card information you gave to the first site.

Unfortunately, you're not as safe as you may have thought. Microsoft recently discovered that IE's security model in this kind of scenario doesn't com-



pletely protect you: A clever attacker could lure you from a legitimate site to a malicious secondary site, or trick you into clicking a link included in an HTML e-mail message. And once you've been tricked into clicking a contaminated secondary window (or a link in an e-mail message), the bad

guy could access your data or run programs that could damage your system. Note, however, that you can't get hurt unless you click. And reputable sites are not likely to have dangerous links embedded in their pages.

Microsoft identified two holes relating to IE's "cross domain security model," and it released a cumulative patch to take care of both flaws. The company, which rates the holes as "critical," provides patches for IE versions 6.0, 5.5, and

5.01 (you must install Service Pack 3 before you download these patches). Browse to [find.pcworld.com/34286](http://find.pcworld.com/34286) for a link to the fixes. In the event of an e-mail attack, your PC is safe if you use Outlook Express 6.0 or Outlook 2002 (set to their "default" modes), or if you've installed the Outlook E-Mail Security Update (available at [find.pcworld.com/34283](http://find.pcworld.com/34283)).

But that's not the end of it. When you install the cumulative patch, a new problem pops up—and you'll need to download a separate fix to deal with it. (The problem emerged after Microsoft issued the cumulative patch.) Some IE 6 users may not be able to log on to certain Web sites that require authentication, such as subscription-based services. In fact, some people may not even be able to access their

MSN e-mail accounts. Microsoft has released a fix for this problem. Go to [find.pcworld.com/34289](http://find.pcworld.com/34289) for the patch. ■

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

### IN BRIEF

#### Phantoms of the Opera

OPERA SOFTWARE is shipping an update of its browser that eliminates five security holes. Three of them could let snoops view your files. Go to [find.pcworld.com/34295](http://find.pcworld.com/34295) to grab the latest version.

#### Stop a Trojan Worm

THE LOVGATE worm uses your Outlook or Outlook Express in-box to spread. It infects your PC with a Trojan horse that can send your system password to a hacker. Visit [find.pcworld.com/34316](http://find.pcworld.com/34316) for McAfee's removal details or [find.pcworld.com/34319](http://find.pcworld.com/34319) for Symantec's advisory. You can also try Bit-Defender's free cleaning tool at [find.pcworld.com/34298](http://find.pcworld.com/34298).

### BUGGED?

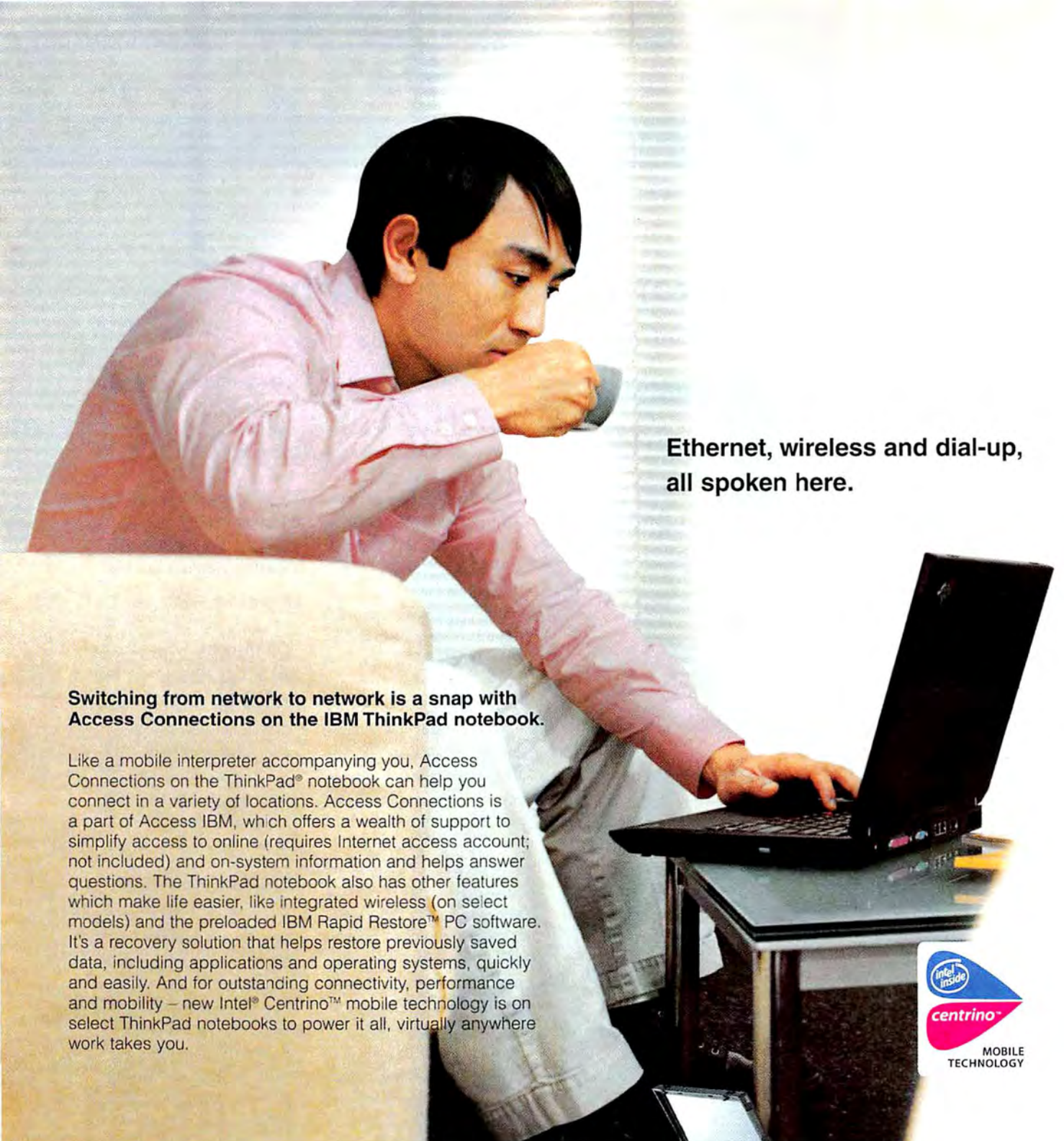
FOUND A hardware or software bug? Tell us about it via e-mail at [bugs@pcworld.com](mailto:bugs@pcworld.com).

### CAN I TRACK MY MACHINE'S PATCH HISTORY?

MANY READERS HAVE asked whether Microsoft has a tool to keep tabs on the security fixes you've installed. It does. The tool is called the Microsoft Baseline Security Analyzer (go to [find.pcworld.com/34292](http://find.pcworld.com/34292)). According to experts, however, it is difficult to use. Lots of people say the tool has an interface that only a Microsoft programmer could love. Don't bother with it unless you relish the thought of editing the Windows Registry.

Instead, you might want to try tools that tell you about the patches your PC *doesn't* have. Windows Update and Automatic Updates identify the patches you need—and install them for you (see [find.pcworld.com/34313](http://find.pcworld.com/34313) for details). Or you could try Big-Fix's free service ([www.bigfix.com](http://www.bigfix.com)). It works like Windows Update, but it also tracks patches for non-Microsoft products.





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IBM ThinkPad X31





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- FireWire (IEEE 1394) port and Compact Flash slot for added connectivity and expansion
- IBM Embedded Security Subsystem 2.0 (requires download of security software)

### System Specifications:

- Intel® Centrino™ mobile technology
- Intel® Pentium® M Processor 1.30GHz supports Enhanced Intel SpeedStep™ technology
- Intel® PRO Wireless Network Connection 802.11b
- 12.1" XGA TFT display
- 256MB DDR SDRAM • 20GB hard drive
- Integrated Ethernet and modem
- Microsoft® Windows® XP Professional
- 5.5-hr Li-Ion battery • 3.6-lb travel weight
- 3-yr system/1-yr battery limited warranty

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ThinkPad X31 Extended Life Battery (#02K7041) \$189

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5-yr on-site/9x5/ Next Business Day Response (#69P9198) \$299

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## NEW! IBM ThinkPad R40

### Distinctive Features:

- FireWire (IEEE1394) port and 2 USB 2.0 ports for added connectivity
- Ultrabay modular bay — Supports an optional second battery

### System Specifications:

- Mobile Intel Pentium 4 Processor 1.90GHz - M supports Enhanced Intel SpeedStep technology
- 15" XGA TFT display
- 16MB ATI Mobility Radeon 7000 4X AGP graphics
- 256MB DDR SDRAM • 20GB hard drive
- Ultrabay Plus DVD-ROM
- Integrated Ethernet and modem
- Microsoft® Windows® XP Professional
- Lotus® SmartSuite® Millennium license • PC Doctor
- 4.0-hr Li-Ion battery • 6.3-lb travel weight
- 1-yr system/battery limited warranty

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Perfect balance of performance and portability

## NEW! IBM ThinkPad T40

### Distinctive Features:

- UltraNav™ — Convenient touch pad/full-function TrackPoint™ combination
- IBM Embedded Security Subsystem 2.0 (requires download of security software)
- Titanium Composite top and bottom covers for added strength

### System Specifications:

- Intel® Centrino™ mobile technology
- Intel® Pentium® M Processor 1.50GHz supports Enhanced Intel SpeedStep technology
- Intel® PRO Wireless Network Connection 802.11b
- 14.1" XGA TFT display
- 256MB DDR SDRAM • 40GB high speed hard drive
- Ultrabay Plus CD-RW/DVD-ROM combo
- Microsoft® Windows® XP Professional
- 4.9-hr Li-Ion battery • 4.5-lb travel weight
- 3-yr system/1-yr battery limited warranty

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High Rate Wireless LAN Mini-PC Adapter	(#22P7701) \$109
Linksys Wireless Access Point	(#22P7130) \$90.99

## ThinkPad Notebook Accessories

ThinkPad Nylon Carrying Case <sup>1</sup>	(#10K0207) \$49
72W AC Adapter	(#02K6699) \$55
IBM USB Serial Parallel Adapter	(#22P5298) \$69
ThinkPad Premiere Leather Carrying Case <sup>1</sup>	(#10K0209) \$99
Lexmark Z65 Color Jetprinter	(#33L5070) \$133.99
256MB USB Memory Key	(#22P9025) \$199
Targus DEFCON Authenticator PC Card Fingerprint Reader	(#31P6763) \$174.99
ThinkPad Port Replicator II	(#74P6733) \$179
UltraBase™ X3 media slice (expansion/device bay for ThinkPad X30)	(#46P7912) \$199
ThinkPad CD-RW/DVD Combo IV Ultrabay 2000 Drive	(#22P6991) \$299

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Service period begins with the equipment date of purchase. Service must be purchased during the original limited product warranty period. Service levels are responsive to the objectives and are not guaranteed. A service technician is scheduled to arrive at your location within two or four business hours of the next business day (depending on service) after remote problem determination is completed. For the 9x5/4-hour service, calls are 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 non-hourly 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. ThinkPad 24x7/24-hour service is not available in all locations. External peripherals, such as racks, tape drives and channel controllers, require their own, separate service coverage. 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- CD-ROM • Integrated 10/100 Ethernet
- Intel Extreme Graphics
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- 3-yr parts and onsite labor limited warranty\*

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- Intel Pentium 4 processor 2.40GHz
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- CD-ROM • Integrated 10/100 Ethernet
- Microsoft® Windows® XP Professional
- 3-yr parts and onsite labor limited warranty\*

**\$989** NavCode 831941U-M504

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### Customize Yours:

Palm® Tungsten™ T Handheld (#22P7124) \$399.99

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### Distinctive Features:

- IBM Rapid Restore PC — Managed data-recovery solution

### System Specifications:

- Intel Pentium 4 processor 2.40GHz
- 128MB DDR SDRAM • 40GB hard drive
- CD-ROM • Integrated 10/100 Ethernet
- Intel Extreme Graphics
- Microsoft® Windows® XP Professional
- 1-yr parts and onsite labor limited warranty\*

**\$669** NavCode 831542U-M504

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3-yr onsite/9x5/4-hr Response (#54P1862) \$239

@server

Value server for Small Businesses

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- IBM Director 4.1 software — IBM Director 3.1 Recipient of *PC Magazine's* Editor's Choice award on October 1, 2002

### System Specifications:

- Intel Celeron® processor 1.80GHz
- 128MB DDR memory std/2GB max\*
- 40GB ATA-100 EIDE hard drive std/240GB max
- 5 available slots/4 available bays
- Integrated Gigabit Ethernet
- Available IBM Remote Supervisor Adapter
- Toolless tower chassis with optional 4U rackmounting
- 1-yr parts and onsite labor limited warranty\*

**\$499** NavCode 848094X-M504

(does not include operating system)

20/40GB TR7 Internal IDE Tape Drive (#48P7042) \$549

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Targus DEFCON Authenticator with USB Hub	(#31P6762)	\$119.99
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# NEW PRODUCTS

EDITED BY ANNE B. McDONALD

## Desktop Photo Labs?

**COLOR INK JET ALL-IN-ONES  
STRESS PHOTO PRINT FEATURES  
WITH MIXED RESULTS.**



**BUILT-IN MEDIA CARD SLOTS** are featured on Brother's MFC-4420C (left) and HP's Officejet 7130.

### MULTIFUNCTION DEVICES



MULTIFUNCTION devices are small-office workhorses: They print, scan, copy, and/or fax. Now some also aspire to be your all-in-one photo lab, with added media card slots and color-printing enhancements.

Lexmark bills its **X5150 All-In-One Print Center** as photo-capable, while Brother's **MFC-4420c** and HP's **Officejet 7130 All-In-One** have features specif-

ically for digital camera users.

All three let you scan digital shots into your PC, print them on glossy paper, and make a few copies. The photography features are a nice addition, but our tests of shipping units show that these color ink jet-based MFDs aren't the best choice for a busy home office.

### IN THE CARDS

LIKE HP's previous PSC series, the Officejet 7130 is designed to make printing digi-

tal photographs as intuitive as possible. The unit has slots on the front of the case for CompactFlash, SmartMedia, and Memory Stick cards, so you can quickly remove media from your digital camera, slip it into the 7130, and print photos without involving a computer. Once the storage card is in the MFD, you can print a proof sheet that includes thumbnail images of your photos and lists options for the number of prints (one or

two), image and paper size, and borders. You choose photos and options by filling in circles on the proof sheet and then scanning it; the 7130 automatically prints your photos as designated. You can up-

load the images to your PC and use the included software to view and lightly edit them, too.

Printed photos were very good, with sharp details, natural flesh tones, and realistic colors. For word jockeys, text and simple graphics also printed crisply.

At \$499, this all-in-one is significantly more expensive and larger than the Brother and the Lexmark. And while it prints the best-looking photographs of the three, it does so at just over 2.5 minutes for a glossy 5-by-7-inch picture. Dedicated ink jet photo printers are much faster with the same shot, averaging 53 seconds in our recent tests.

The Officejet 7130 would be suitable for light to medium home-office duties, with photo printing as a bonus.

### MFC-4420c

Brother

★★★★☆

Makes decent photo prints, but is not good at routine office tasks.

Street: \$250

[find.pcworld.com/34217](http://find.pcworld.com/34217)



**64 MULTIFUNCTION DEVICES**

Brother MFC-4420c, HP Officejet 7130 All-In-One, Lexmark X5150 All-In-One Print Center

**66 DIGITAL CAMERA**

Nikon Coolpix 3100

**NOTEBOOK**

Apple PowerBook G4 (12-inch)

**MP3 PLAYER**

E.Digital Odyssey 1000

**68 IMAGE EDITING**

Jasc Paint Shop Pro 8, Roxio

PhotoSuite 5 Platinum

**WEB BROWSER**

Opera Software Opera 7

**74 PDA PHONES**

Palm Tungsten W, Samsung SPH-i330,

Sony Ericsson P800

**76 PDF SOFTWARE**

Leadtools EPrint 3, Xelerate Software

PowerPDF 2

**77 HEADPHONES**

Skullcandy

Portable Link

**78 DISPLAY**

Philips DesXcape

150DM

Detachable

Monitor

**80 DESKTOP**

Stealth Computer

LPC-401


**FEATURES COMPARISON**

## All-in-Ones Get the Picture

MULTIFUNCTION DEVICE	Street price	Functions	Dimensions in inches	Media card slots	Maximum photo print resolution
Brother MFC-4420c	\$250	Print, copy, scan, fax	15.7 by 16.9 by 9.5	CompactFlash, SmartMedia, Memory Stick	2400 by 1200
HP Officejet 7130	\$499	Print, copy, scan, fax	16.3 by 13.3 by 21.9	CompactFlash, SmartMedia, Memory Stick	4800 by 1200
Lexmark X5150	\$149	Print, copy, scan, fax <sup>1</sup>	22.2 by 18.3 by 12.6	None	4800 by 1200

<sup>1</sup> Width by depth by height. <sup>2</sup> Faxing possible only when MFD is connected to a PC.

Though it's priced at only \$250, Brother's MFC-4420c has features that match those of the more expensive HP, including CompactFlash, Memory Stick, and SmartMedia slots. The unit's LCD panel lets you print a numbered index sheet of all the stored pictures, from which you can choose the photos you'd like to print—though it's not as user-friendly as HP's proof sheet. You can quickly set parameters for pictures—brightness, print quality, number of copies, type of paper, and so forth—on the control panel and then print photos. And unlike the HP and the Lexmark, which use

one ink cartridge for all three colors and another for black only, the MFC-4420c includes three separate color cartridges plus a black cartridge so you can replace individual inks.

This small MFD is shaped more like a stand-alone flat-bed scanner than a six-function device, a design that is useful and attractive; it would fit well on a small desk.

But the MFC-4420c took over 3 minutes to print a single 5-by-7-inch glossy photo, the slowest of the three MFDs we saw. Our test shot looked slightly garish and overcontrasted, with dark colors bleeding together and flesh tones appearing a bit too pink. This

all-in-one's text speeds also were the slowest of the three, and its text print quality definitely was disappointing.

**LIGHT DUTY ONLY**

THOUGH LEXMARK'S new X5150 is not specifically for photos, the company does bill it as photo capable. And the price is right—just \$149. The compact, rounded silver-and-black device looks attractive and professional.

The X5150 lacks slots for media cards. It also trades an on-panel facsimile control for a PC-driven one, so sending faxes requires a few extra steps. Lexmark does include a basic photo editor that lets you crop pictures, add text, and do other minor editing. And the X5150 has a handy driver that displays the ink level and the percentage of the cartridge contents a document or ink-thirsty photo has used.

Though the X5150 can print a photo in less than 2 minutes at its best settings on glossy paper, its photos were the least pleasing of this trio. Skin tones were ashen, other colors looked muted, and all of its photos lacked depth and contrast.

For text and graphics-filled documents, however, we were pleasantly surprised by the X5150's print quality.

This all-in-one isn't robust, but it's an inexpensive choice to handle quick tasks, including printing the occasional moderate-quality photo.

If you want a good MFD wrapped around a decent photo printer, try the HP Officejet 7130, but even as such it's better suited for just light home or home-office document use. Brother's MFC-4420c, while less expensive, disappoints in speed and print quality on all fronts. Finally, for very light all-around use, the Lexmark X5150 has surprising performance at a good price.

If you are primarily interested in quickly printing quality photographs, however, you'd be much better off purchasing a dedicated photo printer.

—Lisa Cekan ■

**Officejet 7130**

HP

★★★★☆

Extra media slots and very good photo quality; a well-rounded MFD.

Street: \$499

[find.pcworld.com/34223](http://find.pcworld.com/34223)

**X5150**

Lexmark

★★★★☆

Reasonable overall print quality, but produces poor photos.

Street: \$149

[find.pcworld.com/34220](http://find.pcworld.com/34220)



**GOOD PRICE:** Lexmark's X5150

**All-In-One costs only \$149.**



## A Nikon for the Masses

### DIGITAL CAMERA

NIKONS HAVE a reputation as cameras for the hard-core photographer, but the company's new Coolpix models are targeted at the neophyte. I looked at a preproduction version of the \$350 **Coolpix 3100**, a small, light, and nicely de-



IN THE MODE: Nikon's 3100 has 14 scene modes to aid novices.

signed 3.2-megapixel camera. It comes with an astounding 14 scene modes, plus something new to Nikon cameras: settings that help novices compose their shots.

Most digital cameras include a few scene modes that let snapshot photographers quickly fine-tune the camera's exposure settings for different types of shots. Picking sports mode, for example, asks the camera to use faster shutter speeds, while choosing portrait mode on a sunny day asks the camera to use the fill-flash function. On the 3100, Nikon placed the four most commonly used scene modes—portrait, landscape, sports, and night portrait—on

a dial; the remainder are found in the camera's menus.

Each of the four primary scene modes has several assist modes—think of them as built-in training wheels for proper composition. The assist modes are helpful, but using them takes a bit too long for quick snapshots.

Don't assume that this camera is strictly for beginners. Though the 3100 has few advanced features and takes only silent video, it does include white-balance calibration and in-camera image

### Coolpix 3100

Nikon

(Preproduction, not rated)

Moderately priced, pocketable, light, and especially easy to use.

List: \$350

[find.pcworld.com/34226](http://find.pcworld.com/34226)

### QUICK TAKES

#### Say 'MP3'

THE **Odyssey 1000** portable MP3 player from E.Digital



offers 20GB of music storage, an FM receiver, and voice navigation—all in a slick, iPod-esque package. Its VoiceNav feature

worked reasonably well, but I preferred the \$350 player's intuitive scroll wheel and large LCD screen. [find.pcworld.com/34262](http://find.pcworld.com/34262)

—Tom Mainelli

cropping. In addition, the Coolpix 3100 feels solid in your hand, and its zoom buttons are large and easily worked. Most important, it takes pleasing shots.

—Tracey Capen

## Mini-Mac: The Smallest PowerBook Yet

### NOTEBOOK

APPLE'S NEW ultralight power notebook, the \$1999 12-inch **PowerBook G4**, comes with plenty of connections and processing muscle, but it still doesn't provide a flawless computing experience.

At 4.6 pounds, this subnotebook is heavy for a category in which many of the competitors weigh 2 to 3 pounds. And while it is Apple's smallest Mac notebook ever (10.9 inches wide, 8.6 inches deep, and

1.2 inches thick), it wins the title by only a hair: A G3 iBook with the same-size screen and an identical amount of RAM is just marginally bigger and heavier—and costs \$450 less. However, the PowerBook G4 is a sleek beauty despite its slightly hefty feel.

The PowerBook G4's matte-silver trackpad and button blend into the case so well, finding them in a darkened environment might be difficult. On my shipping unit, the button had a sticky feel. The keyboard feels roomy, though, and is comfortable to type on.

I found the 12.1-inch screen too small to use comfortably for long periods, especially at the default resolution of 1024 by 768 pixels. Though I don't

have bad eyesight, I had to magnify all my documents to make them legible.

The PowerBook offers one FireWire port, two USB 1.1 ports, and an ethernet connection. An internal modem, a microphone jack, and a headphone jack are arranged on the left side of the case; the slot-loading CD-RW/DVD-R drive sits on the opposite side. A small video-out port accepts the included VGA and combination TV-out (composite) and S-Video-out adapters, so you can use an

external monitor or TV for a display. The notebook also has built-in Bluetooth and accepts Apple's optional 802.11g AirPort Extreme card (\$99).

The PowerBook G4 does have useful DVD-burning capability. If you don't need that, the slightly heavier iBook has most of the PowerBook's functionality and costs less.

—Rebecca Freed ■

### PowerBook G4 (12-inch)

Apple

★★★★☆

Good if you must have a tiny Mac capable of burning DVDs.

List: \$1999

[find.pcworld.com/34241](http://find.pcworld.com/34241)



APPLE'S

12-inch PowerBook G4.

PHOTOGRAPHS: MARC SIMON



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# Photo Editing: Automatic or Manual?

## IMAGE EDITING

IF YOU'RE A wretched digital photographer—or even a good one—Jasc's **Paint Shop Pro 8** and Roxio's **PhotoSuite 5 Platinum** can help you fix your pics. The difference? Paint Shop Pro 8 takes some work

labeled with text and picture icons. Nevertheless, these may sometimes require interpretation. To reach minimal exposure controls, for instance, you click the Overall Quality tab, a label I found vague.

The \$109 Paint Shop Pro 8

Paint Shop Pro 8 provides several automatic ways to fix photos, including Auto Color Balance and Auto Contrast. But it doesn't offer what most people expect from an auto-fix box—instead of simply applying a change automatically, the program pops up a slew of manual settings, including a randomizer button that mixes up settings for creative effect.

Thanks to a new scripting capability, Paint Shop Pro can easily correct batches of images in almost any way it can fix one image. PhotoSuite is even easier to use on multiple images, but you can batch-process with only a small subset of its editing features.

PhotoSuite 5 also requires you to preset an output resolution in Preferences. But to achieve that resolution, the software sometimes adds interpolated pixels—a big no-no for an image editor because the procedure almost always makes pictures look horrible. According to Roxio, this alleviates worry about choosing the resolution. But that's the problem: The application makes important decisions for you.

Both image editors have nifty effects browsers. Paint Shop Pro shows you thumbnails (in a browser) of your image with the effects applied so you can see the changes side-by-side with the original.

## QUICK TAKES

### Alternative Browser Shines

IF YOU RARELY browse beyond Microsoft Internet Explorer or Netscape, you're missing **Opera 7's** stylish new interface and some other worthwhile features. An ad-sponsored version from Opera Software is free; pay \$39 to get the browser without ads and backed by e-mail tech support. Power users will love new keyboard shortcuts that can speed browsing by letting you leave your mouse behind. A new password manager stores all of your passwords in case you forget them. And a faster page-rendering engine supports Web standards better. Opera 7's strongest appeal will be to savvy surfers who like ample tools to control their browsing experience.

[find.pcworld.com/34271](http://find.pcworld.com/34271)

—Tom Spring

In PhotoSuite, clicking a picture icon in the left toolbar representing an effect applies it to your image, though you have little power to tweak it.

PhotoSuite 5 Platinum may work for quick fixes on many photos, but it also could make some of them worse. Paint Shop Pro 8 is far more capable, but it takes more effort to learn. Adobe's Photoshop Elements, meanwhile, remains more elegant than either.

—Alan Stafford ■



PAINT SHOP PRO 8 shows how different effects change your photo.



PHOTOSUITE 5 looks simple, but its tabs require some interpretation.

to learn but gives ample help, whereas PhotoSuite 5 is easy to operate because it tries to do your thinking for you (not necessarily a good thing). I looked at beta versions of each.

As its uncomplicated interface suggests, the \$50 PhotoSuite 5 Platinum is intended for beginners. Roxio calls the program "icon-rich": Instead of toolbars, it has large tabs

has tools to address almost any image issue, but it also offers lots of help for beginners, including an extensive new Learning Center—similar to the Recipes section of the leader in this category, Adobe Photoshop Elements. You also get unlimited, toll-free technical support, too, a rare occurrence these days.

Like most image editors,

### Paint Shop Pro 8

Jasc

★★★★☆

A capable image editor, though sometimes too complicated.

List: \$109

[find.pcworld.com/34229](http://find.pcworld.com/34229)

### PhotoSuite 5 Platinum

Roxio

★★★☆☆

Good for those intimidated by toolbars, but poor overall.

List: \$50

[find.pcworld.com/34232](http://find.pcworld.com/34232)





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# PDA Phones for the Smart and Rich



SAMSUNG SPH-i330 (left)  
and Palm Tungsten W.

## PDA PHONES

PEOPLE CALL PDA/cell phone hybrids *smartphones* for a reason: You have to be smart to use them. That's certainly the case with the Palm **Tungsten W** and the Samsung **SPH-i330**.

A glance at the feature map in either device's manual reveals that these are not simple Palm PDAs: The SPH-i330 manual identifies 29 callouts for buttons and icons; and the Tungsten W, 15. If you're in the market for this type of device, however, both of these models are worth a look.

With its built-in thumb keyboard (a first for Palm) and its bright, 320-by-320-pixel color screen, the \$549 Tungsten W is certainly a pleasure to use. Whether you're a Palm veteran or a neophyte, you'll need some time to find your way around, but once you do, navi-

gating becomes routine. What distinguishes the Tungsten W from other Palms is its communications capabilities. Using AT&T's GSM/GPRS network, it can handle e-mail, wireless instant messaging, Web browsing, and a full complement of phone features (including caller ID, call waiting, and six-way conference calls). Data-only plans start at \$30 per month; voice activation starts at \$20 per month, depending on the number of minutes. The Tungsten W's rechargeable lithium ion/polymer battery supported a full 10 hours of talk and more than 200 hours of standby.

Unfortunately, to use the Tungsten W as a phone, you must connect an uncomfortable Palm-supplied earpiece (there is no built-in or external speaker); and on my shipping

unit, this proved to be inconvenient. By the time I connected the earpiece and untangled its cord, I missed many of my incoming calls. (A Palm Audio Flip Cover, with built-in mike and speaker, should be available in June for \$40 more.) As for Web browsing, unless you view one of few sites that have been enhanced for the Palm screen, pages re-size awkwardly. Page refreshes were achingly slow, too. But at least the keyboard made typing dot-com addresses easier than it is on a regular nine-button phone keypad.

With its hourglass shape and natural grip, Samsung's \$499 SPH-i330 is the first cell phone/PDA that you can truly hold like a regular phone. Alas, I accidentally turned on the phone every time I wanted PDA functions, inadvertently pressing the power buttons for the phone and voice-dial as I pulled the device from its leather case or from its charging station. The 160-by-240-pixel color screen is smaller than the screens of other Palm-based PDAs, but large enough for comfortable use. Its lithium ion battery proved exceptionally long-lived, too, supporting up to 2.5 hours of talk time and up to four days of standby power. Currently the Samsung is available only from Sprint, whose plans covering voice and data start at \$40 a month. Both the SPH-i330 and the Tungsten W are loaded with 16MB of SDRAM.

If you're primarily looking for a phone with PDA capabilities, you can't go wrong with the 5.4-ounce Samsung. But if

## QUICK TAKES

### Harmonic Convergence

THE SONY ERICSSON **P800** unites a mobile phone, a camera, and a PDA (with GPRS Internet access) in a pocketable 5.6-ounce device packed in a cool metallic blue-and-silver case. The Symbian operating system runs apps similar to those you would find on a Palm- or Pocket PC 2002-based PDA, including a viewer for documents in Microsoft Word, Excel, and PowerPoint, and PDFs in Adobe Acrobat. My shipping phone came with a proprietary Web browser; if you prefer, you may download Opera 6.

The included syncing software, despite being slightly primitive, can take data from Lotus Notes or from Microsoft Outlook across a USB 1.1 or Bluetooth connection (and someday, over GPRS). At press time, no U.S. wireless service yet offered the phone in specific plans, but anyone may buy it from Sony Ericsson for \$650 and activate it via a SIM card for a carrier that supports GSM networks (such as AT&T, Cingular, and T-Mobile). [find.pcworld.com/34418](http://find.pcworld.com/34418)

—Seán Captain



you want a power PDA that doubles as a cell phone and a wireless communicator, the 6.4-ounce Palm Tungsten W represents the better choice. Either way, you should be prepared to spend at least \$500.

—Michael S. Lasky ■

### SPH-i330

Samsung

★★★★☆

Well-proportioned cell phone with Palm-based PDA capabilities is marred by poor placement of power buttons.

List: \$499

[find.pcworld.com/34238](http://find.pcworld.com/34238)

### Tungsten W

Palm

★★★★☆

Powerful hybrid serves best as a handheld that just happens to have cell phone and Internet capabilities.

List: \$549

[find.pcworld.com/34235](http://find.pcworld.com/34235)



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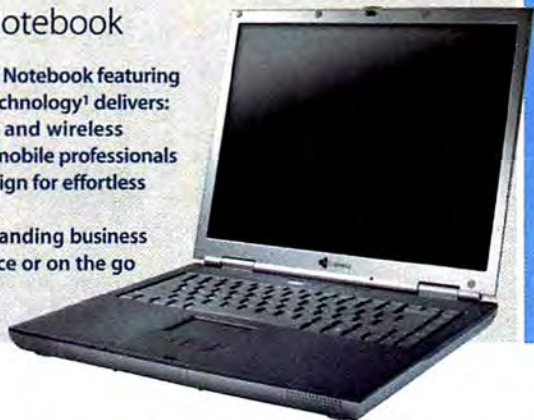
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### EPrint 3

Leadtools

★★★★☆

A one-stop file-conversion utility with a rough interface.

List: \$99

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List: \$50

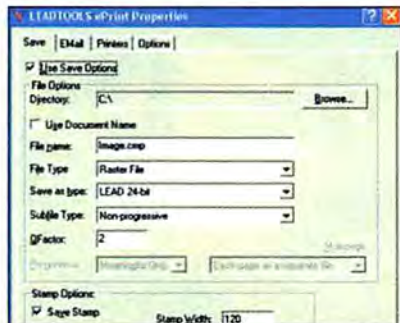
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or Leadtools' \$99 **EPrint 3**.

Think of these programs as printer drivers on steroids. After you install one, it appears as a printer option in any application that supports printing; simply choose the option from the drop-down list in the app's Print dialog box. When you click OK, the program opens a new dialog box that allows you to save your file in PDF form, send it by e-mail, or (of course) just print it.

PowerPDF gives you far greater control than EPrint offers over the PDF files you create, but EPrint provides a

lot more options for printing and file conversion. PowerPDF lets you preview the document, e-mail it with a single click, and set it to be compatible with special features in Adobe Reader 3, 4, or 5. You can also select specific fonts to embed—or to reduce file size, you can choose not to embed any, taking your chances with



**JUST PULL DOWN:** With EPrint, make a PDF file by using the Print dialog box.

# reTHINK COLOR



the fonts installed on the recipient's machine. The program lets you create custom watermarks to protect your work from unauthorized copying, and it provides five different image-compression settings, along with a one-click option to reduce the size of all raster images to 72 dpi to optimize them for viewing on a PC.

EPrint permits you to save files in hundreds of other formats, including Photoshop (.psd), Windows Metafile Formats (.wmf and .emf), and WordPerfect Graphics (.wpg). It also gives you five resolution options, as well as the ability to send jobs to several printers (and

e-mail recipients) at once.

EPrint has a good screen-capture utility that lets you grab a full screen or any combination of on-screen elements. Place it in your Quick Launch toolbar for fast access to individual capture func-

tions, or do your grabbing via hot-key combinations.

EPrint is much clunkier to use than PowerPDF, however: You have to set its e-mail options manually, for example (PowerPDF links to your default e-mail client automati-

cally); and the lack of a preview option means that, to check how a file looks, you have to open it in the target application before you print or transmit it.

For a fast and simple way to create, send, and print PDFs, PowerPDF is your program. Meanwhile, EPrint will give you more output alternatives than you can shake a mouse at.

—Dennis O'Reilly ■



**OPTIONS:** PowerPDF lets you quickly preview, save, or e-mail your file after PDF creation.

## QUICK TAKES

### Back to Business

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[find.pcworld.com/34256](http://find.pcworld.com/34256)

—Tracey Capen



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## NEW PRODUCTS

# A High Price for Freedom

### DISPLAY

PHILIPS CALLS its Windows Powered Smart Display the DesXcape because it liberates you from having to work in one place. But the company might just as well have called it the WalletXcape, because its

colors. Removing the monitor from the base is a challenge, though. And jamming it back in place while simultaneously hooking it to a latch in the back requires the strength of Schwarzenegger and the coordination of Baryshnikov.

**DETACHABLE:**  
Philips' DesXcape monitor can control your PC from a distance.



high price tag will liberate lots of cash from your pocket.

In many respects, the \$1500 **DesXcape 150DM Detachable Monitor** resembles a \$400 LCD monitor. The extra \$1100 pays for the ability to remove the 15-inch monitor from its base and use it to control a PC running Windows XP Professional. The device works on a Wi-Fi (802.11b) network, and it comes with both a wireless keyboard and a USB 1.1 Wi-Fi adapter for your PC (the monitor has Wi-Fi built in).

If you prefer, you can control the touch-sensitive DesXcape with a stylus or with your fingernail. The device does recognize handwriting, but I found its accuracy rate too poor to make much use of it.

As a monitor for your main PC, the DesXcape works fine, delivering sharp text and good

Unlike smaller Smart Displays, the DesXcape, at 5.1 pounds, is too large and heavy for you to hold it very long in one hand while using the stylus with your other. Instead, you can prop it up with a kickstand in the back and use the nifty wireless keyboard. That enables you to escape from your desk to another table.

Of course, other devices perform that function. They're known as notebook PCs, and many of them cost less—and do more—than the DesXcape.

—Edward N. Albro ■

### DesXcape 150DM Detachable Monitor

Philips

★★★★☆

Want to break free of your desk?

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List: \$1500

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## Put This Tiny PC Anywhere

### DESKTOP

IF YOU'VE kicked your floor-bound computer in the power button one too many times or if you haven't room to scribble even a Post-it note at your desk because your system is such a space hog, Stealth Computer wants you to think small.

PC World has seen a clutch of diminutive PCs recently, including those squeezed into toaster-size cases from Shuttle; but Stealth's \$1295 **LPC-401** takes tiny a step further, squeezing an entire 2.53-GHz Pentium 4-based PC into a case the size of two 5.25-inch drive bays. If you're unfazed by the prospect of using an older processor, consider the Stealth LPC-301 (\$895), which fits a 1.2-GHz Pentium III system into a case the size of a single drive bay.

The shipping LPC-401 we looked at ran Windows XP Professional and came with 512MB of DDR266 RAM, a CD-ROM drive, and a 60GB hard drive. (Options such as a larger hard disk and CD-RW drives are available.)

Ports included three USB 2.0, one FireWire, and one each of VGA, serial, ethernet, and parallel, as well as audio inputs and outputs and the

standard PS/2 ports for keyboard and mouse. Neither system offers any PCI or PC Card expansion slots.

This little PC won't break any performance records: Its PC WorldBench 4 score of 115 is much lower than the marks of many similarly configured conventional desktop systems. The LPC-401's 2.5-inch notebook drive is slower than the usual 3.25-inch desktop version, too. The PC runs fast enough for general use, but gamers may dislike the integrated graphics subsystem, which uses main memory.

Both systems have optional



**STEALTH LPC-401: A PC that's slightly smaller than a shoe box.**

mounting brackets, but they require some space to vent the heat from the processor; the LPC-401, in particular, pumps out a lot of warm air, and the processor's fan produces a modicum of noise. The LPC-301 can run off any 12-volt power supply, so you could even power it through the cigarette lighter of your car.

Overall, Stealth Computer delivers what it promises: full-service PCs that fit into very small spaces. If superb performance isn't a top priority, both LPCs will work well as media servers or as PC boxes tucked under your TV or desk.

—Richard Baguley ■

### LPC-401

Stealth Computer

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# Dupe the Snoops

*Don't want to share  
that memo with your  
seatmate? Would you  
rather keep your  
emails to yourself?  
Here's how.*

**Does it ever seem to you as if your fellow travelers on airplanes and trains have an indecent fascination with whatever is displayed on your notebook's screen?**

Maybe your seatmate is bored. Maybe he forgot to bring reading material for the trip. Or maybe his interest in the memo you're writing stems from the fact that his brother-in-law works for your competitor.

In truth, it doesn't matter whether you're writing a memo on the Washington shuttle, playing Solitaire in your cubicle, or drafting a merger and acquisitions letter in the corner office: Your data deserves to remain off-limits to unauthorized readers. And passwords are not a deterrent, because even the most sophisticated passwords will not protect your confidential data from prying eyes once it is displayed onscreen.

The problem is compounded by today's crystal-clear notebook screens, which make it easy and inviting for someone to snoop. And snoop they do. A survey by the *Wall Street*

*Journal* reports that many of the 62 percent of travelers who carry and use a laptop while on the road say they see a sharp increase in the number of seatmates blatantly eyeing their screens. Whether the snoopers have actually increased in number, or whether travelers simply have a heightened awareness of security in the wake of alerts issued by law-enforcement agencies, the need for increased caution and protective strategies is more important than ever.

## En Garde

Security experts say that most breaches that result in an unauthorized person gaining access to confidential data come from user neglect rather than technology failures. That's because users who tend to focus on

their own productivity see security as intrusive and time-consuming. Consequently, they tape their passwords to the underside of their keyboards, use "password" as their password, or just select "remember my user name and password" when a program offers that option.

Fortunately, there's an affordable and easy-to-use solution: 3M's Privacy Filters ([www.3M.com/computer-filters](http://www.3M.com/computer-filters)). Non-blurring and distortion-free, they're easy to attach, mounting onto your notebook or your display's screen using small plastic tabs or a hidden adhesive mounting system. How do they work? 3M's patented micro-louver technology functions like tiny vertical window blinds, enabling only persons directly in front of the monitor to see the screen's contents. To a nearby snoop, the screen appears black, as if it's powered off.

Since the Privacy Filter is an always-on, passive device, it requires no action from you beyond the initial five-second installation. For notebooks, the filters are available in the most popular laptop sizes—14.1", 15.0", and 17.0". For desktop CRTs and LCDs, 3M offers models that fit 13-inch to 21-inch screens. And although you can readily detach the filter—for instance, if you choose to share information with a small group—there's little reason to remove it, since it's lightweight and can stay in place when the notebook is closed.

As added benefits, 3M's Privacy Filter shields your computer monitor screen from scratches and fingerprints and spares your vision by reducing screen glare. That means when it's not protecting your data, it's protecting you.



**With 3M's Privacy Filters, the screen appears dark to a nearby snoop.**

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# Cheap Tweaks

**A**MONG my friends (both of them, including my chiropodist), I'm known familiarly as Budget Bob, the

Frugal Freelancer, the Commodore of Cheap, the Prince of Penny-Pinchers. If there's a bargain to be had, I'm on it like lint on a blue serge suit.

Of course, being cost-conscious has nothing to do with cutting corners or buying shoddy goods. It means shopping and working smart—getting exactly the right tool for the job at the best price. (After all, *cheap* is such an ugly word, don't you think? Personally, I prefer "financially retentive.")

Chances are you can increase your PC's oomph, enhance or extend the capabilities of Windows and

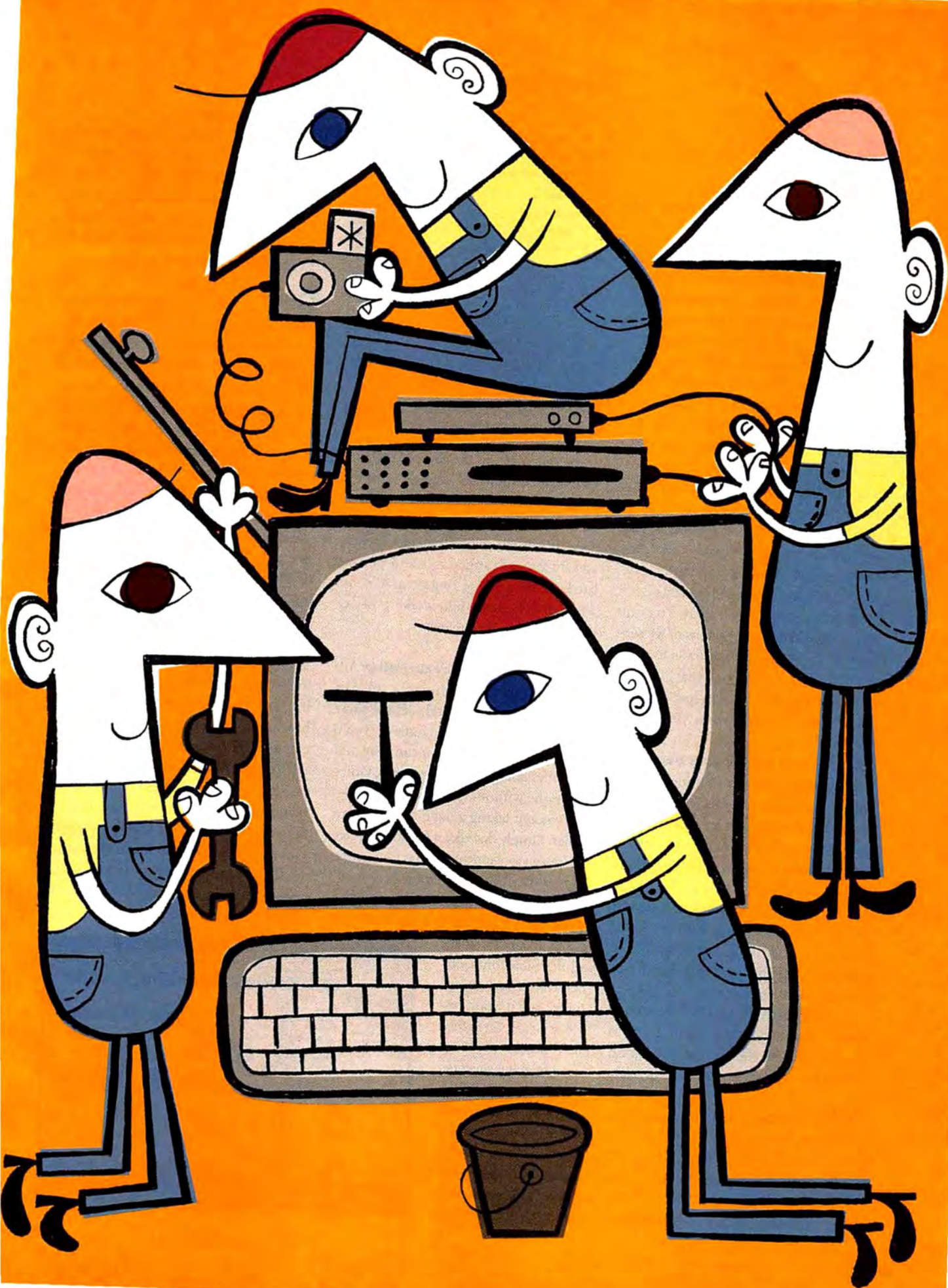
**40+** underpriced, overperforming ways to get more from hardware, software, and the Web—from a \$47 CPU upgrade to free Windows tricks. By Robert Luhn

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So whether your system's chronic complaints are traceable to a hiccuping hard drive, a recalcitrant operating system, or a sputtering Internet connection, I have the low- or no-cost cure for what ails it. And when you've seen it through its convalescence, you'll be able to enjoy the PC of Jack Benny's dreams. ►

ILLUSTRATIONS BY MELINDA BECK







## Spiff Up Your Software

**free** **Streamline your Windows XP start-up:** XP is the Switzerland of operating systems—it tries to accommodate all comers (especially if they have gold). XP loads all sorts of network-related and other services you don't need. Keep them from loading, and you'll save RAM and boost system performance. To do this, select *Start+Run*, type *services.msc*, and press **<Enter>**. Click the *Extended* tab and look for likely loiterers. To prevent a service from starting automatically, double-click it and choose *Disabled* from the General tab's 'Startup type' drop-down menu. The services you can safely disable vary from configuration to configuration, but one good candidate is Messenger (this isn't MSN or Windows Messenger). You can find more-detailed descriptions of XP services at [BlackViper.com](http://BlackViper.com); browse to [find.pcworld.com/34595](http://find.pcworld.com/34595) to view that list. And be sure to check out BlackViper's install guides if you plan to move to XP.

**free** **Build a better virus trap:** For a leaner system, consider shutting off your antivirus program's heuristics feature (it probably doesn't work very well anyway). Or better yet, give one of the new, super-speedy antivirus tools a try; your options include Grisoft's free AVG ([www.grisoft.com](http://www.grisoft.com)) and Hauri's \$40 ViRobot Expert ([www.globalhauri.com](http://www.globalhauri.com)). Both are faster than and as effective as Norton AntiVirus and other antivirus packages. Download AVG or a trial version of ViRobot Expert at [find.pcworld.com/34355](http://find.pcworld.com/34355). **Bonus tip:** Save money and disk space by going to Hauri's site or to [Housecall.antivirus.com](http://Housecall.antivirus.com) to scan your system for free over the Web.

**\$40** **Take Excel to a new level:** Excel has more options than a 1999 dot-com CEO. As Excel maven and former *PC World* Contributing Editor John Walkenbach says on his site, "the Options dialog box is essentially Excel's junk drawer...a



**JOHN WALKENBACH'S PUP shareware add-on for Excel puts the program's many spreadsheet options within easier reach.**

prime candidate for the cover of the *Journal of Bad User Interface Design*." Tame the beast with his \$40 PUP program. PUP is no whelp—it clearly organizes Excel's options, and its 60+ utilities enhance menus, add dozens of range tools, and permit batch printing. Go to [find.pcworld.com/34352](http://find.pcworld.com/34352) to download a fully working 30-day demo with no nag screens.

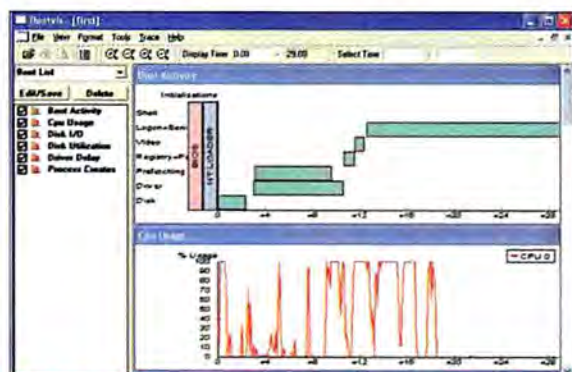
**free** **Try a free Office alternative:** Are you so cheap the condiments shelf in your fridge consists entirely of little packets swiped from fast-food outlets? You'll be happy to learn that you can read and print files and perform other basic Office functions without any disk overhead—and without taking a big bite out of your wallet. Simply download the various free Office app viewers that let you view, print, and/or play files created by Access (97 and 2000 report snapshots), Excel (97 to 2000), PowerPoint (95 to 2002), and Word (97 to 2000). You'll see all the file's fonts, colors, charts, and animations. And it won't cost you a nickel. Go to [find.pcworld.com/34385](http://find.pcworld.com/34385) to download the viewers.

**free** **Don't take Office menus personally:** Microsoft may have liquidated the deplorable Clippy animated assistant in Office, but other

enhancements still irk, such as "personalized" menus, which hide some options you haven't used recently. If you sometimes like this and sometimes hate it, you can have it both ways. Double-click any of the menu titles (such as File or Tools) to display all of your options on the spot.

**free** **Speed up your files by quashing links:** Are your Excel worksheets sluggish and your Word docs dilatory? OLE may be to blame. Object Linking and Embedding lets you add dynamic data to a file, such as placing live Excel spreadsheet cells into a Word document. If the data you plugged into your document no longer requires active updating, make it static: Right-click the object and select *Hyperlink+Remove Hyperlink*. Now your PC won't waste CPU cycles updating these fallow links.

**\$50** **Avoid your local print shop:** Why trudge to the print shop or hire a desktop publishing pro to print your brochures, newsletters, leaflets, and catalogs? Blue Squirrel's \$50 ClickBook 6 application makes it easy to design and print booklets, Day Planner pages, business cards, brochures, and other material. And you can do it all from within just about any Office app. We're talking more than 40 booklet styles, multipage/double-sided printing, automatic sizing, watermarks, and custom layouts. ClickBook's learning curve is a little daunting, but once you set up the program, printing custom documents is a snap. Go to [find.pcworld.com/34343](http://find.pcworld.com/34343) to download a trial version.



**BOOTVIS analyzes and speeds up Windows XP's boot process.**



## free Faster than a speeding mouse:

Inveterate mousers may sneer at keyboard shortcuts, but these feats of prestidigitation save PC users oodles of time. For example, pressing **<Ctrl>-D** creates a bookmark in Internet Explorer. Unfortunately, shortcuts can be tough to remember, and that's where Office 2000 and XP can help: In any Office app (except Excel and Publisher), select **Tools•Customize•Options**, and check the **Show ScreenTips on Toolbars** and **Show shortcut keys in Screen-Tips** boxes. Thereafter, when you pass the



pointer over any toolbar button, up pops its keyboard shortcut. Note that when you change this option in one Office application, you change it in all of them that support it. See this month's *Answer Line* on page 156 for more on keyboard shortcuts. **Bonus tip:** To see all of the keyboard shortcuts in Word, select **Tools•Macro•Macros**. From the 'Macros in' dialog box, select **Word Commands**; then scroll down to and double-click **ListCommands**. Select **Current menu and keyboard settings**, and click **OK**. Word will instantly create a document listing all the keyboard commands.

## free Put Windows XP's PowerToys to work:

Some people love Windows XP's marzipan look and tail-wagging search mascot. Others (like me) just want to scream when exposed to all that cuteness. But instead of howling, I fire up Microsoft's free PowerToys. One of my favorite PowerToys tools is **Tweak UI**, which lets me change my mouse-click speed, turn off IE's annoying **AutoPlay** feature, and perform other interface modifications. Two other winners are the **Image Resizer**, for zooming in on or out of an image with one click, and the **Taskbar Magnifier**. (I like the **Alt-Tab Replacement** tool's view of my active apps, too, but it makes switching between your open windows

slower, so you may want to skip this toy.) Download a copy of PowerToys for Windows XP at [find.pcworld.com/34349](http://find.pcworld.com/34349).

## free Start XP faster, Microsoft style:

Ah, the instant boot—the dream of Windows users everywhere. This may be centuries away, but at least Windows XP users can try to shorten their current boot-up time by installing Microsoft's free **BootVis** tool. First the program identifies everything that Windows loads at start-up; then it relocates the files and rearranges their start order to maximize load speeds. You may be able to shave between 15 and 45 seconds off your start-ups with **BootVis**. Then again, you may not notice any change at all. Is it worth the time and effort? Steve Bass gave the program a try and answered "yes." Go to [find.pcworld.com/34346](http://find.pcworld.com/34346) to read his take on **BootVis** from the March issue's *Home Office* (with a link to the download).

## free Add foreign punctuation in an instant:

If you need foreign-language characters in Word, drop-kick the character map and add them from your keyboard. For acute accents, press **<Ctrl>-'** (apostrophe) and then the letter you want accented, such as the *á* in "no más." For grave or left-leaning accents, press **<Ctrl>-`** (the left single-quotation mark on the key located above the **<Tab>** key on most key-

boards). You can generate letters with a tilde by pressing **<Ctrl>-<Shift>-~**, letters with a circumflex accent by entering **<Ctrl>-<Shift>-^** (the ^ mark shares the 6 key), and letters with an umlaut by typing **<Ctrl>-<Shift>-:**. **Bonus tip:** If you go to Word help and type **foreign punctuation**, the program will give you the option of seeing all such keyboard shortcuts.

## free Sort everything out in Outlook:

By default, Outlook sorts mail by date and time, but you have other choices. If you're looking for e-mail messages with mondo attachments, for example, click the **Size** button at the top of the window to make those messages move to the top of the list. To sort by sender's name, click the **From** button and type the first letter or two of the name you want; you'll jump to that person's most recent correspondence.

## Stingy System Upgrades

**\$30** **Reclaim your RAM:** Windows programs are like teenagers—they don't always remember to put things back when they're done. Silicon Prairie Software's **\$30 MemTurbo II** is a champ at reclaiming memory from closed, crashed, or sloppily written programs. Alas, ►

### LAPTOP TWEAK

## MIGHTY MITES

### \$18 Use minitools to maximize your notebook:

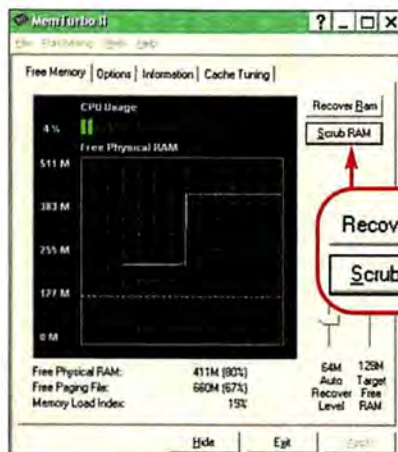
When it comes to laptops, small is good—but small, cheap, and clever are even better. LapWorks' and Codi's notebook accessories achieve all three in spades. Codi's **\$18 USB Mini Keyboard Light** plugs into your laptop's USB port to illuminate your computing on a dark plane or in bed. For \$20 you can buy LapWorks' miniature **Four Port USB Hub**. The company's **\$30 Laptop Desk** is a light, rugged, 11-by-11-inch platform that can function as a tilt stand for a notebook and as a portable tabletop, complete with no-slip rubber surface.





MemTurbo II can't touch the two elusive 64KB memory blocks in Windows 95/98 that lie at the root of "insufficient resources" errors in those OSs. Upgrading to the improved memory-management capabilities of Windows XP is the best solution, but MemTurbo II provides some relief for users reluctant to take that step. Go to [find.pcworld.com/34379](http://find.pcworld.com/34379) to download the trial version.

**\$47** **Fire your CPU:** And hire a better one. If you have a Celeron- or Athlon-based system, a CPU upgrade falls below our \$50 price ceiling. (Check your system's documentation or its vendor's Web site to learn whether your motherboard and BIOS support the faster CPU.) For example, Googlegear.com lists a 1.3-GHz Celeron CPU for \$47, and you'll find Athlon XP CPU upgrades for a similar



**GIVE YOUR RAM a good scrubbing to dump the refuse left by sloppy programs.**

price. Make sure that your new CPU has a heat sink and a fan. Go to [find.pcworld.com/34376](http://find.pcworld.com/34376) for Stan Miaszkowski's step-by-step CPU installation instructions.

**\$25** **Back up faster, simpler, cheaper:** Yeah, we always nag you to back up your data—and we'll do it again. If you've ever groused that backup software is too slow, complicated, and pricey, carp no more. Maximum Output Software sells three versions of its FileBack PC software: \$25 gets you backups to any fixed or remov-

## LAPTOP TWEAK

## MOUSE À LA CARTE

**\$44** **This mouse loves to travel:** No notebook touchpad can match the fit, feel, or accuracy of a mouse. For your next trip, take Kensington's \$44 **PocketMouse Pro** along for the ride. The device's streamlined design and handy retractable USB cord make it the perfect laptop travel companion. Go to [find.pcworld.com/34433](http://find.pcworld.com/34433) to read our impressions of the product.



able media, the ability to synchronize directories, and automatic backups at Windows start-up and shutdown, among other features. The \$35 network version lets you back up to another computer on your network and adds e-mail notification of completed backups. And for IT types, the \$45 enterprise version lets you create custom configurations for groups. All three feature step-by-step wizards that make getting your backups started a breeze. Visit [find.pcworld.com/34610](http://find.pcworld.com/34610) to download the limited-function trial version.

**free** **Boot faster, BIOS style:**

Give your PC a boot in the BIOS. Open your PC's Setup program by pressing the key you're prompted to hit when your system starts (before Windows loads). In the Boot section, turn on the Rapid BIOS Boot or "quick boot" feature and quash poky diagnostic routines. Turn on the Silent Boot feature to eliminate start-up messages. Disable options like Scan User Flash Area unless you have a SCSI hard drive or a network card that uses boot-from-LAN features. Turn off 'Automatic detection of hard drives' so the BIOS won't look for nonexistent drives; then run the BIOS IDE drive identification routine to find and store only your drive's parameters. This will shave 5 to 10 seconds off your boot time. If you use Windows XP, see also "Start XP faster, Microsoft style" on page 89.

**free** **Extend your laptop battery's life:** Sure, downloading your favorite Menudo MP3s would strain any laptop's

battery; but the real watt hogs are a notebook's screen, external drives, LAN and wireless cards, pointing devices, and flash/USB cards. If you don't need it, unplug it or turn it off. You can also save juice by cranking down the screen's brightness via its <Fn> key combination. To force your browser to use system memory instead of the watt-soaking hard drive, set the browser's disk cache to zero. Open Windows' Power control panel (Power Options in Windows XP), and pick aggressive settings—for example, 'After 3 minutes' for your screen blanker, and 'After 10 minutes' for your standby setting.

**\$30** **Squeegee your drive:** When your hard drive starts looking like a college dorm room during finals—cluttered with the digital equivalent of junk-food wrappers, old term papers, and dirty socks—give it a good wall-to-wall scouring. Windows' Disk Cleanup tool lets you rinse away cached Web pages, accumulat-



**CLEAR MORE old files out of your hard drive with Webroot's Window Washer.**



ed cookies, temporary files, and other dead weight that slows your system's performance (click *More Options* for other ways to clear space). However, it misses some detritus in the corners—downloaded e-mail attachments, Netscape's disk cache, and Office scrap, for example. Let Webroot's \$30 Window Washer utility pull on the elbow-length gloves and get to work. Go to [find.pcworld.com/34367](http://find.pcworld.com/34367) to download the fully functional demo.

### **free** Gain graphics speed gratis:

Want better video performance? Open up your PC's pipes—namely, the AGP aperture setting (AAS) in the graphics portion of your PC's Setup program (enter it by striking the key you're prompted to hit before Windows loads). The AAS specifies the amount of system RAM that your AGP card can use if it runs out of room to store texture data (for game backgrounds, for example). Today's graphics cards are loaded with their own RAM, so they'll probably never need to borrow system RAM. But older graphics cards with just a few megabytes of on-board memory might get a boost from an AAS reset. Make the aperture setting twice the size of your graphics RAM, plus 12MB. If you have 16MB of graphics RAM, for example, your AGP aperture should be 32MB plus 12MB, or 44MB. Note that if you go lower than 16MB, your graphics card will starve for data; go above 256MB, and your PC won't get to enough RAM, triggering Windows to crank up its slo-o-o-w virtual memory scheme. Also, not all Setup programs let you change this setting.

### **free** Sync in a blink:

Does it take longer than usual to hot-sync your PDA? The likeliest reason is that extra programs on the syncing list are slowing the process down. Right-click the *HotSync* icon in your system tray, and choose *Custom*. Select a program that you don't want to sync, and click *Change*. Choose *Do nothing*, and then click *Set as default* to prevent the change from affecting only the current session's sync. With fewer apps to check, your syncs should speed up.

## Power to the Peripherals

### **free** Get the inside scoop on your

**discs:** Do no-name CD-R discs really record data at 16X? And how fast can your drive write to CD-RW discs? Two free tools will tell all. Nero's InfoTool details write speeds, supported formats, and other information for every CD or DVD drive in your system, as well as for the media in those drives. CDR Identifier goes even further, unearthing the disc manufacturer, dye type, media type, maximum capacity, recording speed, and other disc details. Visit [find.pcworld.com/34373](http://find.pcworld.com/34373) to download either program.

### **free** Turn your scanner into a photo-

**copier:** Unlock the photocopier trapped inside your scanner with Nico Cuppen's free Photocopier 2.26 utility. Just slap an item on the scanner and select the relevant specs: type of scan (black-and-white, gray-scale, or color); magnification (100 percent or 70 percent); darkness level; and number of copies. Then click *Copy*, and they roll right out of your printer. Upgrade to the \$18 Photocopier Pro to run copies by pressing your scanner's copy button. The Pro version also lets you preview scans, wield editing and manipulation tools, and save copies to disk in various formats. Go to [find.pcworld.com/](http://find.pcworld.com/)

34360 to download Photocopier 2.26 and a trial version of Photocopier Pro. **Bonus tip:** Scanning a newspaper article? To avoid scanning the stuff on the *other* side of the clipping, place a piece of black paper behind the item you're scanning.

### **free** Scan it high, and then boil it

**down:** When you scan at a high resolution, the larger file's extra data protects against image degradation that may occur during editing of the file, by giving you wiggle room. If your scanning software permits, scan in high-bit mode (12 or 16 bits per channel). The resulting file is bigger than if you used a lower bit rate, but you can probably slim it down in your image editing program. When you're happy with the result, convert the picture to 8-bit color.

### **free** Get more from your JPEGs:

If speed be your muse, save your camera images as JPEG files. For everyday shots, medium resolution (1024 by 768) is sufficient for great-looking 5-by-7 prints. For nature pix, increase the JPEG resolution or save the shots as TIFF files. When you edit a JPEG, note its compression ratio and save it at that value. If you increase the compression ratio, the image quality will degrade. You'll do better to save edited JPEGs as bigger—and slower—TIFFs.

### **\$30** Stream tunes from your stereo to

**your PC:** Don't start using your old LPs as placemats just yet. To MP3 'em, you ▶

## CAMERA TWEAK

### FASTER PHOTOS

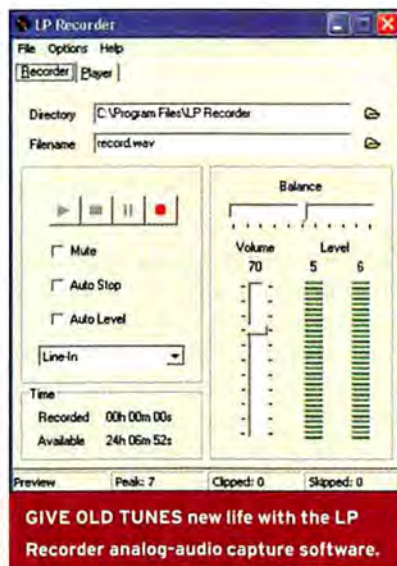
**\$39** **Catch all the action:** If you find your digital camera slow to fire its shutter, try giving its memory a jolt. Many digital cameras save images to sluggish flash memory cards. If your camera can use a faster card, get one. Lexar Media's **8X 64MB** flash memory card is only \$39. To speed image transfers between your camera and your PC, use the fastest connection available. Better yet, get a stand-alone flash card reader, such as Lexar Media's \$40 USB 1.1-based **CompactFlash Reader**.





need just a sound card, a cable with a stereo minijack on one end and a pair of RCA plugs on the other, and a program—such as CFB Software's \$30 LP Recorder 5—that captures analog audio (go to [find.pcworld.com/34370](http://find.pcworld.com/34370) to download a trial version). Plug the cable's RCA jacks into the left and right audio outputs on your stereo, and put the 0.125-inch plug into your sound card's line-in port. Fire up the capture program, turn on your stereo, place an LP on the turntable (the setup works with audio cassettes as well), and start recording. Before you know it you'll have converted your analog music library into a folder full of MP3s on your PC.

**free** **That's a moiré:** When you scan images from magazines and newspapers, they often look as if they've been captured through a chain-link fence—this is called a moiré pattern. To remove moiré, try rotating the image slightly. If that doesn't help, increase the scan resolution by as much as 50 percent. If your scanning software has a descreen feature, use it. If none of these methods work, open the image in your image editor and look for a "despeckle" or "Gaussian blur" option. In Adobe's Photoshop, for example, choose *Filter•Noise•Despeckle* (which automatical-



ly smooths the image) or select *Filter•Blur•Gaussian Blur*, a similar tool that provides more-precise control. Another option in Photoshop is to select *Filter•Sharpen•Unsharp Mask* and then play with the sliders until you get the desired effect.

**free** **Burn faster, cheaper, and safer:** Burning CD-Rs from disc to disc is slow and fraught with peril. A better way is to save an image of what you're burning to your hard disk, shut down all other active programs on your PC, and then burn the image to CD-R. You save time in the long run, and you avoid the dreaded buffer

underrun error. **Bonus tip:** Got a fast burner? You may not have to buy top-speed media. For example, 40X media can burn at 48X or even 52X in many cases. Experiment with media recommended by your drive's manufacturer—you could save bucks and still burn to the max.

**\$15** **Save a buck, save the planet:** A hundred smackers for a laser-printer toner cartridge? Just say no! Buy a remanufactured cartridge instead, and save half the cost, or more. They're sold everywhere: online, at superstores, in subways. Just remember to purchase *remanufactured* cartridges—units that have been disassembled and cleaned, have had their worn parts replaced, and have then been retested. Avoid companies that "drill and fill" used cartridges; these can leak toner and ruin your hardware. When in doubt, ask the company about its products.

**\$20** **Save a buck, save a tree:** Paper doesn't grow on trees, you know. Oh, wait—it does. But it's still expensive. One way to help preserve our nation's natural resources when you print photos is to use Veena Jayaram's \$20 Photo Paper Saver utility. The program lets you pick the photos you want to print and the size of each print (it warns you if there are too many for a single page). It even arranges the layout of photos on each page to maximize use and minimize waste of that pricey photo stock. Stop by [find.pcworld.com/34358](http://find.pcworld.com/34358) to download your copy.

**free** **Clean up your video screen grabs:** Grabbing a frame from a DVD movie playing on your PC can be ugly. Screens captured from a DVD viewing program such as CyberLink's PowerDVD look terrible when pasted into an image editing program because you capture an interlaced video frame—the two interposed scan lines that make up the video image. Look for a de-interlace option in your image editor. In Adobe's Photoshop 7, for example, select *Filter•Video•De-Interlace*, choose *Odd* or *Even Fields*, select the *Interpolation* option, and click OK. ▶

## DESKTOP TWEAK

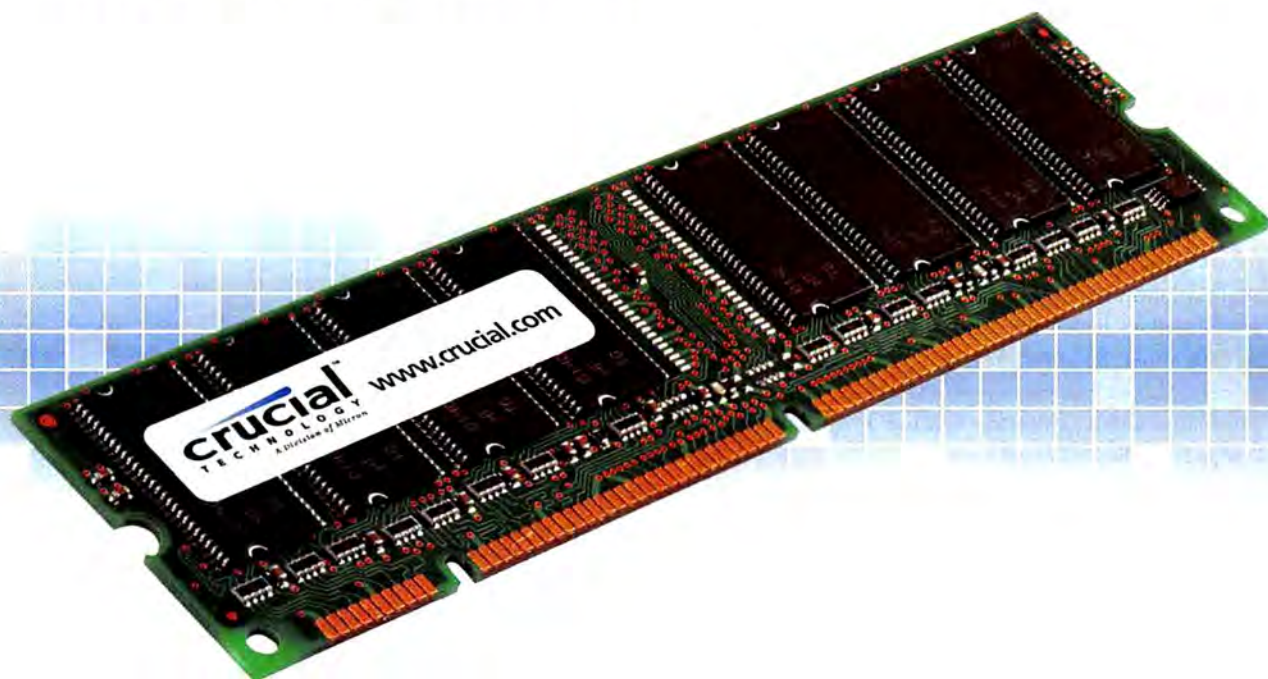
### SPEEDIER DATA

**\$15** **Shift your hard drive into high gear:** Why is your new ATA/100 or /133 hard drive waddling instead of sprinting? Check the data cable connecting the drive and interface. You may need an 80-pin (that is, Enhanced IDE) cable—a \$15 investment that will help maximize your drive's performance. EIDE cables can help older ATA-33 and -66 drives, too; but if your motherboard's drive interface is ATA-33 or -66, spring for Promise Technology's *Ultra100TX2* or *Ultra133TX2* fast ATA controller. The pain: \$27 and \$43, respectively. After you install the new controller, your BIOS may continue to look for your hard drive on the old controller. If so, enter Setup before Windows loads and set the drive's parameters to *None* or *Auto detection*. The BIOS will ignore the PC's built-in IDE interface and look at the card's interface instead. Once you save the changed settings and restart, the new controller will automatically identify your drive and boot from it as before, only faster.





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**free** **Happiness is a warm scanner:** Before you use a flatbed scanner, wipe the device's platen with regular window cleaner or a vendor-recommended glass-cleaning solution. Then let the scanner warm up for at least 15 minutes. Scans made before the scanner's bulb reaches its normal temperature may look fuzzy.

**free** **Shoot in any season:** When it comes to cameras, "digital" and "rugged" aren't synonymous. At temperatures above 90° Fahrenheit, digital noise will show up in dark shots. So get a shade for your camera. Shooting in misty weather? Put your camera in a Ziploc bag that has a hole in it for the lens to poke out of.

**free** **Diagnose your fuzzy scans:** Is your scanner output spotty? Digiversity.tv site manager Russell Viers suggests a test: Write the word *TOP* in big black letters on an 8-by-11-inch sheet of white paper and scan the page. (Any resolution will do—72 dpi is fast.) Open the scan in your image editor and find an equalize option to adjust the image contrast so you can identify problems. If you see a wavy black line along the paper's edge, the scanner lid may be leaking light. If you see spots, the scanner may need a new bulb, or you may need a new scanner. Can't afford either? If spots are confined to one area, you can avoid that location when positioning originals for scanning.

**free** **Beware the dark-and bright-side:** Want your scanned images to stay sharp? Don't fiddle with the brightness or



## AUDIO TWEAK

## BIG PC SOUND

**\$50** **Stream MP3s to your stereo:** You've got a drive laden with MP3s playing through your PC's wimpy 35-watt speakers while your stereo uses speakers the size of the monolith in *2001*. No sweat, Xitel's \$50 **HiFi-Link** lets you funnel MP3s from your PC to your stereo and make full use of those more-powerful speakers. Use the supplied cable to connect the cigar-shaped device to a USB port on your PC and to audio inputs on your amplifier. Crank up the volume on your PC and stereo, launch your PC's MP3 player, and get ready to macarena!



contrast controls in your scanning or image editing software. Adjusting them changes every pixel in the image by the same value, muddying dark areas of the shot and washing out bright ones. The trick is to master nonlinear correction, such as with the Levels and Curves tools in Adobe's Photoshop. Visit the Adobe insider's site at [RussellBrown.com](http://RussellBrown.com) for more on this and other Photoshop verities.

## Web and Network Know-How

**\$50** **Turn ads off (and PC protection on):** Plenty of good programs can block Web ads, but there's something especially elegant about using the controls that Zone Labs includes with its \$50 ZoneAlarm Pro firewall software to keep your browsing ad-free. Just move the slider under Ad Blocking on the Privacy tab to *High* to banish all bandwidth-hogging advertisements: banners, Flash movies, even those big eye-blasters that appear in the middle of your screen

uninvited and won't go away. Oh, yeah—ZoneAlarm is a darn good firewall too. Head over to [find.pcworld.com/34340](http://find.pcworld.com/34340) to download a trial version of the program. Note, however, that ZoneAlarm Pro's High ad-blocking setting may suppress legitimate information on Web pages when such data is displayed like an ad.

**free** **Fine-tune your TCP/IP settings:** Is your TCP/IP all that it should be? Zip over to SpeedGuide.net and find out. First, click the *TCP/IP Analyzer* link to see whether your connection—from Windows settings to modem options—is properly configured. If the analyzer finds something amiss, click the *TCP/IP Optimizer* link to download a little tool that analyzes your connection and tweaks your settings; alternatively, you can dig into the optimizer and set your own custom preferences. The topper: It's all free.

**free** **Cloak your e-mail address on the Web:** Listing your e-mail address on a Web site is like issuing an invitation for it to be harvested by spambots, those nasty automated programs that troll the Web for anything that looks like an e-mail address and then sell their catch to spammers. Keep the canned creepy-crawlies at bay by showing your e-mail address as a bitmap image rather than as text—▶



# Great color comes in small packages



Minolta Co., Ltd., Osaka, Japan



## \$799 color laser magicolor 2300 DL

The magicolor 2300 DL is a high-flying laser printer that's small in size and big in color. Included in its compact design is a combination of soaring speed, high-wire networking, and 2400 dpi quality—so even if you have to wing it, your prints will look brilliant! Powerful enough for workgroups, the magicolor 2300 DL is affordable enough for the home office user. Simply put...you can have it for a song—just **\$799**. For more information call **800-523-2696**.

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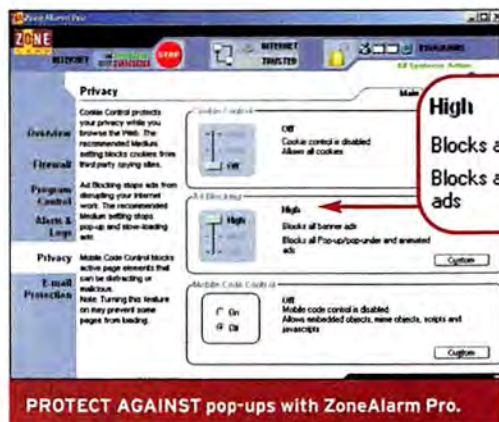
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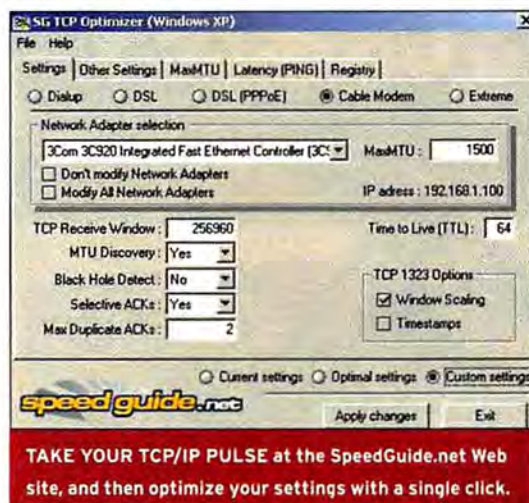
**free** **NIC network slowdowns in the bud:** If your PC seems to take forever to find your network, its network interface card may be running on automatic pilot, trying (and failing) to detect a network setting that isn't there. Or you may be faced with mismatched settings: For example, your computer's NIC may be configured to function at 10BaseT, but your LAN hub may recognize only 100BaseT. You can't

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easily change the network card. Right-click *My Network Places* (or *Network Neighborhood* in Windows 98 and Me), select *Properties*, and click the *Configure* button for your network card. Choose the *Advanced* tab, and look for an entry labeled 'Link Speed' or 'Media Type'. The typical options are 10BaseT and 100BaseT (full or half duplex for each), Hardware Default, and Auto. Make sure these settings match the specs for your network router or hub. When you're unsure how to proceed (if you have both 10BaseT and 100BaseT devices on the LAN, for example), just go with the lowest common denominators—10BaseT and half duplex.

**free** **Ferret out network printers:** Setting up a shared printer is normally the province of your friendly neighborhood IT department; but if they're off fishing, why not try setting it up yourself? (Note that Windows XP's Add Printer Wizard should find network printers for you, but your network's server may not cough up the information XP needs.)

First, select *Network printer* in the Local or Network Printer dialog box, and then choose *Browse for a printer*. This may show all the printers attached to the LAN. (Just don't pick the printer in the CEO's office!) If the printer you want to use isn't listed, but you know the printer's server and shared name, enter that data in the 'Browse to' text box in this format: `\\servername\printername`. Make the connection, and then select the appropriate printer driver (XP may already have it on hand; if not, download it from the printer vendor's Web site). If this doesn't work, find the IP address of the networked



printer or print server, open the *Printers and Faxes* control panel, double-click *Add Printer*, and click *Next*. Select *Local printer*, uncheck the *Automatically detect* box, click *Next*, choose *Create a new port*, and select *Standard TCP/IP Port*. In the subsequent dialog boxes, enter the IP address of the printer or print server, and select the Device Type according to the printer or server appliance name. Choose the make and model, and finish the driver installation. You'll need to download and install the proper driver for any print servers as well.

Robert Luhn was editor in chief of *Computer Currents* and a senior editor at PC World. Contact him at [pcwluhn@aol.com](mailto:pcwluhn@aol.com). Special thanks to Jim Aspinwall, David Bishop, David Blatner, and Gary Funk.

## INTERNET TWEAK

### EASY DISCONNECTS

**\$30** Knock out an always-on connection: If you're worried about hackers breaching your always-on cable, DSL, or other broadband Internet link, try PathLock's \$30 E100 Netimer. The device plugs into your DSL or cable line at one end, and into your PC's ethernet port at the other. When your system is idle for a set period, the E100 takes your PC offline. Or press the *Disconnect* button to go offline immediately. Then press *Connect* when you're ready to go back online. It's the perfect gift for broadband newbies (hello, Mom!).



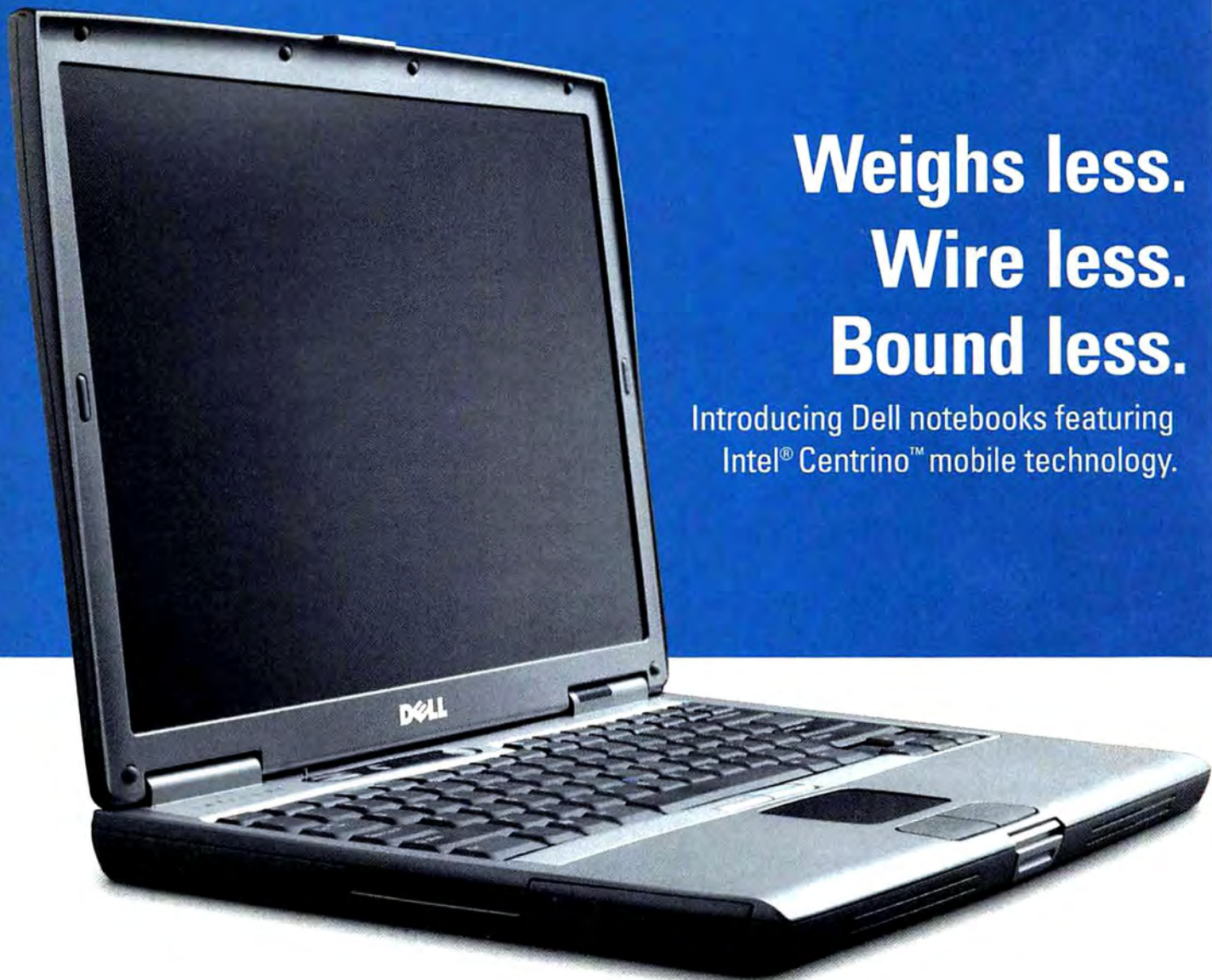


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By Richard Baguley

# DVD

# Put It On

With affordable burners and easier video editing software, there's never been a better time to turn videos into slick discs you can share.

Your long-winded CEO insisted on introducing your company's newest product. Trouble is, he rambled for a good long hour, and now he wants his breathtaking speech to be seen and heard by all your customers. Luckily, falling rewritable DVD drive prices and sophisticated software can make immortalizing your company's talking head on DVD—in a tactfully edited director's cut—as easy as pressing play.

Well, it might not be *quite* that easy, but at least it's increasingly affordable: Rewritable DVD drive prices have dipped below \$300, on average. That was the price level that allowed CD burners to start setting the world on fire, and we expect the same to happen with DVD burners. On the creative side, DVD authoring software has become more affordable, too—several packages cost as little as \$50. And you can get a pretty good set-top DVD player for less than \$100 these days, making it easy to view your video discs on your television. ►

**INSIDE:****103 STEP 1: IMPORT****105 STEP 2: EDIT & AUTHOR****107 STEP 3: WRITE**PHOTO-ILLUSTRATION BY  
MARC SIMON







In this article, we've trained most of our attention on video editing and DVD authoring. But turning your PC into a DVD production studio requires several other components, so we have included advice on selecting the best of those as well. For suggestions on shopping for the right DV camcorder, see "How to Choose a Digital Camcorder," on page 104. For the best rewritable DVD drives, see our *Top 10 DVD Drives* chart on page 108. In addition, we've also outlined some PC configurations that will optimize the video editing process (see "How Much PC Do You Need?" on page 109).

### EVERYBODY WANTS TO BE IN THE MOVIES

THANKS TO DVD's popularity, you have a crowded field of video editing and DVD authoring software to pick from. Figuring out which product does what—and what each does well—can be difficult. We've winnowed our review down to nine packages: Capable video editing programs that can also write to DVD, and DVD authoring programs that have limited editing capabilities and

also write to DVD. The video editing programs we reviewed all output to videotape; to compressed, Internet-friendly files; or to a DVD. The DVD authoring programs output to DVD only.

DVD authoring programs such as Pinnacle Expression, InterVideo WinDVD Creator Plus, and CyberLink PowerProducer offer limited options to edit the video and customize DVD menus. Other programs,

such as Pinnacle Studio 8, provide more flexibility, with more-complex tools for tweaking the video and the DVD menus.

We tested the packages by using them to copy footage from a DV camcorder to DVD and assessing how well each handled the job. We also evaluated each program's feature set and ease of use. Finally, we lab-tested how long each package took to convert the video to MPEG-2, the format used on DVD movie discs.

Of our two Best Buys, Ulead's DVD MovieFactory 2 uses a simple interface and strong editing tools, making it a solid choice for DVD authoring, while Pinnacle Studio 8's robust set of tools provides great control over editing video before burning it to DVD.

## Figuring out which package does what—and what each does well—can be difficult.

### FEATURES COMPARISON

## VIDEO EDITING AND DVD

WITH THE EXCEPTION OF Adobe Premiere, all of these packages are simple to use. You'll discover, however, that you can achieve greater

SOFTWARE	Street price	Comments	Video editing		
			Editing format	Auto scene detection	Edits audio
Adobe Premiere 6.5 <a href="http://find.pcworld.com/34472">find.pcworld.com/34472</a>	\$549	Has incredibly powerful video editing capabilities; poor DVD authoring components mean it's not the best choice for burning movies, however. (★★★★☆)	Timeline	No	Yes
CyberLink PowerProducer <a href="http://find.pcworld.com/34475">find.pcworld.com/34475</a>	\$50	Employs a step-by-step approach to DVD authoring, yet places some features in odd locations. Very slow in our tests. (★★★☆☆)	None	Yes	No
InterVideo WinDVD Creator Plus <a href="http://find.pcworld.com/34478">find.pcworld.com/34478</a>	\$100	Provides a good selection of editing tools, but they are confusingly laid out, and you can't edit menus. (★★★☆☆)	Storyboard/timeline	Yes	No
Mediastream NeoDVD 4 Plus <a href="http://find.pcworld.com/34481">find.pcworld.com/34481</a>	\$50	Though it has minimal editing features, its simple, step-by-step approach to creating DVD videos should suit beginners. (★★★★☆)	None	No	No
Pinnacle Expression <a href="http://find.pcworld.com/34487">find.pcworld.com/34487</a>	\$50	Provides a relatively simple way to create DVDs, but the minimal, clunky editing tools make it awkward to use. (★★★☆☆)	Storyboard	Yes	No
<b>Best Buy</b> Pinnacle Studio 8 <a href="http://find.pcworld.com/34484">find.pcworld.com/34484</a>	\$100	Its loads of features for editing and enhancing audio and video overcome one fault: It was the slowest at compressing video. (★★★★☆)	Storyboard/timeline	Yes	Yes
Roxio Easy CD & DVD Creator 6 <a href="http://find.pcworld.com/34490">find.pcworld.com/34490</a>	\$100	Though its three-step process for creating discs makes it easy to use, the program does not give you much control over how the menus look. (★★★★☆)	Storyboard	Yes	No
Sonic/Adaptec MyDVD Media Suite <a href="http://find.pcworld.com/34493">find.pcworld.com/34493</a>	\$100	A nice collection of programs that also includes packet writing, audio editing, and graphics manipulation utilities. (★★★★☆)	Storyboard/timeline	Yes <sup>1</sup>	Yes <sup>1</sup>
<b>Best Buy</b> Ulead DVD MovieFactory 2 <a href="http://find.pcworld.com/34496">find.pcworld.com/34496</a>	\$50	This program has an easy-to-use interface that gives you plenty of control over how the final DVD will look. (★★★★☆)	Storyboard	Yes	No

<sup>1</sup> Time to encode and author a DVD movie containing two AVI files totaling 4.37GB.

<sup>2</sup> When used with MPEG-2 1.2.



# STEP 1: IMPORT

**A**S WELL AS importing directly, all the products in this review can send commands (like Play, Fast Forward, and Reverse) to video from any MiniDV camcorder that supports the Open Host Controller Interface (OHCI) standard. And all digital camcorders currently manufactured support the OHCI standard (but if you are using an older camcorder, check the documentation). When you find the piece of video that you want to record to your hard drive, simply press the *Record* button in the program, and it will automatically play the videotape and begin transferring.

Many of the programs we tried can automatically detect scene changes—that is, they recognize skips in the time code or changes in the video content and create separate clips for each scene. You can then use these clips as chapters when creating the DVD menus later on. With most programs, scene detection occurs as you capture the video; with InterVideo's WinDVD Creator Plus and CyberLink's PowerProducer, however, you must instruct the program to detect scenes after the entire video has been imported.

Instead of scene detection, Adobe Premiere uses batch capture: You preview

the tape, create a list of time-stamped segments you want to capture, and then hit Record; thus Premiere records only what you want. This approach works best when you wish to import only small parts of a tape—for example, so you can capture just the good takes of a rehearsed speech.

Mediastream's NeoDVD 4 Plus lacks scene detection but lets you define DVD chapter points manually. Adobe depends on a bundled third-party DVD encoder—DVDit 2.5 LE—that doesn't include scene detection (but with Premiere's batch capture abilities, scene detection isn't really needed). Sonic/Adaptec's MyDVD ►

## AUTHORING SOFTWARE PACKAGES

editing flexibility with a more robust program such as Premiere or Pinnacle's Studio 8.

		DVD								
	Adds audio to clips/movies	Multiple video quality settings	Number of built-in menu styles	Menu styles customizable	Adds audio to menus	Can create DVD files on hard drive	VideoCD/ SVCD support	Creates DVD photo slide shows	DVD codec used	Rendering time <sup>1</sup> (minutes:seconds)
	Yes	Yes	15	Yes	No	Yes	Yes	Yes	MainConcept	32:09 <sup>1</sup>
	No	Yes	28	Yes	Yes	Yes	Yes	Yes	CyberLink	65:29
	Yes	Yes	31	No	No	Yes	Yes	Yes	InterVideo	27:06
	Yes	Yes	29	Yes	Yes	Yes	Yes	Yes	Mediastream	14:07
	No	Yes	45	Yes	Yes	No	Yes	Yes	Pinnacle	60:06
	Yes	Yes	45	Yes	Yes	Yes	Yes	Yes	Pinnacle	83:32
	Yes	No	20	No	No	Yes	Yes	Yes	Ligos	34:05
	No	Yes	33	Yes	Yes	Yes	Yes	Yes	Ligos	34:53
	No	Yes	60	Yes	Yes	Yes	Yes	Yes	MainConcept	44:11

<sup>1</sup> Can be done only in ArcSoft ShowBiz, a program included in the MyDVD Media Suite.

See [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.



Media Suite does include scene detection, but to use it, you must export the video to ArcSoft ShowBiz (a separate utility within the MyDVD Media Suite), which adds another step to the process.

You may not always want to rely on automatic scene detection, though: If you happen to press the pause button frequently while taking video, you can end up with hundreds of clips and chapter

points. All of the software programs here let you turn off scene detection, although this is much easier in a program such as Studio 8, which has powerful tools for trimming, splicing, and adding tran- ▶

## How to Choose a Digital Camcorder



**TO MAKE A GOOD DVD**, you need a good digital video camcorder—but not necessarily an expensive one. You should look for features that make the capturing process easier and the video quality better.

Most DV camcorders use color LCD displays (many analog models have monochrome displays). Check the display size: Bigger is better, but it almost always depends on the size of the camcorder itself, and some people would rather have a smaller device. Consider buying an extra battery, since most camcorders' batteries tend to peter out after about an hour (the length of a single tape).

All other things being equal, you will get better-quality video with a camera whose CCD has more pixels; moderately priced models commonly use 680,000-pixel CCDs. A 10X optical zoom should be sufficient for most settings. However, you should approach vendor claims about digital zoom with caution: Anything above 100X produces such poor image quality that it is generally not usable. Finally, consider how the camera fits in your hand. Although smaller camcorders can be more convenient to tote around, their controls are often awkwardly placed. Moreover, people with large hands may find them more frustrating to use than a slightly larger model.

**SONY'S DCR-PC101:** An ideal small-size DV camcorder that doesn't skimp on features.



**MINIDV TAPE:** Most such tapes hold 60 minutes (or about 13GB) of digital video. When you convert that footage into an MPEG-2 file at the default (maximum) quality setting, it will fit onto a 4.7GB DVD disc. To fit longer MiniDV tapes to a disc, you must use a lower quality setting.

**ANALOG-IN AND -OUT PORTS:** Use these to connect a VCR or an analog camcorder so you can capture old video for transfer to DVD, or so you can export digital video to a VHS cassette.

**FIREWIRE PORT:** Any camcorder with a FireWire port is OHCI-compliant, which means that a PC with a FireWire port will recognize it, allowing you to control the camcorder from a video editing program and to import video from it.



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sitions between video clips. Once the video is captured and saved to your hard drive, you can cull video from several different tapes to put onto one DVD.

Many digital camcorders have analog-in

ports, making it convenient for you to connect them to an older VCR or analog camcorder and digitize your old analog videotapes for simple transfer to a DVD disc. If you have even older media (such

as 8mm film), you can copy them to digital videotape and then to DVD, using a projection device such as the \$995 Cine-Mate-15 ([find.pcworld.com/34574](http://find.pcworld.com/34574)); or you can use a video transfer service.

## STEP 2: EDIT & AUTHOR

**I**F YOU DON'T think you'll want to do much with your video except add a few menus, you'll be satisfied with the limited editing capabilities of one of the DVD authoring applications we tested, such as DVD MovieFactory 2 or MyDVD Media Suite. On the other hand, if your video requires extensive editing and alter-

video will flow and to ascertain how background music tracks will fit in. MyDVD Media Suite, WinDVD Creator Plus, and Studio 8 offer both approaches: You can switch between them as you wish.

Other packages (such as PowerProducer) do not allow this kind of editing at all: Though you can edit the individual clips

then want to edit it in ArcSoft ShowBiz, you have to select 'Send Selected Clip' in MyDVD, make your edits in ShowBiz, and then select 'Export to MyDVD project'. It works, but the two parts of the suite have a very different look and feel; other applications do it all in one interface. The editing process is not completely integrated either: You can trim a clip in MyDVD, but if you then send it to ShowBiz for further editing, you'll get the entire clip, not the edited version.

Like most programs, Pinnacle Expression and Roxio's Easy CD & DVD Creator 6 let you insert simple fades and wipes between video clips, while PowerProducer enables you to add special effects, such as embossing. However, these programs don't let you control the length of transitions or the degree to which the special effect alters the video—each effect can only be switched on or off.

Easy CD & DVD Creator 6, Studio 8, WinDVD Creator Plus, NeoDVD 4 Plus, and DVD MovieFactory 2 allow you to add a sound track to your video using an ▶

No matter how polished your raw video might seem, you will likely want to add titles or trim out a mistake.

ation, you'll want a more complex product that offers wide-ranging video editing capabilities, such as Studio 8.

No matter how polished your raw video might seem, you will likely want to add titles or trim out a mistake. Programs that focus on DVD authoring and not video editing furnish only basic editing tools, such as the ability to cut out or to merge clips. Among the programs here, MyDVD Media Suite and DVD MovieFactory 2 have the easiest-to-use tools.

Besides handling those basic tasks, Premiere 6.5 and Studio 8 can remove color casts, speed up or slow down the video, and add sophisticated special effects.

The storyboard style of video editing—in which you drag icons representing video clips, transitions, and effects into a wide strip on the screen (like putting videos into a photo album)—might seem like child's play. The timeline approach, however, makes it easier to see how the

and you can change where they appear on the DVD menu, you can't alter the sequence in which the clips are played.

### INSIDE THE TOOLBOX

SOME PRODUCTS here don't integrate their tools very well—often because DVD capabilities were added long after the basic video editing applications were completed. If you capture a video clip in MyDVD Media Suite's capturing section and

### Software Best Buys

**Best BUY** IF YOU WANT to get the best results with your video, Pinnacle Studio 8 provides a slew of powerful editing tools and doesn't cost a fortune. If you just want to get your videos onto DVD with a minimum of fuss, Ulead DVD MovieFactory 2 offers a simple, uncluttered approach, with most features only a few mouse clicks away.



PHOTOGRAPH: MARC SIMON





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MP3 or WAV file. WinDVD Creator Plus also includes a handy audio mixer for setting the volume levels of different sound sources—useful if you want to strip the audio from a clip, for instance, or if the music is overwhelming the dialog.

MyDVD Media Suite does offer mixing

capabilities, but only in the suite's ShowBiz component—so you would again find yourself passing clips to and fro between programs. Aside from Studio 8 and Premiere, none of the other products have a mixer; you'd have to employ a separate app to reduce the audio level of the music.

Easy CD & DVD Creator 6, Studio 8, and NeoDVD 4 Plus also let you record a live narration to your video with a microphone, but no program here allows you to create the subtitles or alternate audio tracks (such as director commentaries) that are featured on many movie DVDs.

## EDITING VIDEO CLIPS IN ULEAD DVD MOVIEFACTORY 2



**1** These tools let you edit the video and audio contained in a video clip.

**2** A video clip can be previewed and marked for splitting into smaller clips, using these controls.

**3** Thumbnails show the clips captured for this project; each can be used as a chapter on the final DVD.

## EDITING VIDEO CLIPS IN ROXIO EASY CD & DVD CREATOR 6



**1** You can test how menus will look, using the preview screen.

**2** The storyboard format shows the final movie chapters, letting you edit the order in which they play.

**3** You can select a menu theme from those included in the program.

## EDITING VIDEO CLIPS IN PINNACLE STUDIO 8



**1** You can add various types of transitions to enhance your video.

**2** This preview screen offers the same controls as a DVD player.

**3** In this timeline, you can view the exact sequence of your completed video.



## STEP 3: WRITE

**A**LL OF THE PROGRAMS burned a complete video to disc with few problems—we could leave them running unattended, provided we had placed a blank disc in the rewritable DVD drive in our test bed. Letting the software run unattended may be a good strategy, because some programs took a very long time to compress the video into MPEG-2 format. Their speed depends mostly on the codec (compressor/decompressor) that each uses. For more details on the role of the codec in creating DVD videos, see “Speed Rendering With the Right Codec” on page 110.

All nine software packages we reviewed support both DVD-RW and DVD+RW drives, so you can write movies to either a write-once disc or a rewritable disc you can write over later on. Many rewritable drives bundle a DVD authoring program, but in most cases, such software won't be a complete package, in contrast to the programs here. If they aren't stripped down, the bundled applications may be older versions of currently available software.

For recommendations on rewritable DVD drives, consult our *Top 10 DVD Drives* chart on page 108.

### MAY I SEE THE MENU, PLEASE?

YOU CAN CREATE DVD menus in all of these packages with a template-based approach. With most, you can modify the

templates by changing the background image (important if you want the menu to show your company logo, say), the style of the menu buttons, and their placement; and you can add titles. WinDVD Creator Plus and Easy CD & DVD Creator 6 don't let you edit the menus.

DVD MovieFactory 2 provides the most templates—60—all of which can be edited. PowerProducer offers 28, which is probably enough for most people, except that you can't add your own back-

Most of the packages can add music that plays while users are choosing where to go from the menu. Easy CD & DVD Creator 6 sneaks in an annoying self-endorsement—it automatically inserts a 15-second animated Roxio video at the start of the disc. Fortunately, you can remove this, although it will keep coming back in every new project you create.

While Adobe Premiere 6.5 is a very capable video editing program, it can't create DVDs itself. Instead, it bundles

Many rewritable DVD drives bundle a DVD authoring program, but such software won't be a complete package.

grounds, and its included images (such as photos of sandy beaches, blue skies, and tropical sunsets) are clichéd.

Every program uses the chapter beginning points set up by scene detection as menu buttons—each chapter gets a button that takes you straight to that chapter.

Expression, Studio 8, and NeoDVD 4 Plus let you customize almost every aspect of the menu, but the others, such as WinDVD Creator Plus and Easy CD & DVD Creator 6, don't permit you to alter the layout of the menus.

Sonic's DVDit 2.5 LE, which you must use to create the disc menus and burn the disc. Unfortunately, DVDit doesn't have many features, and its unintuitive menus and lack of documentation make navigating the program a pain.

Another serious problem: You can set Premiere 6.5 to export files directly into DVDit once they have been encoded, but Premiere stores audio within a separate file, so you have to associate it manually with the video. Soon, however, Adobe will release EncoreDVD, a \$600 program that it claims will be much more powerful than DVDit. (EncoreDVD wasn't available in time for this review.)

Once you've completed the menus, you can use an on-screen remote control—a feature all the programs have—to preview the presentation so you can gauge how the menus and video will appear to someone watching the DVD. At this point, if you see features that you wish to change, you can still make alterations without having to waste a write-once disc. ▶

## Hardware Best Buys

**Best  
BUY**

**FAST, REASONABLY** priced drives from Sony and Hewlett-Packard win our nod as the best

rewritable DVD drives. Sony's DRU-500A supports both the +RW and -RW formats, while HP's DVD Writer Dvd300i, a newcomer to our chart (see page 108), is the first drive to write to +R discs at 4X.





Previews can sometimes be misleading, however. Edited video in NeoDVD 4 Plus and MyDVD Media Suite appeared jerky, giving the impression that something was wrong with the video files. But when we burned the video to DVD, it looked fine.

### QUALITY AND QUANTITY

MOST APPLICATIONS (including all of those we reviewed) let you choose a quality setting before you begin the process of writing to DVD. The lower the quality, the greater the amount of video you can fit on a disc—although the exact amount will depend on the individual settings of each program. All of the packages here store video at the maximum quality setting by

default, which makes sense: Footage from a single 60-minute videotape will easily fit onto a single DVD at this setting.

Changing the quality setting changes the bit rate—the quantity of data allowed when compressing the video, expressed as megabytes per second. The higher the bit rate, the better the quality, but the smaller the amount of video you can fit on the disc.

NeoDVD describes its quality settings as “Good,” “Better,” and “Best,” but some products are more specific in describing how much video you can fit onto a disc. WinDVD Creator Plus offers the quality settings of “DVD(1 hour)” and “DVD(2 hour).” Only Studio 8 and Premiere 6.5 let you directly edit the bit rate.

In our informal tests, we saw no significant differences in the quality of the video produced by the programs at their best setting; all produced video that looked clean and sharp, with clear sound. In movies produced by applications that lacked volume control, however, any background music tended to drown out the dialogue. Video produced using lower quality settings looked less pleasant—we saw obvious compression artifacts, and the video appeared fuzzy.

### EVALUATING PERFORMANCE

TO COMPARE EACH product's performance, we took two 10-minute videos, created a simple menu with two chapters,

## FEATURES COMPARISON

# TOP 10 DVD DRIVES

A NEW DRIVE FROM Hewlett-Packard, the first on our chart rated to write to +R discs at 4X (about 4MB per second), lands a Best Buy in such as the first-place Sony DRU-500A and the number two HP DVD Writer Dvd300i, will save you a significant amount of time when

	REWRITABLE DVD DRIVE	Street price (2/25/03)	Overall rating	Performance	Write speed/ Rewrite speed	Drive formats
1	<b>Best Buy</b> Sony DRU-500A <a href="http://find.pcworld.com/31409">find.pcworld.com/31409</a> (★★★★★)	\$340	90	Very good	8:36/7:48 7:32/11:50 <sup>1</sup>	4X DVD-R, 2X DVD-RW, 2.4X DVD+R, 2.4X DVD+RW, 24X CD-R, 10X CD-RW
2	<b>Best Buy</b> Hewlett-Packard DVD Writer Dvd300i <a href="http://find.pcworld.com/34454">find.pcworld.com/34454</a> (★★★★★) <b>NEW</b>	\$299	86	Very good	3:59/8:44	4X DVD+R, 2.4X DVD+RW, 16X CD-R, 10X CD-RW
3	Pioneer DVR-A05 <a href="http://find.pcworld.com/32642">find.pcworld.com/32642</a> (★★★★★)	\$275	86	Very good	6:43/36:27	4X DVD-R, 2X DVD-RW, 16X CD-R, 8X CD-RW
4	LaCie DVD/CD-RW USB 2.0 and FireWire Drive <a href="http://find.pcworld.com/34457">find.pcworld.com/34457</a> (★★★★★) <b>NEW</b>	\$399	85	Very good	6:45/49:46	4X DVD-R, 2X DVD-RW, 16X CD-R, 8X CD-RW
5	Toshiba SD-R5002 <a href="http://find.pcworld.com/32645">find.pcworld.com/32645</a> (★★★★★)	\$220	84	Good	8:25/16:19	2X DVD-R, 1X DVD-RW, 16X CD-R, 10X CD-RW
6	Alera Technologies DVD-R Quad Cruiser <a href="http://find.pcworld.com/33680">find.pcworld.com/33680</a> (★★★★★)	\$390	84	Very good	7:11/52:41	4X DVD-R, 2X DVD-RW, 10X CD-R, 8X CD-RW
7	CenDyne DVR-105 <a href="http://find.pcworld.com/33677">find.pcworld.com/33677</a> (★★★☆☆)	\$280	83	Very good	6:41/53:07	4X DVD-R, 2X DVD-RW, 16X CD-R, 8X CD-RW
8	Philips DVDRW 228 <a href="http://find.pcworld.com/31418">find.pcworld.com/31418</a> (★★★★★)	\$300	83	Good	9:05/7:30	2.4X DVD+R, 2.4X DVD+RW, 12X CD-R, 10X CD-RW
9	LG Super-Multi DVD-Writer GMA-4020B <a href="http://find.pcworld.com/31067">find.pcworld.com/31067</a> (★★★★★)	\$290	83	Good	10:57/29:12	2X DVD-R, 1X DVD-RW, 2X DVD-RAM, 12X CD-R, 8X CD-RW
10	Memorex DVD+RW+R Internal ReWritable Drive <a href="http://find.pcworld.com/31421">find.pcworld.com/31421</a> (★★★★★)	\$260	82	Good	9:06/7:33	2.4X DVD+R, 2.4X DVD+RW, 12X CD-R, 10X CD-RW

**FOOTNOTE:** <sup>1</sup> Results are for DVD+R/DVD+RW and then for DVD-R/DVD-RW. **HOW WE TEST:** Visit [find.pcworld.com/33869](http://find.pcworld.com/33869) for details on our test methodology. **CHART NOTES:** Write speed is the time (in minutes:seconds) taken to write two 10-minute video files to DVD; it does not include rendering, transcoding, or other preparation time. Rewrite speed is the time (in minutes:seconds) taken to format a blank rewritable DVD disc combined with time to copy 1.18GB of data to the disc. Due to their quick formatting, which formats only enough space to complete the write, DVD+RW drives get much faster results. The overall rating we assign to each rewritable DVD drive is based on performance (35 percent), price (25 percent), features (15 percent), ease of installation (15 percent), and service and support (10 percent). All drives come with a one-year warranty unless otherwise noted. See [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.



and timed how long each one took to render the contents in MPEG-2 format.

Of the nine programs we tested, NeoDVD 4 Plus was fastest. (See the chart "Processing Times for DVD Authoring Software" on page 110). Pinnacle Expression compressed the video significantly faster than Pinnacle Studio 8. Pinnacle claims it will soon offer an update for Studio 8 that includes a newer codec. But even if the update provides the same results as Expression, it would still be significantly slower than most packages we tested. Despite Studio 8's lagging time in authoring a DVD, we still appreciate its powerful and complex tools for editing and processing video and audio.

the second spot. Relatively fast drives, writing your video to a DVD.

	Included software
	Sonic MyDVD 4, Veritas RecordNow 4.5, Veritas DLA, Veritas Simple Backup, CyberLink PowerDVD
	Veritas RecordNow 4.5, Veritas DLA, Veritas Simple Backup, CyberLink PowerDVD, ArcSoft ShowBiz DVD
	Sonic MyDVD 4, Roxio EasyCD Creator Basic 5.3, Pinnacle InstantWrite 4, ArcSoft ShowBiz, Sonic CinePlayer
	Sonic MyDVD Video Suite 4, Roxio Easy CD Creator 5, Roxio DirectCD 5, InterVideo WinDVD, ArcSoft ShowBiz
	CyberLink PowerDirector 2.5 Pro DE, VOB InstantCD/DVD InstantDisc, CyberLink PowerDVD
	Ulead DVD MovieFactory 2 SE, Ahead Nero Express 5.5, Ahead InCD 3.51, CyberLink PowerDVD
	Sonic MyDVD 3.5, Ahead Nero Express 5.5, Ahead InCD 3.51, InterVideo WinDVD
	Sonic MyDVD 3.5, Ahead Nero 5.5, Ahead InCD 3.3, CyberLink PowerDVD, Pinnacle Studio 7
	BHA B's DVD 1.1, BHA B's Recorder Gold 5, BHA B's Clip 5, InterVideo WinDVD
	Sonic MyDVD 3.5, Ahead Nero Express 5.5, Ahead InCD 3.3, CyberLink PowerDVD, ArcSoft ShowBiz

## BURNING DIRECT TO DISC

WHILE MOST programs must import the video, compress it, and burn it to disc in separate steps, four packages (NeoDVD 4 Plus, MyDVD Media Suite, DVD MovieFactory 2, and Easy CD & DVD Creator 6) can write movies from your camcorder to DVD discs in (almost) real time. This process is referred to as "direct-to-disc."

Based on our informal tests, such direct burning takes a fairly powerful PC. We tried it on a 2.53-GHz Pentium 4 system and a slower 1.3-GHz Athlon XP 1500+. It worked fine on the Pentium 4 system, but failed on the Athlon—the system couldn't keep up. Also, the process works

in near-real time only with rewritable discs: All the programs except NeoDVD 4 Plus can do direct-to-disc on write-once discs, but they have to import the video, encode it, and then burn it to disc.

The programs that support direct-to-disc use a new format called DVD+VR (using a DVD+RW disc) or DVD-VR (on DVD-RW discs), which allows the discs to be edited after video has been written to them. On a VR-formatted disc, you can delete video, reuse the space, and then edit the menus on a set-top DVD recorder that supports it. Discs using this format are also likelier to be compatible with set-top DVD recorders. However, DVD+VR and DVD-VR are relatively new. Only ▶

## How Much PC Do You Need?



IF YOU WERE to trust the minimum PC configuration recommendations listed on the side of a software package's box, you'd think you could edit video with any old PC. Many vendors state that a Pentium II-450 is adequate, but realistically, you need a better-equipped machine.

For instance, Adobe Premiere requires only a PIII-500 CPU, but Adobe's Bruce Bowman says the program will operate slowly using such a system. A PC using a Pentium 4 or Athlon XP processor will encode and process effects much more swiftly. And if you plan to use a program that does direct-to-disc authoring, we'd recommend a system with at least a 2-GHz Pentium 4 or a 2.13-GHz Athlon XP 2600+.

As for RAM, 512MB should normally be enough. Bowman notes that more than 512MB will be necessary only if you are running a number of additional programs.

Some software vendors suggest that a 4GB hard drive is sufficient. However, a single one-hour tape of digital video will consume 13GB of storage space. Even if that 4GB drive didn't house system files, you'd have room for only about 15 minutes of footage.

If you own an older system, you may be able to install a second hard drive to get enough storage space. Most new PCs come with at least 60GB hard drives, and hard drives over 100GB are now common. Storing your video on a separate hard drive will also speed things up—video editing involves an awful lot of disk reads and writes.

Finally, either a CRT or an LCD screen should be fine for *editing* video, because the monitor has no effect on the production quality of the movie. Older LCDs may exhibit on-screen trails when you play movies, but some new LCDs feature faster (16ms) response times, which will minimize such effects.

—Kalpana Narayanamurthi

LEVEL OF AUTHORING	CPU	RAM	Hard drive	Monitor size (inches)
Hobby-level editing and authoring	Pentium 4 or Athlon XP	256MB to 512MB	30GB to 60GB	17 or 19
Dedicated editing and authoring	2-GHz Pentium 4 or Athlon XP 2000+	512MB to 1024MB	60GB to 120GB, or 60GB on two separate drives	19 or 21



Mediastream's NeoDVD 4 Plus, Sonic/Adaptec's MyDVD Media Suite, and Roxio's Easy CD & DVD Creator 6 support DVD+VR, and only Easy CD & DVD Creator 6 supports DVD-VR. But other products are likely to follow soon.

The main drawback of direct-to-disc: You give up the ability to add a sound track or edit the video. Still, it can be useful if you want to make quick copies of your videos, or if you just don't want to take the time to edit them.

*Richard Baguley is a senior associate editor, Kalpana Narayanamurthi is an associate editor, and Alan Stafford is a senior editor at PC World. Testing was performed by Performance Analyst Thomas Luong of the PC World Test Center.*

## Speed Rendering With the Right Codec



**GOT SOME TIME to kill?** Render some video. The fastest application we tested, Mediastream's NeoDVD 4 Plus, took the length of a coffee break to convert our digital video test footage into a DVD-friendly MPEG-2 file, while the slowest, Pinnacle Studio 8, took the length of a long lunch. The credit—or blame—lies with the codecs they use.

A codec—short for compressor/decompressor—does the heavy lifting behind the scenes of these applications; the applications use them to convert and compress video and audio into a format such as AVI, QuickTime, or MPEG-2. An hour of footage from a DV camcorder takes up about 13GB on your hard drive; an application using a codec can make it fit on a 4.7GB DVD and still look fabulous, but the operation takes time. “The single biggest hindrance to rendering speed is how fast the codec is,” says Richard Townhill, group product manager for Adobe Premiere. “Every single time you touch every single frame of video, you’re using a codec. It is a mathematically complex and time-consuming process.”

### WHO'S CRACKED THE CODEC CODE?

FOR PREMIERE, Adobe licenses an MPEG-2 codec from MainConcept ([www.mainconcept.com](http://www.mainconcept.com)). We first tested Premiere with version 1.1 of the codec; the process took 54 minutes. We then updated the codec to version 1.2, which adds support for Pentium 4 optimizations and hyperthreading, plus other tweaks; the updated codec helped us shave 40 percent off the rendering time—not unusual, according to Mark Bailey, chief operating officer of MainConcept LLC. However, our test bed used an Athlon 2000+ processor, not a P4. According to the PC World Test Center, Athlon processors access most of the same optimizations that Pentiums do, and in many tests conducted by the Test Center in the past, Athlon systems have performed just as well as—and occasionally even better than—Pentium 4 systems on P4-optimized tasks.

Ligos ([www.ligos.com](http://www.ligos.com)) licenses its codec to Roxio and Adaptec, among others. Pinnacle says that both Studio 8 and Expression employ an MPEG-2 codec of its own design. But because Expression was released later than Studio and uses a newer version of the codec, Expression encoded our test files in about an hour, compared to nearly an hour and a half for Studio. Pinnacle says both versions of the codec take advantage of Pentium 4 optimizations and hyperthreading; nevertheless, both performed our tests substantially slower than the average of the products we tested.

One trick that codecs use is to analyze upcoming frames and recognize similarities to previous frames. “If you know the sky is going to stay the same,” explains Brandon Higa, senior marketing engineer at Canopus, “you can see that and not do anything with it.” Canopus's codec works with Premiere.


The MPEG-2 codec used for DVD movie playback need not be the same as the one used for encoding. Set-top DVD players and game consoles with DVD drives have hardware-based decoders that work just like software codecs, says MainConcept's Bailey. But movies not destined for DVD—Web videos, for example—usually require that codecs for both video and audio be installed on your system.

—Alan Stafford

### TEST REPORT

## PROCESSING TIMES FOR DVD AUTHORIZING SOFTWARE

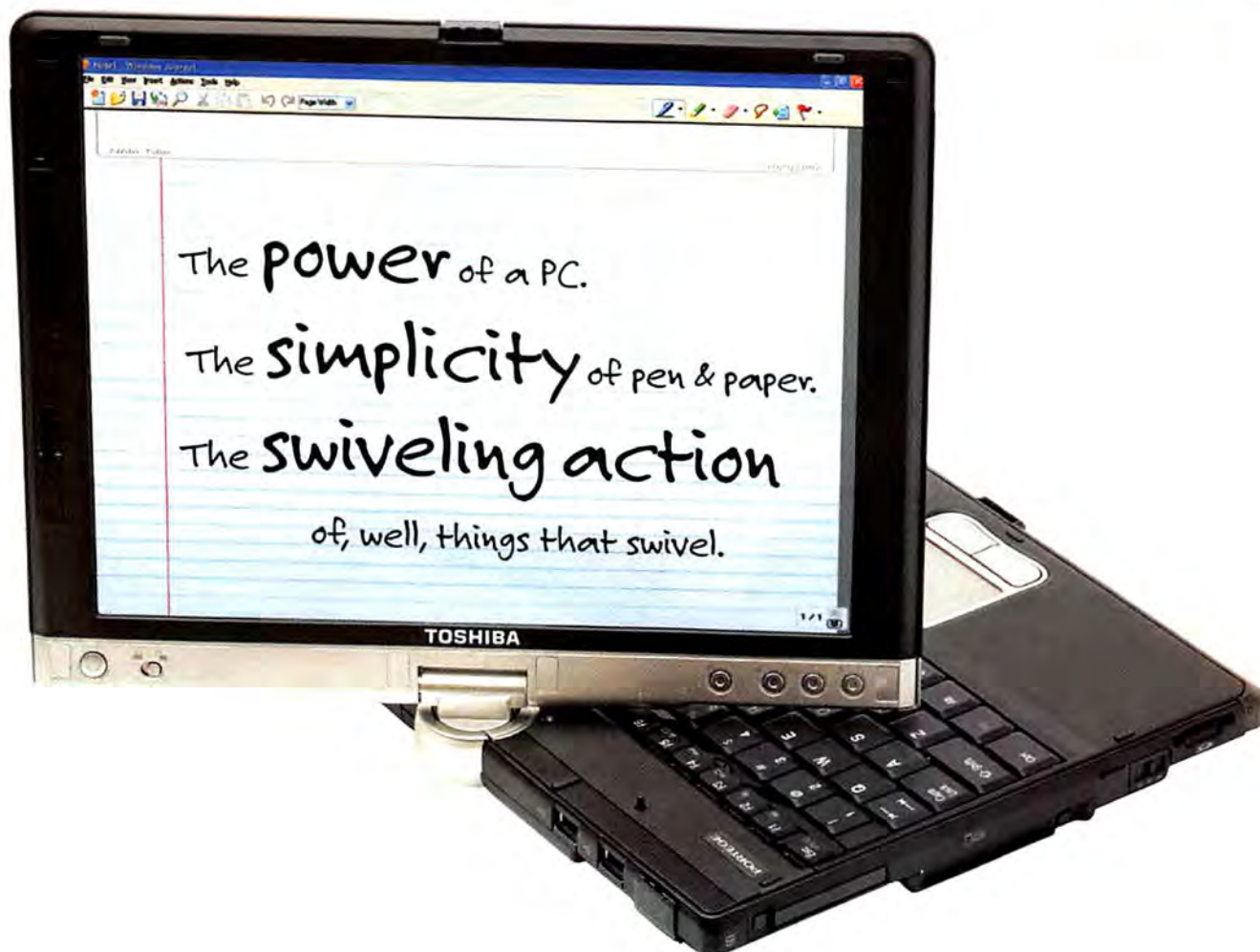
NEODVD 4 PLUS rendered a DVD-friendly MPEG-2 file nearly twice as fast as its closest competitor.

PROGRAM	 DVD rendering times (minutes:seconds)
Mediastream NeoDVD 4 Plus	14:07
InterVideo WinDVD Creator Plus	27:06
Adobe Premiere 6.5 <sup>1</sup>	32:09
Roxio Easy CD & DVD Creator 6	34:05
Sonic/Adaptec MyDVD Media Suite	34:53
Ulead DVD MovieFactory 2	44:11
Adobe Premiere 6.5 <sup>2</sup>	54:24
Pinnacle Expression	60:06
CyberLink PowerProducer	65:29
Pinnacle Studio 8	83:32



**FOOTNOTES:** <sup>1</sup>Using MPEG Encoder version 1.2. <sup>2</sup>Using MPEG Encoder version 1.1. **HOW WE TEST:** We tested the DVD authoring capabilities of each package by importing two AVI test files, creating a menu with two chapters, running the encoding and authoring process, and outputting the results to the hard drive. **CHART NOTE:** Lower times are better.





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SAMSUNG

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That's why Samsung teamed up with Best Buy to benefit the Magic Johnson Foundation. It raises funds for community-based organizations dealing with HIV/AIDS education and prevention programs as well as other community health, education and social issues for inner-city residents. Programs include scholarships, mentoring, new technology centers for underserved communities and national health-awareness campaigns. It's a deserving cause that we're proud to support. For more information about Samsung's Four Seasons of Hope, visit [www.fourseasonsofhope.com](http://www.fourseasonsofhope.com).

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MAGIC JOHNSON  
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# Natural-Born Spam Killers

Six top utilities promise relief from the junk-mail onslaught. Our tests reveal the best defenders for your in-box.

BY DANIEL TYNAN

EVERYBODY GETS too much spam, and nobody likes it. But you don't have to eat any of it. Invest \$20 to \$60 and some training time in an antispam utility, and you can enjoy a nearly spam-free diet.

We put six leading spam fighters through our torture test and found that, after some customization, the best filtering software can keep at least 90 percent of the junk you receive out of your in-box. A good filtering program lets you easily correct its mistakes and updates itself automatically as spammers develop new tricks to beat the latest filtering techniques. Finding the right utility can be tough, however—the choice depends heavily on which e-mail client you use to check your messages.

In general, we preferred tools like Cloudmark SpamNet, Sunbelt Software's IHateSpam, and Spamnix, which integrate directly into e-mail clients such as Outlook, Outlook Express, and Eudora. Stand-alone products such as Firetrust Mail- ▶



Washer Pro, Lyris MailShield, and McAfee SpamKiller support a much wider range of e-mail clients, but using them requires more work. The stand-alone programs check your messages and winnow spam out before you launch your e-mail application. Integrated utilities—like our Best Buy, IHateSpam 3.2 for Outlook—filter the spam from inside your e-mail client, which saves you a step.

## Integrated Utilities

### Cloudmark SpamNet (for Outlook)

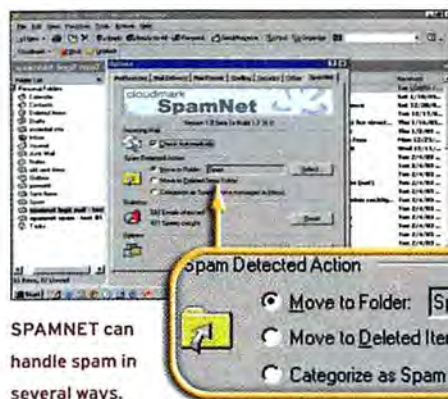
[find.pcworld.com/31553](http://find.pcworld.com/31553)

★★★★★, \$5 per month

SPAMNET wants you to participate in the war on spam. Though Cloudmark's Outlook plug-in (free download, with a \$5 monthly fee) isn't the most efficient spam fighter—it caught less than 70 percent of the spam in our test—it's elegantly designed and easy to use. Unlike other tools, SpamNet uses peer-to-peer technology and an army of users to fight spam.

Here's how it works: At installation, SpamNet inserts a toolbar, containing two buttons (Block and Unblock) and a short drop-down menu, below Outlook's stan-

dard toolbar. When you download your mail, SpamNet scans each message and assigns it a unique digital "fingerprint" based on data it pulls from the message. The program then goes online to check Cloudmark's massive spam database; if a junk e-mail you've received has already



SPAMNET can handle spam in several ways.

been fingerprinted, SpamNet shunts the offending message to a Spam folder.

When SpamNet misses a piece of spam, you simply highlight the message and click the Block button; SpamNet sends the fingerprint of that message to the database and moves the mail to your Spam folder. Cloudmark's servers even

analyze the e-mail you block to determine how trustworthy a spam fighter you are (otherwise, spammers could trip up the system with fake submissions). As you continue to accurately identify spam, Cloudmark gives more weight to your submissions when updating its filters.

But all this peer-to-peer makes for slow spam busting; SpamNet took more than 30 minutes to analyze our full e-mail sample. It snagged 66 percent of the junk out of the box, with only three genuine messages incor-

rectly caught. We dutifully forwarded 214 messages and tried again, but the score didn't improve a whit; the system hadn't updated because it didn't trust our opinions yet.

There's something tremendously appealing about ganging up on spammers, and SpamNet is supremely easy to work with, but IHateSpam provides better protection for Outlook users.

### IHateSpam for Outlook 3.2

[find.pcworld.com/31556](http://find.pcworld.com/31556)

★★★★★, \$20

### IHateSpam for Outlook Express 3.2

★★★☆☆, \$20

SUNBELT SOFTWARE'S IHateSpam can integrate with more than one e-mail client. But while its Outlook implementation is excellent and easily wins our nod for top spam trapper, the Outlook Express version is a little rough around the edges.

In both clients, the program installs a toolbar that lets you change filtering settings, flag spam that it missed, tattle on spammers to their ISPs, and manage blacklists ("enemies") and so-called whitelists ("friends"). Beyond that, however, the versions differ significantly.

In Outlook, IHateSpam downloads all your e-mail to your in-box, scans it, and moves suspected spam into a Quarantined Mail folder. When the program misses spam, you can select a bunch of messages at once and click the Is Spam button to quarantine them. The program

## BEST BUY

### IHateSpam Tops for Outlook Users



**Best  
BUY**

SUNBELT SOFTWARE'S \$20 IHateSpam 3.2 integrates easily into Outlook 2000 and 2002, offering superior protection with minimal bother. (Too bad we can't say the same about the Outlook Express version.) Users of other e-mail clients should go for SpamKiller 4, which was purchased by McAfee last year but is still the best stand-alone spam hit man around. Eudora users have a slightly harder choice: The integrated Spamnix isn't as efficient as SpamKiller, but it's a lot easier to use.

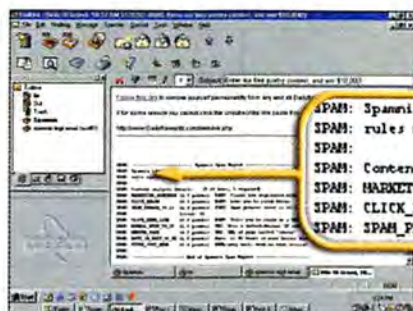


sends portions of each message back to Sunbelt Software, which uses them to update its filters. Adding a sender to your friends or enemies list is equally easy.

But the Outlook Express plug-in isn't as smooth. In Express, IHateSpam marks suspect messages as read and moves them into your Deleted Items folder. As a result, you can too easily miss legitimate mail that gets caught by mistake. Marking mail as spam or adding friends and enemies is more work, too; you must select each message individually and move it to a folder or delete it manually.

Both versions nabbed more junk straight out of the box than any other program—around 95 percent. After some tweaking, the Outlook version improved to 98 percent, but the Outlook Express version still rejected some mail from our friends and accepted a few messages from our enemies. We also found the Outlook Express version unstable and buggy.

Sunbelt is the only antispam vendor that offers toll-free phone support; we



SPAMNIX reports help you determine why each filtered message was flagged as spam.

called and were connected with a human immediately. And at \$20 its software is also the cheapest. That price, combined with the program's ease of use and top-notch performance, makes IHateSpam a no-brainer for Outlook users. But Outlook Express fans should probably opt for SpamKiller—at least until a better version of IHateSpam for OE comes along.

#### Spamnix for Eudora

[find.pcworld.com/31562](http://find.pcworld.com/31562)

★★★★☆, \$30

FINE-TUNING the filtering in Spamnix for Eudora took us some time. Once we finished, though, we found the spam blocker easy to use and effective.

Spamnix analyzes each message and assigns points for traits like forged headers that obscure the actual source of the mail (1.5 points) or subjects that start with the word *Free* (0.3 points); mail that exceeds a certain number of points gets sent to the Spamnix folder. Open an exiled piece of spam, and you'll find a brief report at the bottom of the message detailing why Spamnix blocked it, along with the occasional snarky comment ("Risk free? Suuurrreeee...").

The bad news? If you get a lot of junk e-mail, creating filters will prove time-consuming. When Spamnix misses a piece of spam, you have to open the message to create a filter for that sender's

## TEST REPORT

### Spam Filters Help Limit Your Junk E-Mail Intake

MOST FILTERING TOOLS WE TESTED caught 90 percent of the spam in our sample, after training. But spam fighting is all about saving time. That's why we preferred utilities that integrate into your e-mail client—like our Best Buy, IHateSpam—over stand-alone programs.

	SPAM FILTER UTILITY	List price	Before training		After training		Comments
			Spam caught	False positives <sup>1</sup>	Spam caught	False positives <sup>1</sup>	
Integrated	Cloudmark SpamNet ★★★★☆ <a href="http://find.pcworld.com/31553">find.pcworld.com/31553</a>	\$5 per month <sup>2</sup>	66%	5%	65% <sup>3</sup>	8%	Uses a peer-to-peer network to filter. Scanning multiple messages is slow. An Outlook Express plug-in will be available soon.
	<b>Best Buy</b> IHateSpam for Outlook 3.2 ★★★★★ <a href="http://find.pcworld.com/31556">find.pcworld.com/31556</a>	\$20	94%	30%	98%	18%	Inexpensive and easy-to-use package offers accurate filtering. Only product backed by toll-free phone support.
	IHateSpam for Outlook Express 3.2 ★★★★☆ <a href="http://find.pcworld.com/31556">find.pcworld.com/31556</a>	\$20	95%	28%	94%	45%	Outlook Express version of our Best Buy doesn't work as smoothly and produced many false positives.
	Spamnix for Eudora ★★★★☆ <a href="http://find.pcworld.com/31562">find.pcworld.com/31562</a>	\$30	66%	5%	99%	13%	Outstanding performance after tweaking, but creating filters can prove time-consuming. An Outlook version will be available soon.
Stand-alone	Firetrust MailWasher Pro 3 ★★★★☆ <a href="http://find.pcworld.com/31559">find.pcworld.com/31559</a>	\$30	79% <sup>4</sup>	0%	96%	10%	Performed well after training, though it crashed occasionally. Supports POP3 and MSN Hotmail.
	Lyris MailShield Desktop 3 ★★★★☆ <a href="http://find.pcworld.com/34514">find.pcworld.com/34514</a>	\$60	78%	8%	98%	22%	Points-based filtering has trouble with legitimate HTML e-mail. Supports POP3, MAPI, IMAP, MSN Hotmail, and some Yahoo e-mail.
	McAfee SpamKiller 4 ★★★★☆ <a href="http://find.pcworld.com/34511">find.pcworld.com/34511</a>	\$40 download, \$50 CD-ROM	84%	23%	98%	2%	Setup and training are particularly simple and intuitive. Supports any POP3 or IMAP client and MSN Hotmail.

**FOOTNOTES:** <sup>1</sup> Legitimate e-mail wrongly flagged as spam. <sup>2</sup> \$4 per month for current users. <sup>3</sup> It may take a week or more for training to affect SpamNet's performance. <sup>4</sup> 199 spam messages (about 32 percent) marked as "possible." **HOW WE TEST:** To test each utility, we restored two backups of a real mail file containing both spam and legitimate e-mail. After installing a tool, we restored the first backup, which had 683 messages, including 623 we identified as spam. We recorded the amount of spam the filter caught and the number of legitimate messages it wrongly flagged at its default settings. We trained each program on this first set of mail by creating filters to block missed spam and allow incorrectly flagged mail. Where applicable, we switched to a stricter filter setting. We then restored the second backup—which included the first batch plus an additional 269 messages—and tested the filter with the new settings. **CHART NOTE:** Bold percentages indicate the best performance.



address or domain, then manually delete the e-mail. (According to Spamnix reps, Eudora doesn't let plug-ins perform these operations automatically.) Other programs let you select spam in bunches, then filter and delete them automatically.

Spamnix caught 66 percent of the spam on our first try. After we made filters and lowered the program's spam threshold (from 5 points to 3), it got about 99 percent of the junk—the best performance of any utility we tested—with only 11 false positives (real e-mail incorrectly tagged).

Though Spamnix required too much tweaking for our tastes, it's still our pick for Eudora users simply because an integrated spam filter is preferable to a stand-alone one. By the time you read this, Spamnix should have a version that plugs into Outlook, which could make it a worthy competitor to iHateSpam.

## Stand-Alone Utilities

### Firetrust MailWasher Pro 3

[find.pcworld.com/31559](http://find.pcworld.com/31559)

★★★☆☆, \$30

WOULD YOU RATHER wash your e-mail by hand, or hire someone to do it? MailWasher Pro promises to sanitize your inbox, but we had to scrub our messages manually to get all the spam out. This \$30 utility is just a little too hands-on.

Like MailShield and SpamKiller, MailWasher Pro is a stand-alone program that supports a wide range of e-mail software. Unlike those other two programs, MailWasher Pro dumps both your spam and your genuine mail into a single folder, marking suspect messages as "Probably Spam" or "Possible Spam." Click the Process Mail button, and the program deletes the probable spam, adds each message's sender address to its blacklist, and sends a bounce notice (a notice claiming that the message was undeliverable) back to the spammer. You can choose from three filtering settings, create your own filters, and elect to use independently operated domain name server (DNS) blocklists to further weed out spam.

MailWasher Pro uses a heuristic system

to identify spam by characteristics such as forged headers and suspicious attachments. Unfortunately, its heuristics could use some polishing. When we tested MailWasher Pro using its defaults, it deleted only 7 percent of the spam, marking another 32 percent as "Possible Spam." For our second test, we added domains from the hundreds of missed spam mes-

sages to the program's internal blacklist, told it to use DNS blocklists, and reset it to Strong spam blocking. MailWasher Pro then caught and deleted 96 percent of the junk with few false positives.

While MailWasher's final score was excellent, the results simply weren't worth the hours we had to take to create the lengthy blacklist. Product support ►

## HOW IT WORKS

### Spam-Filtering Software

AS SPAMMERS GET TRICKIER, so does the software designed to thwart them. Some utilities rely entirely on filters—rules that scan a message's header, subject, and body text for telltale signs of spam. Others rely on external "blackhole lists" (sometimes called blocklists or blacklists in spam filtering software) to keep out any mail coming from IP addresses used by spammers. Still other utilities compare parts of a message to a massive database of spam, looking for similarities. Most use a combination of tactics, along with sophisticated algorithms that assign a spam-probability score to each message. Here's how a few of the more common techniques work.

The screenshot shows an email header from a web browser. Five yellow callout boxes with red numbers point to specific parts of the header:

- 1** Points to the Return-Path: <L6929679537.66243.2@service.emailfactory.com>
- 2** Points to the Received: from hamgravy.emailfactory.com (64.35.34.52)
- 3** Points to the Date: Fri, 24 Jan 2003 03:34:02 -0500
- 4** Points to the Subject: PastaExpress, As Seen on TV Plus 4 Free Gifts
- 5** Points to the text: The NEW PASTA EXPRESS -- With 4 FREE GIFTS...

- 1** Spam filters look hard at the return address, which is often fake. In this case, the address consists almost entirely of numbers, a common component of machine-generated spam.
- 2** A filter may examine the IP address where the e-mail originated and compare it against lists of addresses known to be sources of spam. If it finds a match, that e-mail is usually blocked.
- 3** Some antispam software compares the date on the message against the time it's actually received; spammers will either delete the date or assign one in the future so that the e-mail lands at the top of its victims' mailboxes.
- 4** Common catchphrases in the subject line (like *as seen on TV* and *free gifts*) are another giveaway; many spammers also insert garbage characters, misspellings, or odd letter spacing in an attempt to fool simple text filters.
- 5** Lines entirely in capital letters—or oversize fonts in HTML mail—are a common spam tactic, so some filters flag messages that contain them.



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is strictly via e-mail, and because the developer is based in New Zealand we had to wait overnight for answers. We also found the program highly unstable, experiencing several system-level crashes.

### Lyris MailShield Desktop 3

[find.pcworld.com/34514](http://find.pcworld.com/34514)

★★★★☆, \$60

LYRIS MAILSHIELD DESKTOP works with most e-mail clients, including POP3 and MAPI software, as well as MSN Hotmail and the paid (but not the free) Yahoo Webmail accounts. MailShield is about as good as SpamKiller in catching spam, but it wrongly tagged more legitimate messages, and at \$60 it's a tad pricey.



MAILWASHER PRO tags messages as "Probably Spam" and "Possible Spam," then presents them to you for processing.

MailShield Desktop analyzes spam using a points system: For example, it gives a message 15 points if the sender's name is missing, 138 points if the text contains the word *porn*. When a message gets a score of 250 or more, MailShield sends it to the Trash. You can adjust that threshold up or down, but you can't alter how the program assigns points. This means that if you receive a lot of legit HTML mail you'll get more false positives, because the program assigns a large number of points for "HTML characteristics" such as embedded photos.

Using just its default settings, MailShield caught nearly 80 percent of the spam messages in our first test. When we filtered out the spam it missed and lowered the threshold to 175 points, it nailed 98 percent of the junk. But it also marked 19 genuine messages as spam, including all of PC World's HTML newsletters.

Like MailWasher, MailShield lets you send fake nondelivery messages back to spammers so that they'll take your address off their lists, but there's no built-in way to report spammers to their ISPs. The prerelease version 3 we looked at was a tad sluggish and unstable.

Support for single users is limited to information on the Web site and three e-mail queries during the first 60 days. And at \$60 for a single license, the app is too rich for most users' blood. (Lyris also sells a server version aimed at workgroup and enterprise customers.) SpamKiller gives you the same level of protection for less dough.

### McAfee SpamKiller 4

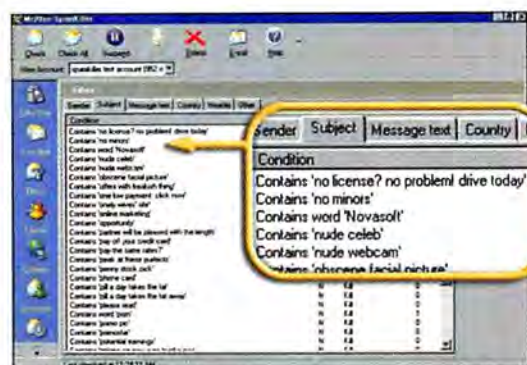
[find.pcworld.com/34511](http://find.pcworld.com/34511)

★★★★☆, \$40 download, \$50 CD-ROM

THE ANCIENT (in computer years) SpamKiller is both deadly and versatile. After we trained it, the \$40 program had one of the best spam-catching rates in this survey. Better yet, SpamKiller supports most POP3 or IMAP e-mail clients, as well as MSN Hotmail.

SpamKiller's install wizard scans your hard drive and imports your e-mail settings and address book with minimal prompting. Click the Check button, and SpamKiller logs on to your mail server and downloads your messages, splitting them into two folders: Killed Mail (suspected spam) and Live Mail (the rest). It works by scanning each message's header, subject, and text for telltale signs of spam (for example, the phrase *absolutely free* in the subject line), and it updates the filters on a weekly basis.

A preview window lets you examine each message to determine if it's truly junk. SpamKiller even shields you from the nasty stuff, blanking out the images



McAfee SPAMKILLER 4 provides plenty of filtering options, which you can manage from this console.

inside HTML mail while you screen the suspect messages. When SpamKiller incorrectly files messages, you can create filters to stop future mail from a spammer or allow e-mail from a legitimate source with just a few clicks.

But you won't have to do either very often. SpamKiller whacked 84 percent of the unwanted stuff on our first test—and a whopping 98 percent after we'd trained it by creating some filters—with very few mistakes. The bad news? McAfee's phone support is expensive (\$3 a minute or \$39 an incident), and its free live-chat support is spotty. If you're serious about fighting spam on your desktop, SpamKiller is the best-performing package we tested. But SpamKiller is a stand-alone product—most users will still prefer the convenience of an integrated filter like iHateSpam. SpamKiller 5, due out later this year, will integrate into Outlook and could provide the best of both worlds. ■

PC World Contributing Editor Daniel Tynan doesn't much care for spam either.

### ONLINE

## More on Spam...

FILTERING UTILITIES aren't the only way to stop junk. For more on spam and how to fight it, see "Spam, Inc." ([find.pcworld.com/34598](http://find.pcworld.com/34598)), "Wage War on Spam With Old Tools and New Filters" ([find.pcworld.com/34640](http://find.pcworld.com/34640)), and "Spam: It Happens" ([find.pcworld.com/34643](http://find.pcworld.com/34643)).





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November 5, 2002  
Pinnacle Studio 8  
Pinnacle Systems, Inc.

**PINNACLE**  
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# Seeing is Believing



Model  
PV722E Pictured



Model  
P922E Pictured

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MODEL	PV722E	P922E
Bezel Color	Silver (2-tone)	Silver (2-tone)
Size	17"	19"
Display Technology	Active Matrix TFT LCD UltraVision™ Panel	Active Matrix TFT LCD UltraVision™ Panel
Viewing Angle (x/y-axis)	170° / 170°	170° / 170°
Pixel Pitch	0.264mm	0.294mm
True Panel Resolution	1280 x 1024	1280 x 1024
Response Time	25ms	25ms
Brightness	250 nit	250 nit
Contrast Ratio	500:1 (typ.)	500:1 (typ.)
Interface	Analog / DVI	Analog / DVI
Advanced Features	USB 2.0, Speakers	USB 2.0, Speakers
Pivot Function (w/ Software)	Yes	—
VESA Wall Mountable	Yes	Yes
Emission Standard	TCO'99	TCO'99

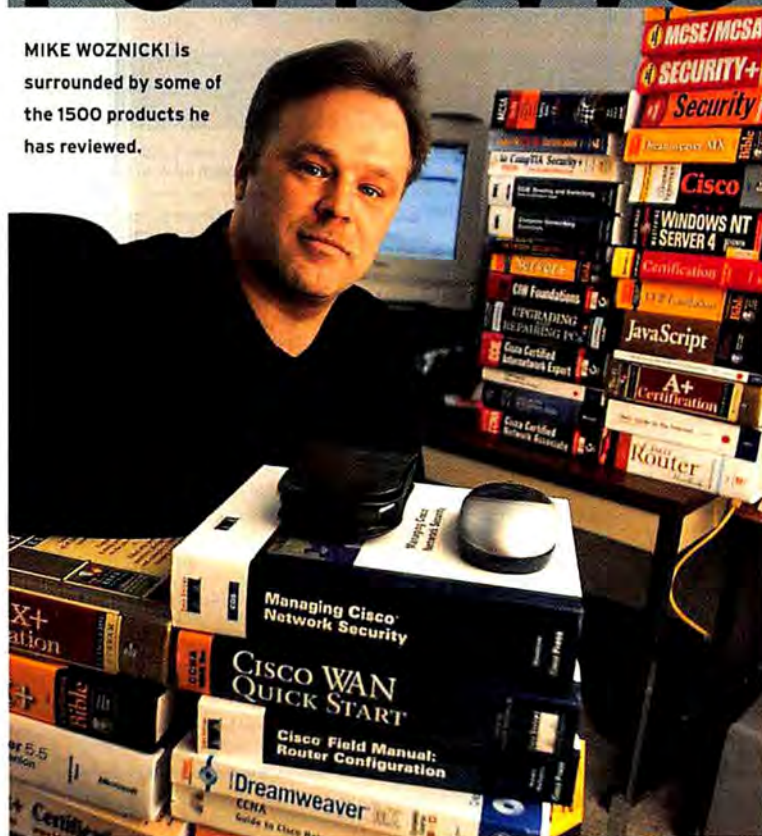
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PUBLIC  
OPINIONS:  
inside user  
reviews

**MIKE WOZNICKI** is surrounded by some of the 1500 products he has reviewed.



All over the Web, all kinds of people write real-world reviews of tech products. Can you rely on them? Here's the straight scoop.

BY MICHAEL GOWAN

MIKE WOZNICKI HAS been reviewing computer hardware, software, books, and videos on Amazon.com for the past five years. Woznicki, an IT manager and technical certification instructor based in Holland, Massachusetts, certainly knows his stuff. He is currently ranked number 11 among Amazon.com Top Reviewers, based on visitors' assessments of the helpfulness of his reviews.

But Woznicki isn't your typical reviewer. For one thing, he gets most of the products he reviews free from manufacturers. For another, he has reviewed more than 1500 products. Woznicki's situation brings up a couple of questions. Can receiving freebies influence his reviews? And can anyone really know that many different products well?

Woznicki's circumstances are unusual, but questions about user reviews are not. Does the reviewer have any real knowledge of the area? ▶

PHOTOGRAPH BY BILL O'CONNELL



he or she is writing about? Could a sly company submit top reviews about itself to drive up its own score? Finding reviews you can trust is always an issue.

We went behind the scenes to find out how much you can depend on user reviews. We interviewed expert reviewers and the people who work at review sites; we also put the sites through their paces as we searched for user reviews of PC-related products. We looked at sites that focus on product reviews only (like Amazon.com), as well as those that handle both product and merchant reviews (such as ResellerRatings.com).

Our findings? In general, you *can* trust a lot of user reviews, though it might take some work—and a dose of skepticism—to ferret out the reliable ones. Of course, the great thing about user reviews is that the people who write them live with the

products in the real world. By contrast, editorial reviews in *PC World*, for example, are usually restricted by time and limited testing scenarios. Real customers often encounter problems after several months, or even a year—something that an editorial review can't capture. In fact, many *PC World* editors are big fans of user reviews for these reasons.

A few user-review Web sites reported that some funny business does go on, however. Sometimes, a merchant's employees will try to post phony reviews either to bump up their own company's rating or to drive down the competition's score. The sites do their best to stop such tampering before the reviews get posted. Beyond that, some sites offer tools to help you filter what you see so you can get more out of the user reviews.

Our two favorites: Epinions.com and

PCPhotoReview.com. Epinions.com displays reviews in a digestible format and provides useful filtering tools. And for shutterbugs, PCPhotoReview.com's write-ups are usually packed with valuable details on a wide range of digital (and film) cameras (see the chart below for a list of all the sites we examined). Note: As we went to press, DealTime announced that it had agreed to buy Epinions.com.

## THE PROCESS

GENERALLY, posting a review is straightforward. Most sites require that you sign up with an e-mail address before you submit your review. Then you write the review, select a rating (or whatever the site requires), and click *Post Review* (or something similar). Most sites examine postings before allowing them to appear; sites take a few hours or even a couple of days

## FEATURES COMPARISON

# Review Sites: Epinions.com and PCPhotoReview.com Are Tops

BOTH BEST BETS DISPLAY REVIEWS in templates that are easy to read. Epinions provides handy customization tools.

WEB SITE	Star rating for user reviews only	Type of reviews	Site monitors reviews	Users can sort ratings	Advanced customization features <sup>1</sup>	Antifraud measures	Comments
Amazon.com <sup>2</sup> <a href="http://www.amazon.com">www.amazon.com</a>	★★★★☆	Products	Yes	Yes	Yes	No	Reading reviews while you shop is easy. Certain categories like digital cameras often have overly positive reviews.
BizRate.com <a href="http://www.bizrate.com">www.bizrate.com</a>	★★★★☆	Products/merchants	Yes	Yes	Yes	Yes	The site's links to the merchants' reviews (as opposed to the merchants' sites) aren't always easy to find.
ComputingReview.com <a href="http://www.computingreview.com">www.computingreview.com</a>	★★★☆☆	Products	Yes	Yes	No	Yes	The site covers a surprisingly limited selection of computer products, and offers few reviews for each item.
CNet Download.com <a href="http://www.download.com">www.download.com</a>	★★★★☆	Products	Yes	Yes	No	Yes	The site is easy to navigate, its users love to speak up, and you can expect to find a lot of geeky comments.
<b>Best Bet</b> Epinions.com <sup>3</sup> <a href="http://www.epinions.com">www.epinions.com</a>	★★★★☆	Products/services/merchants	No	Yes	Yes	Yes	It's easy to find product reviews in a flash, and the site provides useful ways to customize review preferences.
NewEgg.com <sup>2</sup> <a href="http://www.newegg.com">www.newegg.com</a>	★★★☆☆	Products	Yes	Yes	No	No	Covers a wide range of tech products, and the users share a high level of expertise. Site can be hard to navigate.
<b>Best Bet</b> PCPhotoReview.com <a href="http://www.pcphotoreview.com">www.pcphotoreview.com</a>	★★★★☆	Products	Yes	Yes	Yes	Yes	This specialized community offers an impressive number of camera-related products and reviews to go with them.
Photo.net <a href="http://www.photo.net">www.photo.net</a>	★★★☆☆	Products/merchants	Yes	Yes	No	No	While the reviews are often by experts, the site's interface makes it hard to get to them. Selection of cameras is small.
PriceGrabber.com <sup>4</sup> <a href="http://www.pricegrabber.com">www.pricegrabber.com</a>	★★★★☆	Products/merchants	Yes	Yes	No	Yes	Nicely combines ratings of merchants and products. Site flags merchants that have been removed from its listings.
ResellerRatings.com <a href="http://www.resellerratings.com">www.resellerratings.com</a>	★★★★☆	Products/merchants	Yes	No	No	Yes	Provides easy at-a-glance info. The merchant rating is broken down into shopping phases, like shipping and returns.

<sup>1</sup> Options let users sort reviews in ways other than by date or rating—by particular reviewers or different aspects of transactions, for example.

<sup>2</sup> Primarily a shopping site.

<sup>3</sup> As we went to press, DealTime had agreed to acquire Epinions.com.

<sup>4</sup> PCWorld.com's Product Finder is powered by PriceGrabber.com.



## Make the Most of User Reviews

AS WITH ANY SOURCE of information, you must know what to look for. Keep these tips in mind the next time you peruse the postings.

- **SKIM PAST THE RATING:** One person's five may be another's three, so there's often little value in the overall score. You have to focus on the details to understand the user's point of view.
- **THE MORE REVIEWS, THE MERRIER:** "You should never read just one or two reviews.... Any one person may be off their rocker, so to speak, whereas a dozen or two dozen people probably aren't," says Scott Wainner of ResellerRatings.com.
- **ADD UP THE NUMBERS:** If you do like to consider the overall cumulative rating of a product, make sure you factor in the total number of reviews. The more reviews a product or a merchant gets, the better the chance of a representative rating.
- **USE THE TOOLS AT HAND:** Take advantage of filters and other

features to make your search more efficient and refine what you see.

- **FOCUS ON THE NEGATIVES:** As bad as it sounds, you can save a lot of time if you learn about the problems people have had with a product or a merchant. Plus, a single problem may be unique to a reviewer's complicated PC configuration, but if you see a recurring theme in a dozen reviews, there's probably something to it.
- **LOCATE THE EXPERTS:** If you want a digital camera, visit a site that specializes in digital camera user reviews, like PCPhoto-Review.com. People who post reviews on these sites tend to have a higher level of expertise and provide more in-depth details.
- **DIP INTO DISCUSSIONS:** If all else fails, go to Google Groups ([groups.google.com](http://groups.google.com)) and search for the product or merchant in the Usenet archives. It's often a great source for advice, if you're willing to wade through many posts and the off-topic turns they can take.

to post reviews. Epinions.com is the exception; it posts reviews immediately.

Sites like PriceGrabber.com and Amazon.com monitor submissions for profanity and nonsense text. Most sites will also exclude a review if it's clear that the user either does not own the product or has never interacted with the merchant. Sites will take down offensive postings, but they usually won't edit the text or correct typos. Note: PCWorld.com's Product Finder is powered by PriceGrabber.com, and PCWorld.com provides user reviews through Product Finder.

Web sites that specialize in merchant ratings sometimes run into fraudulent activity: "Many unscrupulous companies do try to submit reviews for themselves on ResellerRatings.com," Scott Wainner, the site's chief executive officer, acknowledges. Such companies are usually merchants with poor ratings trying to boost their overall score. But some companies also bad-mouth competing merchants to force their ratings to drop.

To combat spurious reviews, BizRate.com, PriceGrabber.com, and ResellerRatings.com employ a variety of antifraud measures. All three sites indicated that they use specific tools to investigate suspicious postings, but they wouldn't disclose further details. If the sites find that a merchant has acted improperly, they remove the guilty party from their listings.

### FINANCIAL INCENTIVES?

QUESTIONABLE POSTINGS may also come from people who are compensated for writing reviews of products or services. Such compensation can come in the form of free merchandise or cash.

Mike Woznicki gets to keep the products that manufacturers send him. He says that this arrangement doesn't affect what he writes because he chooses the products he wants to review. "The idea that I would favor one [company] over the other doesn't happen," he says. (Note: Manufacturers provide products for PC

World to evaluate. Hardware is sent back when testing is complete. Other media outlets handle reviews differently. *Consumer Reports*, for example, purchases all the products it reviews.)

Woznicki's situation seems to be the exception rather than the rule, however. Other reviewers said that they don't receive free products. Epinions.com is the only site we looked at that pays money—albeit a nominal sum—for reviews. The site pays only those users whose reviews on popular products are highly rated by members, says Sarah Leary, vice president of marketing at Epinions.com. ▶

### sites we like

**Epinions.com**

WHEN YOU REGISTER as a member on **Epinions.com**, you can specify the reviewers whose opinions you depend on to build a Web of Trust (1). When we searched for a popular graphics board, Epinions listed our trusted reviewer's opinion up top (2)—just the way we want it.

The screenshot shows the Epinions.com interface. At the top, there are navigation tabs for various product categories: CARS, BOOKS, MOVIES, MUSIC, COMPUTERS, ELECTRONICS, GIFTS, HOME & GARDEN, KIDS & FAMILY, OFFICE SUPPLY, SPORTS, TRAVEL, and MORE. A search bar is present with the text 'Search for' and a dropdown menu showing 'Graphics Cards'. Below the search bar, there's a breadcrumb trail: 'Home > Computers & Internet > Graphics Cards'. The main product listing is for 'ATI RADEON 7500 Multi-monitor Graphics Card - 64MB VRAM - AGP 4x'. It shows an 'Overall rating' of four stars and a 'Read Reviews' link. A 'Web of Trust' section is highlighted with a red box and a red arrow pointing to it. This section shows a list of members who trust the reviewer 'zebgowan', with columns for 'Sort by' (Member Name, Biography and Location, Date added) and 'Date added'. The first member listed is 'zebgowan' with a date of 'Feb 12 03'. A red circle with the number '1' is around the 'Web of Trust' header, and a red circle with the number '2' is around the 'Read Reviews' link.



## sites we like



PCPhotoReview.com makes it easy to scan the highlights before you dig into details. It lists the number of reviews for each product at the top (1) along with an overall numerical rating (2). Its template (3) makes the pros and cons a quick read.

Canon PowerShot G2

53 reviews

4.62 of 5

MSRP: \$ 899.00

Product Specifications

- 4 megapixel CCD
- Max resolution: 2,272 x 1,704
- 3x Optical Zoom (35mm equivalent 34-102mm)
- Exposure: Program AE, Shutter priority AE, Aperture priority AE, Manual and AE lock

More Specs/Features

Manufacturer Site | Sample Images

More Reviews:

Imaging Resource

Read the Reviews >> Write a Review >>

Reviewed by: **Danqing, Intermediary**

Price Paid: \$770 at B&H

Summary:

The G2 is a very nice still-photo digi- week and have generally been v- improvements certainly could be r-

Strengths:

- Compact
- Very good image quality to 8x10"
- Easy to learn & use

Weaknesses:

- Needs better focus control for ma-
- Bit of a hassle to switch between shooting active children

Customer Service:

- Not required

Similar Products Used:

- Kodak DC 260
- Kodak DC 3900
- Nikon Coolpix 775

And the average review earns less than \$1 during its lifetime. "I've racked up a whole 50 bucks in over a year of review writing," says a hardware reviewer at the site who goes by the name of Zero.

In light of the potential for conflicts of interest and fraud on review sites, you do need to exercise your judgment on whose opinions you can trust. You must also look out for reviews from writers who may not know what they're talking about. For example, a negative review may stem from a problem involving the user and not the product itself. Perhaps the reviewer had used the product for just one day or didn't know how to operate it.

## WORK THE TOOLS

TRUSTING A SITE'S reviews is one side of the equation; ultimately, it's what you get out of a site that counts. Some make it easy to find the reviews you want. Epinions.com, CNet Download.com, and PCPhotoReview.com offer great search engines and link you to the reviews you're after quickly. On Photo.net, however, the user reviews are buried several clicks into the EzShop section of the site, and its search engine left much to be desired. When we searched Photo.net for the Canon PowerShot G2, for example, the site didn't return results of any kind, even though the product was listed with 22 reviews.

When we looked at the sites, we didn't find many reviews of newer products; no site had more than three reviews of Sonic-

blue's Rio S50 MP3 player, for example. Some sites have pages of reviews for one product but a handful of posts for others. NewEgg.com, a shopping site, could

Focus on the details within the review and ignore the overall rating.

boast 112 reviews for the ATI Radeon 9700 Pro graphics board, while it had just 6 Windows XP Home Edition reviews. Because different sites attract users with different interests, it's worth your while to hunt around until you find sites that match your interests and expertise level.

Though reviews on most sites have undergone at least minimal inspection, it doesn't necessarily mean they're worth reading. That's where community feedback—if any—comes into play. Sites like Amazon.com, Epinions.com, and PCPhotoReview.com ask you to vote on how helpful you found a review. Based on those votes, the sites will automatically push the highest-rated reviews to the front so you see them first, which saves you from wading through the muck.

Most sites let you sort reviews by date or rating. Epinions.com offers even greater customization: You can create a "Web of Trust," which lets you pick reviewers whose opinions you feel are in line with yours. After that, any relevant reviews of theirs will bubble up to the top of the list.

Even after you've used filtering and other tools on the sites, you still have to decide whether the review says anything worthwhile. "The ideal review is detailed, compares a product to similar products, and is written after someone has used the product for long enough to really know it well," says John Shafer, channel manager for PCPhotoReview.com. So delve into the details, especially the negative comments, and look beyond the overall rating (see "Make the Most of User Reviews" on page 123 for additional tips).

With practice, you'll become very adept at scanning reviews and zooming in on the informative ones. Remember that most people are motivated to write reviews either when they're thrilled to bits or when they're just ready to vent. So expect to see reviews that are either very favorable or really negative (one good reason to focus on the details and ignore the overall ratings). And make sure you read as many reviews as you can handle. That way, the useless or fishy ones will be balanced out by the real gems. ■

Michael Gowan is a freelance writer based in Oakland, California.



# New Color Printers Add Green to Your Sales and Zing to Your Messages

**C**olor sells. It stimulates and motivates. In fact, it is so effective in helping to get your message heard above all the other chatter competing for your customers' and colleagues' attention that businesses once paid upward of \$10,000 for a color printer.

Industry experts, sales managers, marketing gurus, and endless studies agree that adding full color to important sales and marketing documents, or spot color to everyday correspondence, increases reader recall by an astounding 30 percent over plain monotone printing. What's more, readers remember up to 60 percent more of the content of a newsletter, an ad, or any document when it's in color.

With all these benefits, what's

not to like about color printing? The cost, that's what. But all that has changed, now that Oki Data ([www.okidata.com](http://www.okidata.com)) has introduced two exceptionally affordable color printers. Oki's C5100n and C5300n network-ready color printers deliver such high-end

features as a first-color-page-to-print time of just 18.3 seconds and a printing rate of 12 pages per

minute in color (three times faster than competing printers), as well as 20 pages per minute in monochrome. The C5100n and C5300n go for \$999 and \$1,299 respectively, but users continue to save money with both because of the units' low cost per page (both color and mono) and a duty cycle that's 67% longer than the com-



▲ Oki's C5300n digital color printer provides small workgroups with exceptional performance, reliability, and output in a compact footprint.

petition's. The units' small footprint, Web-based management, duplex printing capability, and high reliability make them ideal components of a departmental printing solution.

One of the underlying reasons for the great reliability of the C5000 series is its single-pass architecture. With four in-line digital LED print heads and image drums, the printers lay down all the colors in one pass. Other technologies use a time-consuming multi-pass method.

## SPONSORED BY:

Oki Data Americas, Inc.  
[www.okidata.com](http://www.okidata.com)

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## CREATING MOODS WITH COLOR

**N**ow that Oki has put a powerful tool of persuasion within reach, it's up to you to wield the power it confers effectively. You may want to heed the advice of industrial psychologists when it comes to color printing. They suggest, for instance, selecting one dominant color for your document to indicate the overall mood you want to create. Mixing strong colors can cause confusion in the reader's mind. Here are some other tips on how colors subliminally influence people's moods:

- **Yellow implies good cheer and bright spirits.** Use it sparingly, however, because it also "shouts."
- **Reds and oranges generate excitement.** They catch a reader's attention and raise his or her level of anticipation.
- **Blue relaxes and "lowers the temperature."** In its

pure tone, however, it's too intense, so tone it down by diluting it with other colors.

- **Green, like the other colors of nature,** connotes freshness, continuity, and dependability.
- **Purple implies elegance** (a perception dating from medieval times, when purple extracted from abalone shells was used to color the robes of kings and queens).
- **Black, white, and gray are no-frills, no-nonsense colors.** Used with spot colors (about 10 percent of your document), they can have a riveting effect.
- **Mauve, pink, and peach symbolize romance,** and freedom from worry.

No matter what colors you use, Oki Data's printers will help you translate your newfound creativity into "revenue-stream green."



THE  
SOHO  
REPORT

# 2 Techniques for Building a Successful Web Site

It doesn't matter whether you sell a product or service on the Web or in a mall; customers do business with *you*, not your company. Sure, they want the newest listings if you're a real-estate broker, and they want crisp images of your one-of-a-kind paintings if you're an artist.

But at the same time, they want something else from you—a relationship. And that's far more difficult to code.

According to the e-commerce experts, the lack of face-to-face interaction is a major limitation of Web-based commerce. Because anyone can be anyone on the Web, your site's ultimate success depends on the quality of the relationship you establish with your customers. Building trust, confidence, and integrity is where you need to focus your resources.

## Try [www.dellhost.com](http://www.dellhost.com)

DellHost combines the technical expertise of Sprint with the reliability of Dell's high-performance PowerEdge servers. With DellHost's full range of hosting services, you can begin with a very low-cost shared-hosting solution and move up to a dedicated-hosting solution as your business grows. With DellHost, you need never worry about running out of headroom.

DellHost's enhanced dedicated-hosting packages use Dell's legendary PowerEdge servers, fueled by dual 2.4-gigabyte Intel Xeon CPUs. Sporting two 36-gigabyte drives to provide Texas-sized storage, plus 1 gigabyte of RAM for lightning-fast performance, these powerhouse servers can reliably handle everything a transaction-intensive, dynamic e-commerce site demands.

What's more, DellHost leaves nothing to chance when it comes to preserving and protecting your data.

For example, with your dedicated server located in a Sprint data center, you will be directly connected to Sprint's OC-48 Tier 1 Internet backbone for unsurpassed network connectivity. A ring-based SONET architecture assures redundancy. Need

further inducement? New dedicated server accounts can save 50% off the monthly recurring fee on all backup and firewall solutions when ordered with a dedicated solution.

Remember, your site's performance is a vital measure of your credibility and forms an integral part of your relationship with your customer. Selecting the right host will free you to focus your limited energy, time, and dollars where it's needed the most—on building your business—and not on worrying about the tools you use to do it!

### SPONSORED BY:

DellHost  
[www.dellhost.com](http://www.dellhost.com)

**DELLHOST**  
Network by Sprint

## How Do You Create A Successful Site?

### ■ First, just *do it*.

Identify your product and your market. Design some Web pages, select a host, and put the pages on the Web. If you do the work yourself, you can get started in business for a couple of hundred dollars.

■ While it's important for you to thoroughly understand your online business, fortunately it's not necessary for you to understand the underlying technology that powers it. Surprised? Don't be. Actually, that technology is one element you can outsource with confidence. Just make sure, however, that you ally yourself with people who know their stuff. Settle for nothing less than 99.9 percent uptime—anything else will mean lost sales, customers, and opportunities.





## What happens when your online business needs room to grow?

If your Web host is cramping your style instead of helping you manage growth, it may be time for a host you can count on. DellHost™ combines

award-winning Dell™ server technology and the Sprint nationwide Tier 1 digital network to offer tailored small business solutions that are reliable, secure and scalable. You can get the hosting stability and performance you need without the hassle of developing and supporting an expensive infrastructure. Whether your online business is treading water or riding a wave, DellHost can provide the technology and expertise you need to concentrate on your business, not your hosting solution. **To hook up with DellHost, visit [www.DellHost.com/pcworld](http://www.DellHost.com/pcworld) or call (866) 826-6068.**

**DELL HOST™**  
Network by Sprint

Where legendary Dell technology meets the award-winning Sprint network.



# TOP 100

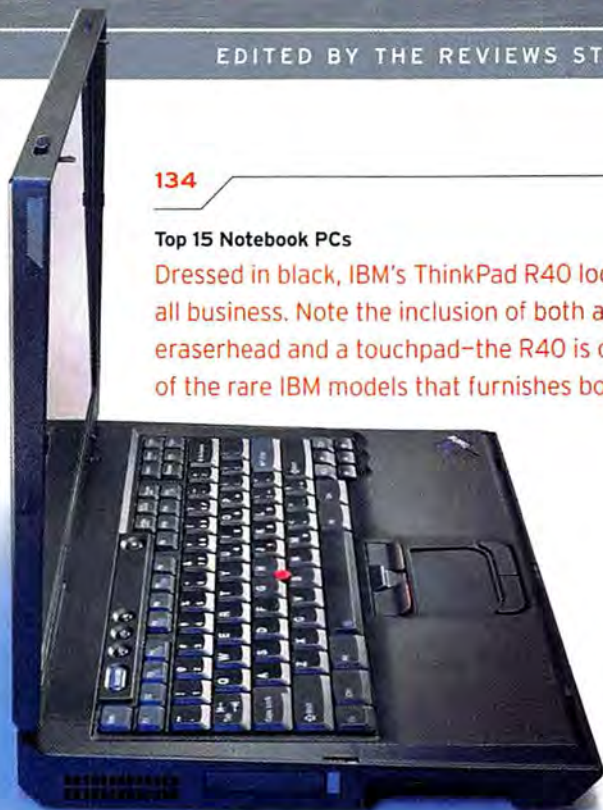
EDITED BY THE REVIEWS STAFF

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- 139 17-INCH LCD MONITORS
- 141 SCANNERS
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- 145 MORE REVIEWS

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## Top 15 Notebook PCs

Dressed in black, IBM's ThinkPad R40 looks all business. Note the inclusion of both an eraserhead and a touchpad—the R40 is one of the rare IBM models that furnishes both.



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## Top 5 Photo Printers

What the heck is that? It's Canon's i70, a portable photo printer that comes with a docking station (the base pictured with it here) so you don't have to fiddle with cords when you head for the road.

## New Business-Class ThinkPad Flies

### TEST Center

**Think about a ThinkPad** if you travel often, even if you're stuck in coach: The new IBM ThinkPad R40 we tested for this month's *Top 15 Notebook PCs* chart rates as one of the fastest portables we've ever tested, yet its battery lasted nearly 3.5 hours—enough to get you from Kansas City to Kalamazoo on a single charge. Five bucks to watch the in-flight movie? The ThinkPad R40's built-in DVD/CD-RW combo drive lets you sit back and watch your own on its 15-inch display.

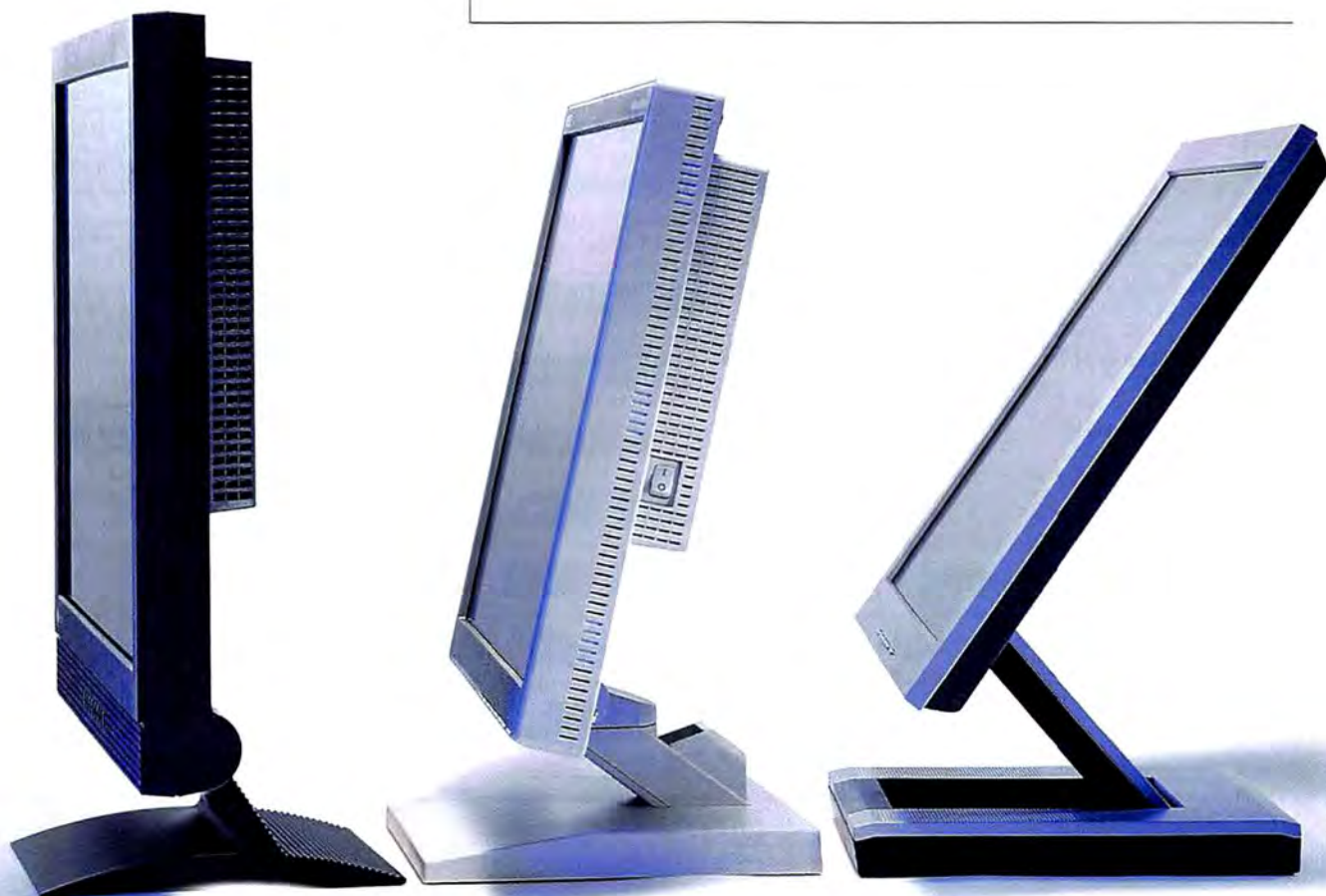
If you like the R40's screen, you'll love the 17-inch LCDs from the *Top 10 Monitors* chart. The Best Buy Dell 1702FP costs only \$549.

Freelance writers Richard Jantz, Dan Littman, Mick Lockey, and Carla Thornton, and PC World reviews editors Richard Baguley, Tracey Capen, Seán Captain, Rebecca Freed, Alexandra Krasne, Melissa J. Perenson, and Alan Stafford contributed to the Top 100 section this month. Ulrike Diehlmann, Julio Giannobile, Elliott Kirschling, Jeff Kuta, Tony K. Leung, and Thomas Luong of the PC World Test Center performed testing on the products reviewed in this section, with logistical support provided by Julian Weatherby.



### Top 10 Monitors

You do not have to put your LCD in the upright and locked position: Like most flat-panel monitors, Eizo Nanao's FlexScan L565, NEC-Mitsubishi's MultiSync LCD1760V, and Samsung's SyncMaster 172B (shown left to right) tilt to improve viewing angle. The L565 costs \$799—not a bad price for a 17-inch LCD six months ago, but another model on the chart costs half that.



## YOUR GUIDE TO THE TOP 100

EACH MONTH, WE TEST a large number of PCs, printers, monitors, and other products. Only the best products land on the charts, which are refreshed monthly.

System configurations are shown as tested. The overall rating for each product is calculated on a 100-point scale and reflects results from our hands-on evaluations

and performance tests. A 90-point score is exceptional, while one in the 70s is above average.

The PC WorldBench 4 score is a measure of how fast a PC can run a mix of common business applications as compared with our baseline machine, a Gateway Select 1200 with a 1.2-GHz Athlon processor, 128MB of PC133

SDRAM, and a 20GB hard drive. For example, a PC that scores 120 is 20 percent faster than the baseline system. The support policies score is based on vendor support policies (not shown on charts). Please see [find.pcworld.com/15720](http://find.pcworld.com/15720) for additional details on how we compile charts for the Top 100.

### Top 10 Scanners

The HP Scanjet 5550c looks like it has its flaps up, but the contraption atop this \$300 scanner is an automatic document feeder, a rarity among the small-office models we've tested.





## TOP 15 DESKTOP PCs

POWER SYSTEM		Overall rating	Street price (2/21/03)	PC WorldBench 4 performance score <sup>1</sup>	Faster	Comments
1	<b>Best Buy</b> Dell Dimension 8250 <a href="http://find.pcworld.com/32546">find.pcworld.com/32546</a>	89	Very expensive \$3158	Windows XP Home Good 123		Fourth-time Best Buy boasts a great-looking, large LCD that produces vibrant colors. (★★★★★ Feb 03)
2	Sys Technology Performance 3000+ <a href="http://find.pcworld.com/34112">find.pcworld.com/34112</a> <b>NEW</b>	87	Expensive \$2995	Windows XP Professional Outstanding 136		The latest Sys posted one of the top PC WorldBench 4 scores. Its six-speaker sound system has plenty of oomph, as well. (★★★★★)
3	Micro Express MicroFlex 27A <a href="http://find.pcworld.com/32897">find.pcworld.com/32897</a>	85	Inexpensive \$2199	Windows XP Professional Very good 130		One of the chart's fastest units running business applications is also quick at gaming. Includes a 19-inch LCD monitor. (★★★★★ Mar 03)
4	ABS Awesome 3330 <a href="http://find.pcworld.com/32549">find.pcworld.com/32549</a>	84	Inexpensive \$2039	Windows XP Home Good 124		Swift system performed especially well in our gaming graphics tests; includes two hard drives in a RAID array. (★★★★★ Feb 03)
5	Gateway 700XL <a href="http://find.pcworld.com/32552">find.pcworld.com/32552</a>	82	Very expensive \$3354	Windows XP Home Fair 119		Price falls \$145 on this loaded model with a huge LCD, two 200GB hard disks, and a cordless keyboard and mouse. (★★★★★ Feb 03)
6	MPC Millennia 910i Xtreme <a href="http://find.pcworld.com/34301">find.pcworld.com/34301</a>	82	Expensive \$3292	Windows XP Professional Good 123		After missing the chart last month, this feature-packed PC earns a spot thanks to an impressive price drop of nearly \$650. (★★★★★ Apr 03)
7	Polywell Poly 880NF2-2700 <a href="http://find.pcworld.com/32900">find.pcworld.com/32900</a>	82	Inexpensive \$2289	Windows XP Home Good 128		This Poly earned high marks on graphics tests, but text on our review unit's monitor could have looked better. (★★★★★ Mar 03)
Percent of overall rating ▶			10 percent	25 percent		
VALUE SYSTEM		Overall rating	Street price (2/21/03)	PC WorldBench 4 performance score <sup>1</sup>	Faster	Comments
1	<b>Best Buy</b> ABS Awesome 3380 <a href="http://find.pcworld.com/34118">find.pcworld.com/34118</a> <b>NEW</b>	85	Expensive \$1749	Windows XP Home Outstanding 132		This value screamer beat all but the fastest power systems in our speed tests. It also posted top-end graphics scores. (★★★★★)
2	Dell Dimension 4550 <a href="http://find.pcworld.com/34106">find.pcworld.com/34106</a> <b>NEW</b>	85	Expensive \$1541	Windows XP Home Very good 122		Latest update of Dell's venerable value PC boasts better performance, advanced graphics, and a great 19-inch flat-screen CRT. (★★★★★)
3	Micro Express Microflex 24A <a href="http://find.pcworld.com/32891">find.pcworld.com/32891</a>	81	Very inexpensive \$999	Windows XP Home Outstanding 131		Still one of the speediest models on the chart, this low-cost machine offers plenty of bang for the buck. (★★★★★ Mar 03)
4	Freeway Innovation A4800M <a href="http://find.pcworld.com/32894">find.pcworld.com/32894</a>	78	Inexpensive \$1259	Windows XP Home Good 116		This model provides all-around solid performance and an excellent audio system; also includes free shipping. (★★★★★ Mar 03)
5	Polywell Poly 884RF-2600 <a href="http://find.pcworld.com/31982">find.pcworld.com/31982</a>	77	Average \$1499	Windows XP Professional Very good 124		Strong performer with an adequate 15-inch LCD monitor but a cluttered interior; drops a hefty \$100 this month. (★★★★★ Jan 03)
6	Freeway Gaming Predator PI440-R <a href="http://find.pcworld.com/34193">find.pcworld.com/34193</a> <b>NEW</b>	77	Average \$1399	Windows XP Home Very good 126		Fast PC in a tall black case gives you plenty of expansion room, but you'll have to navigate a crowded interior. (★★★★★)
7	CyberPower XP 8000 Dream <a href="http://find.pcworld.com/33539">find.pcworld.com/33539</a>	77	Very inexpensive \$999	Windows XP Home Fair 110		CyberPower upgrades to a 19-inch monitor this month. System offers expansion room and power for basic tasks. (★★★★★ Apr 03)
8	EMachines T2460 <a href="http://find.pcworld.com/34148">find.pcworld.com/34148</a> <b>NEW</b>	74	Very inexpensive \$900	Windows XP Home Fair 101		Good-looking model's very low price partially makes up for its lackluster performance overall. (★★★★★)
Percent of overall rating ▶			20 percent	20 percent		

Go to [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.

<sup>1</sup> 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 129.

<sup>2</sup> Total capacity in gigabytes (may represent multiple drives).

AMD'S NEW BARTON PROCESSOR debuts on our desktops chart inside a blazingly fast PC from Sys Technology. Powered by the Athlon XP 3000+ CPU, the Sys Performance 3000+ turned in a chart-topping PC WorldBench 4 score of 136, which helps this machine capture second place overall among power systems. It beat

the second-fastest machine on the chart, the new ABS Awesome 3380 (number one on the value side), by 4 points. The Athlon XP 3000+ is one of three new CPUs, developed under the Barton code name, that come with double the Level 2 cache (from 256KB to 512KB) of their



Visit [find.pcworld.com/34304](http://find.pcworld.com/34304) 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 <sup>2</sup>	Monitor	Graphics	Case type <sup>3</sup>				
3.06-GHz Pentium 4	512/ PC1066 RDRAM	200	18-inch LCD	128MB ATI Radeon 9700 Pro	Midsized tower	<b>Very good:</b> 16X DVD-ROM drive, DVD-R/RW drive, V.92 modem, network adapter, Microsoft Office XP Small Business Edition	Very good	Very good	Good/Fair
2.167-GHz Athlon XP 3000+	512/ DDR333 SDRAM	180	17-inch LCD	128MB ATI Radeon 9700 Pro	Midsized tower	<b>Good:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, wireless keyboard and optical mouse, Corel WordPerfect Office 2002	Outstanding	Good	*/
2.17-GHz Athlon XP 2700+	512/ DDR400 SDRAM	120	19-inch LCD	64MB Gainward GeForce4 Ti 4200	Midsized tower	<b>Good:</b> DVD-R/RW drive, 40X/12X/40X CD-RW drive, network adapter	Very good	Good	*/
2.25-GHz Athlon XP 2800+	1024/ DDR400 SDRAM	160	19-inch CRT	128MB ATI Radeon 9700	Tower	<b>Fair:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Outstanding	Good	Fair/Good
3.06-GHz Pentium 4	512/ PC1066 RDRAM	400	19-inch LCD	128MB ATI Radeon 9700	Tower	<b>Outstanding:</b> DVD-RAM/-R drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Microsoft Office XP SBE, Pinnacle Express	Outstanding	Very good	Fair/Fair
3.06-GHz Pentium 4	1024/ DDR333 SDRAM	240	17-inch LCD	128MB Leadtek WinFast A250 Ultra	Midsized tower	<b>Very good:</b> DVD-R/RW drive, 48X/24X/48X CD-RW drive, network adapter, Norton AntiVirus 2002 (90-day intro version), Microsoft Intellitype Pro 2.1	Good	Good	Fair/Fair
2.17-GHz Athlon XP 2700+	512/ DDR333 SDRAM	160	19-inch CRT	128MB Leadtek WinFast A250 Ultra	Midsized tower	<b>Very good:</b> DVD-R/RW drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Outstanding	Good	*/
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 <sup>2</sup>	Monitor	Graphics	Case type <sup>3</sup>				
2.25-GHz Athlon XP 2800+	512/ DDR400 SDRAM	120	19-inch CRT	128MB ATI Radeon 9700 Pro	Midsized tower	<b>Good:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Corel WordPerfect Office 2002	Very good	Very good	Fair/Good
2.67-GHz Pentium 4	512/ DDR333 SDRAM	120	19-inch CRT	128MB ATI Radeon 9700 TX	Midsized tower	<b>Very good:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Logitech Optical Mouse, Microsoft Works Suite 2003	Very good	Very good	Good/Fair
2-GHz Athlon XP 2400+	512/ DDR400 SDRAM	80	17-inch CRT	64MB Leadtek GeForce2 Ultra	Midsized tower	<b>Good:</b> 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.90 modem, network adapter, Ulead VideoStudio 6	Fair	Fair	*/
1.8-GHz Athlon XP 2200+	512/ DDR266 SDRAM	80	15-inch LCD	128MB ATI Radeon 9000 Pro	Midsized tower	<b>Very good:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Open Office suite, Quicken 2003 New User Edition	Good	Good	*/
2.13-GHz Athlon XP 2600+	512/ DDR400 SDRAM	160	15-inch LCD	64MB Leadtek WinFast A250	Midsized tower	<b>Good:</b> 16X DVD-ROM drive, 40X/12X/48X CD-RW drive, V.92 modem, network adapter, Lotus SmartSuite 9.6	Very good	Good	*/
2.8-GHz Pentium 4	512/ PC1066 RDRAM	80	17-inch CRT	64MB Nvidia GeForce4 MX 440	Tower	<b>Good:</b> 16X DVD-ROM drive, 52X/24X/52X CD-RW drive, V.92 modem, network adapter	Good	Fair	*/
2.4-GHz Pentium 4	512/ DDR333 SDRAM	80	19-inch CRT	128MB ATI Radeon 9000 Pro	Midsized tower	<b>Very good:</b> 16X DVD-ROM drive, 48X/16X/48X CD-RW drive, V.92 modem, network adapter, Corel WordPerfect Office 2002	Fair	Fair	*/
2-GHz Athlon XP 2400+	256/ DDR266 SDRAM	60	17-inch CRT	Integrated S3 ProSavage8	Minitower	<b>Very good:</b> 16X DVD-ROM drive, 48X/16X/40X CD-RW drive, V.92 modem, network adapter, Microsoft Works 7 and Money 2003	Poor	Very good	Good/Fair
10 percent						10 percent	10 percent	5 percent	25 percent

<sup>2</sup> 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).

<sup>3</sup> Insufficient data to give a rating.

Athlon XP predecessors. (For more on the Barton processors, including *PC World's* exclusive performance tests, see our April news story "AMD's Latest Is a Winner" at [find.pcworld.com/34310](http://find.pcworld.com/34310).) You will see more Barton-based systems in coming months: MPC, for example,

has discontinued the Millennia 910a configuration that took second place on last month's power list. A new 910a will carry the souped-up AMD processor.

MPC retains a spot on the power lineup with its Pentium 4-based Millennia 910i Xtreme. Originally tested for our April



**THE SYS PERFORMANCE 3000+ smokes the competition and has a stylish LCD.**



## TOP 5 PCs Under \$900

	SYSTEM		Overall rating	Street price (2/21/03)	PC WorldBench 4 performance score <sup>1</sup>	Faster	Comments
1	<b>Best Buy</b> Dell Dimension 2350 <a href="http://find.pcworld.com/34109">find.pcworld.com/34109</a>	NEW	79	Expensive \$887	Windows XP Home	Good 110	Update of an earlier model has better performance, a larger hard drive, and a faster CD-RW drive. (★★★★☆)
2	NuTrend Mega 2 <a href="http://find.pcworld.com/34121">find.pcworld.com/34121</a>	NEW	78	Expensive \$899	Windows XP Home	Outstanding 129	Outperforms some power desktops when running business applications. Neat case easily allows expansion. (★★★★☆)
3	Gateway 300S <a href="http://find.pcworld.com/34127">find.pcworld.com/34127</a>	NEW	78	Expensive \$899	Windows XP Home	Good 109	Handsome system includes a generous software bundle and a monitor that displays very sharp text. (★★★★☆)
4	Polywell Poly 880NF2-2000 <a href="http://find.pcworld.com/34154">find.pcworld.com/34154</a>	NEW	75	Expensive \$899	Windows XP Home	Good 114	Roomy midsize tower unit is one of the first models we've seen with NVIDIA's new integrated graphics and sound. (★★★★☆)
5	Freeway Innovation A7000 <a href="http://find.pcworld.com/32657">find.pcworld.com/32657</a>		74	Average \$769	Windows XP Home	Good 115	Attractively designed PC with a great price for its speed and features; case has plenty of expansion room. (★★★★☆ Feb 03)
Percent of overall rating ▶				15 percent	15 percent		

Go to [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.

<sup>1</sup> 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 129.

<sup>2</sup> Total capacity in gigabytes (may represent multiple drives).

issue, the 910i missed that chart due to its high price; MPC has since slashed the price tag by \$644. The 910i is wrapped in the company's new desktop colors: a beige front panel and a charcoal-gray case.

Two new models fail to make our power

roster. The \$2371 Sys Performance 2700+ is a well-equipped system with a strong PC WorldBench 4 score of 125 and powerful graphics capability, but it is not as compelling as its 3000+ sibling. Meanwhile, the Polywell Poly 7205G-3000 can-

not match the price and performance of the seventh-place Poly 880NF2-2700.

On our value list, outstanding graphics performance and an impressive PC WorldBench 4 score push the ABS Awesome 3380 to the top rank. It's rare to find

## TECH TREND

## Surround Sound Without a Sound Card

MOTHERBOARDS WITH built-in stereo sound have been around for a few years, but many newer systems—such as this month's ABS Awesome 3380—offer integrated 5.1 surround sound (which supports five speakers and a subwoofer). With that kind of acoustic horsepower built-in, do you still need a dedicated sound card?

The most common integrated audio is based on a standard developed by Intel called AC'97, and it comes close to the quality of entry-level cards, such as Creative Labs' Sound Blaster Live. Like the low-end cards, AC'97-based integrated sound chips fully support the 16-bit audio of music CDs, and can

even drive specialized connections favored by some audiophiles, such as S/PDIF for sending digital output to a home stereo system.

For music lovers and gamers, however, a dedicated card is worth the added cost. Creative Labs' latest Audigy 2 sound cards, for example, support the 24-bit sound found on (still rather rare) DVD audio discs, and they provide features for enhancing both music and games—such as a large stock of prerecorded audio effects and a memory controller for handling multiple sound streams at once.

Integrated audio keeps improving, however. Intel promises that its next system chip sets, code-named Springdale and Canterwood, will provide better sound (though full details were not available at press time). Intel is also developing a successor to the AC'97 standard, code-named Azalia, that will support 24-bit, 7.1 surround sound. And Via Technologies is promising similar specs for its Envy24PT controller, which should start appearing on motherboards later this year.

A downside of integrated audio is the challenge of setting it up. A sound card has ports (usually color-coded) for each connection, such as front speakers, subwoofer, and microphone. Because of the cramped space on motherboards, however, many integrated sound systems have a limited number of ports, which do double duty. For example, one port may serve as either the microphone or the subwoofer connection, depending on how you configure it.



ABS AWESOME 3380 with 5.1 sound.



Visit [find.pcworld.com/34307](http://find.pcworld.com/34307) 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 (GB) <sup>1</sup>	Monitor	Graphics	Case type <sup>1</sup>				
2.4-GHz Pentium 4	256/DDR266 SDRAM	60	17-inch CRT	Integrated Intel 845G using main memory	Minitower	<b>Very good:</b> 24X-48X CD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Corel WordPerfect Productivity Suite	Poor	Good	Good/Fair
2-GHz Athlon XP 2400+	512/DDR400 SDRAM	60	17-inch CRT	64MB Asus V9180TD	Midsized tower	<b>Very good:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter, Corel WordPerfect Office 2002	Fair	Very good	+/
2.4-GHz Pentium 4	256/DDR333 SDRAM	40	17-inch CRT	Integrated Intel 845G using main memory	Minitower/desktop <sup>1</sup>	<b>Good:</b> 16X DVD-ROM drive, V.92 modem, network adapter, Microsoft Works 7, Corel WordPerfect Productivity Pack	Fair	Very good	Fair/Fair
1.67-GHz Athlon XP 2000+	256/DDR333 SDRAM	80	17-inch CRT	Integrated NVidia NForce2 using main memory	Midsized tower	<b>Good:</b> 16X DVD-ROM drive, 48X/16X/48X CD-RW drive, V.92 modem, network adapter, Lotus SmartSuite 9.7	Fair	Good	+/
1.67-GHz Athlon XP 2000+	512/PCI33 SDRAM	40	17-inch CRT	64MB ATI Radeon 7000	Minitower	<b>Good:</b> 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Poor	Good	+/
10 percent						10 percent	10 percent	15 percent	25 percent

<sup>1</sup> 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).

<sup>1</sup> Insufficient data to give a rating.

<sup>1</sup> Case can be placed in either orientation.

## TOP 5 CORPORATE PCs

[find.pcworld.com/32114](http://find.pcworld.com/32114)

**1 Best Buy** Compag Evo D510 Convertible Minitower  
[find.pcworld.com/32009](http://find.pcworld.com/32009)

**2** Dell OptiPlex GX260  
[find.pcworld.com/30191](http://find.pcworld.com/30191)

**3** Gateway E-6000  
[find.pcworld.com/32012](http://find.pcworld.com/32012)

**4** IBM NetVista M42  
[find.pcworld.com/32015](http://find.pcworld.com/32015)

**5** MicronPC ClientPro 325  
[find.pcworld.com/32018](http://find.pcworld.com/32018)

From the January 2003 Issue

an ATI Radeon 9700 Pro graphics card in a system under \$1800. Another new ABS feature is less pleasing: The company has reduced its standard parts warranty from three years to one year, a change that is in line with a general trend among PC makers. However, ABS does stand out for offering a lifetime labor warranty.

A hair behind the ABS, a new configuration of Dell's Dimension 4550 captures second place. Though it has the same processor as last month's number three model, it comes in 4 points higher on PC WorldBench 4. Some of that gain may arise from the ATI Radeon 9700 TX graphics card that led it to superlative scores in our game tests; the card is a special Dell version of ATI's Radeon 9700 Pro running at a slower clock speed.

Paired with a stellar 19-inch CRT monitor, this Dimension should please gamers without breaking their wallets.

Elsewhere on the value side, Freeway-Tech's towering, black Predator P1440-R takes sixth place—offering both speed and loads of room for further growth (six open drive bays and three open PCI slots). April's second-place EMachines T2200 SE has been discontinued, and the new T2460 slides into the number eight spot. The \$900 price is very appealing, but the unit's performance was ho-hum, netting a PC WorldBench 4 score of just 101.

## CHEAP THRILLS

THE SECOND INSTALLMENT of our *Top 5 PCs Under \$900* chart features four impressive new models. An updated version of the Dell Dimension 2350 takes our Best Buy award thanks to improved performance and Dell's better-than-average reliability record. In the number two slot, the NuTrend Mega 2 proves that speed is not a luxury only for the wealthy. Posting a blistering PC WorldBench 4 score of 129, it trumps several power systems on our standard chart. Another plus: Instead of the integrated graphics found in most low-cost models, the Mega 2 comes with a GeForce4 MX 440-based graphics card. Note, however, that though the Mega 2 outperformed all but one of the systems with integrated graphics in our gaming tests, it's suitable for only casual game

play at best. Like its sibling company, ABS, NuTrend has reduced its parts warranty to one year but is retaining lifetime coverage for labor and tech support.

The number four Polywell Poly 880NF2-2000 has NVidia's new NForce2 system chip set, which uses GeForce4 MX graphics technology but shares a portion of the system's main memory. Overall, the Poly 880NF2-2000 produced slightly higher frame rates than did the NuTrend Mega 2 in our gaming tests. The third-place PC, Gateway's 300S, is a slick-looking silver machine that you can position as either a desktop or a minitower. The unit that we reviewed came with a well-stocked software bundle and a nice 17-inch CRT monitor that produced bright, lifelike colors and very sharp text. ■

## TOP 5 ENTERTAINMENT PCs

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**1 Best Buy** Gateway Media Center PC 500  
[find.pcworld.com/32990](http://find.pcworld.com/32990)

**2** Falcon Northwest Mach V 2800+ DV  
[find.pcworld.com/32987](http://find.pcworld.com/32987)

**3** HP Media Center 883n PC  
[find.pcworld.com/32984](http://find.pcworld.com/32984)

**4** Alienware Area-51  
[find.pcworld.com/30956](http://find.pcworld.com/30956)

**5** Voodoo Computers Egad Obsidian Black  
[find.pcworld.com/30776](http://find.pcworld.com/30776)

From the March 2003 Issue



## TOP 15 NOTEBOOK PCs

POWER NOTEBOOK		Overall rating	Street price (2/19/03)	PC WorldBench 4 performance score <sup>1</sup>	Faster	Comments
1	<b>Best Buy</b> IBM ThinkPad R40 <a href="http://find.pcworld.com/34181">find.pcworld.com/34181</a>	88	Inexpensive \$2149	Windows XP Professional	Very good 107	This well-designed midsize model debuts on top, thanks to its solid performance; Wi-Fi (802.11b) is an extra-cost option. (★★★★☆)
2	Gateway 600X <a href="http://find.pcworld.com/31847">find.pcworld.com/31847</a>	86	Inexpensive \$2099	Windows XP Home	Very good 103	Huge desktop replacement features a jumbo screen and keyboard. It can hold up to two optical drives or three batteries. (★★★★☆ Jan 03)
3	Compaq Evo N610c <a href="http://find.pcworld.com/32228">find.pcworld.com/32228</a>	86	Very inexpensive \$1924	Windows XP Professional	Good 101	A funky silver Wi-Fi module on the lid and dual pointing devices highlight this square black laptop. (★★★★☆ Feb 03)
4	Toshiba Satellite 5205-S503 <a href="http://find.pcworld.com/34163">find.pcworld.com/34163</a>	85	Inexpensive \$2199	Windows XP Home	Very good 104	Has fantastic sound and strong performance—this model can take on almost anything. It's heavy, however, and short on legacy ports. (★★★★☆)
5	MPC TransPort T1000 <a href="http://find.pcworld.com/32822">find.pcworld.com/32822</a>	84	Inexpensive \$2185	Windows XP Professional	Good 99	A silver case and a light-blue keyboard make this a flashy-looking machine; it's relatively light and includes a fingerprint reader. (★★★★☆ Mar 03)
6	Gateway 600XL <a href="http://find.pcworld.com/34214">find.pcworld.com/34214</a>	84	Average \$2499	Windows XP Professional	Very good 107	This wireless-ready desktop replacement boasts a supersize screen and keyboard; like the 600X, it has two flexible modular bays. (★★★★☆)
7	Dell Latitude C640 <a href="http://find.pcworld.com/32825">find.pcworld.com/32825</a>	82	Inexpensive \$2206	Windows XP Professional	Good 98	Basic-black business notebook has flexibility in the form of dual pointing devices, but it's not a multimedia star. (★★★★☆ Mar 03)
Percent of overall rating ▶		15 percent	20 percent			
VALUE NOTEBOOK		Overall rating	Street price (2/19/03)	PC WorldBench 4 performance score <sup>1</sup>	Faster	Comments
1	<b>Best Buy</b> IBM ThinkPad R32 <a href="http://find.pcworld.com/31145">find.pcworld.com/31145</a>	79	Average \$1674	Windows XP Professional	Good 94	This lightweight model has a modular bay, as well as a spacious screen and a comfortable keyboard. (★★★★☆ Dec 02)
2	Compaq Evo N1015v <a href="http://find.pcworld.com/32834">find.pcworld.com/32834</a>	79	Very inexpensive \$849	Windows XP Home	Average 90	Relatively thin notebook has a good-size screen, as well. Plus, a stylish Wi-Fi module sits on the lid. (★★★★☆ Mar 03)
3	Toshiba Satellite Pro 6100 <a href="http://find.pcworld.com/31829">find.pcworld.com/31829</a>	77	Expensive \$1857	Windows XP Professional	Very good 100	Conservative all-black box includes built-in Wi-Fi and a modular bay. A steep \$442 price drop moves this model to the value list. (★★★★☆ Jan 03)
4	Sotec 3120X <a href="http://find.pcworld.com/33761">find.pcworld.com/33761</a>	77	Very inexpensive \$949	Windows XP Home	Average 91	Affordable metallic-gray ultraportable offers a built-in DVD-ROM/CD-RW combo drive and three USB 1.1 ports. (★★★★☆ Apr 03)
5	Compaq Presario 3005US <a href="http://find.pcworld.com/33764">find.pcworld.com/33764</a>	76	Average \$1699	Windows XP Home	Very good 104	Large desktop replacement offers a so-so keyboard but acres of display space on its 16-inch screen. Price falls by \$100 this month. (★★★★☆ Apr 03)
6	Fujitsu LifeBook C Series <a href="http://find.pcworld.com/34277">find.pcworld.com/34277</a>	76	Average \$1699	Windows XP Home	Good 95	Four USB 2.0 ports and a DVD-R/-RW drive highlight this sleekly metallic but slightly heavy laptop. (★★★★☆ Apr 03)
7	Micro Express NP1124A <a href="http://find.pcworld.com/34280">find.pcworld.com/34280</a>	76	Average \$1599	Windows XP Professional	Very good 105	Chunky purple-and-silver unit includes both Secure Digital and Memory Stick slots, and an extrawide touchpad for easier scrolling. (★★★★☆ Feb 03)
8	Sharp Actius MV12W <a href="http://find.pcworld.com/34166">find.pcworld.com/34166</a>	76	Expensive \$1899	Windows XP Professional	Good 99	Light model has a DVD-ROM/CD-RW combo drive and a good keyboard, but its screen area is not as generous as that of larger notebooks. (★★★★☆)
Percent of overall rating ▶		20 percent	15 percent			

Go to [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.

<sup>1</sup> 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 129.

<sup>2</sup> Except where noted, all Intel CPUs are SpeedStep chips, which run at a slower speed on battery power.

<sup>3</sup> In gigabytes.

WE'RE STILL WAITING TO SEE how the first notebooks equipped with Intel's Pentium M processor will stack up on the chart (see our news story "Centrino Notes Raise the Bar" on page 30 for a preview). In the meantime, though, Intel's mobile Pentium 4 CPU continues to dominate. This month sees three new notebooks driven by

the Pentium 4-M processor make their mark on the power side: the IBM ThinkPad R40, the Toshiba Satellite 5205-S503, and the Gateway 600XL.

A medium-size model priced at a moderate \$2149, the R40 is propelled to its Best Buy rank by its balance of price and



Visit [find.pcworld.com/34415](http://find.pcworld.com/34415) for reviews of all products tested this month and ranked in this chart.

BASE CONFIGURATION							Extra features *	Overall design	Battery life (hours:min) *	Average weight (pounds) *	Vendor's reliability/ service
CPU †	Screen (inches)	RAM (MB)	Hard drive ‡	Pointing device	Multi-purpose bays						
2.2-GHz Pentium 4-M	15	256	60	Touchpad, eraserhead	1	Fair: 8X DVD-ROM and 24X/10X/24X CD-RW combo drive, built-in modem and network adapter	Outstanding	Good/ 3:22	Average/ 7.2	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	14.1	256	40	Touchpad	1	Good: 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	15	512	40	Touchpad	1	Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Very good	Good/ 3:32	Heavy/ 8.7	Good/Fair	
2-GHz Pentium 4-M	14.1	256	40	Touchpad	1	Very good: 8X DVD-ROM and 20X/10X/24X CD-RW combo drive, built-in modem and network adapter, Office XP SBE 2002	Very good	Fair/ 2:50	Average/ 7.1	†/†	
2.4-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 2003	Excellent	Good/ 3:00	Very heavy/ 9.8	Good/Fair	
2-GHz Pentium 4-M	14.1	256	40	Touchpad, eraserhead	1	Fair: 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 *	Overall design	Battery life (hours:min) *	Average weight (pounds) *	Vendor's reliability/ service
CPU †	Screen (inches)	RAM (MB)	Hard drive †	Pointing device	Multi-purpose bays						
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 Mobile 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	
2-GHz Pentium 4-M	15	512	60	Eraserhead	1	Fair: 8X DVD-ROM and 8X/8X/24X CD-RW combo drive, built-in modem and network adapter	Very good	Poor/ 1:53	Average/ 7.8	Good/Fair	
1.2-GHz Mobile Celeron *	12.1	256	20	Touchpad	0	Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Fair	Fair/ 2:29	Very light/ 5.0	†/†	
2A-GHz Pentium 4 *	16	512	40	Touchpad	0	Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Fair	Good/ 3:03	Very heavy/ 9.4	Fair/Poor	
1.8-GHz Pentium 4-M	15	256	60	Touchpad	0	Good: DVD-R/-RW drive, built-in modem and network adapter, Microsoft Works 2002	Fair	Good/ 3:18	Heavy/ 8.2	†/†	
2.4-GHz Pentium 4 *	15	512	60	Touchpad	1	Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter	Fair	Fair/ 2:04	Heavy/ 9.0	†/†	
1.13-GHz Pentium III-M	12.1	256	40	Touchpad	1	Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter	Fair	Fair/ 2:50	Very light/ 5.0	†/†	
	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.  
 \* Non-SpeedStep CPU.

\* Single-speed desktop CPU.

performance. Equipped with a 2.2-GHz Pentium 4-M, the R40 scored 107 on PC WorldBench 4, tying a fellow newcomer, the Gateway 600XL, for top performance honors on our chart.

Though several models tested for past charts finally appear in this month's value

rankings, the only newly tested model is Sharp's Actius MV12W. The portable weighs a fairly svelte 5 pounds (as little as 3.6 pounds without its DVD-ROM/CD-RW combo drive and power adapter) and is equipped with Wi-Fi antennas embedded alongside its 12.1-inch screen. ■

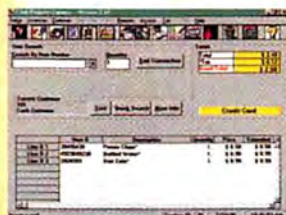
**SHARP'S sleek, silver Actius MV12W.**





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	PHOTO PRINTER	Street price (2/25/03)	Overall rating	Score/speed for photo (ppm)	Print quality for photos	Cost/number of color cartridges	Comments
1	<b>Best BUY</b> Epson Stylus Photo 2200 <a href="http://find.pcworld.com/32093">find.pcworld.com/32093</a>	\$699	85	Fair/0.2	Outstanding	\$12/6	<b>FEATURES:</b> 2880-by-1440-dpi maximum resolution; tabloid maximum paper size; wide format; parallel, USB 2.0, and FireWire ports. <b>SUMMARY:</b> Designed for serious photographers, Epson's Stylus Photo 2200 printed the most detailed photos with the most accurate color of all the printers we've reviewed. (★★★★☆ Jan 03)
2	Epson Stylus Photo 960 <a href="http://find.pcworld.com/32099">find.pcworld.com/32099</a>	\$349	82	Fair/0.5	Outstanding	\$12/5	<b>FEATURES:</b> 2880-by-1440-dpi maximum resolution; tabloid maximum paper size; parallel port; roll paper holder; automatic cutter. <b>SUMMARY:</b> Similar design to that of the more expensive Stylus Photo 2200; produces superb glossy photos, with lifelike color and fine detail. (★★★★☆ Jan 03)
3	Canon i850 Photo Printer <a href="http://find.pcworld.com/32096">find.pcworld.com/32096</a>	\$180	81	Good/0.8	Good	\$12/3	<b>FEATURES:</b> 4800-by-1200-dpi maximum resolution; letter maximum paper size; parallel port. <b>SUMMARY:</b> Fastest photo printer on the chart is a good choice for budget-minded photographers, but photos could be more vivid. Excellent all-around performance. (★★★★☆ Jan 03)
4	HP Photosmart 7550 <a href="http://find.pcworld.com/32102">find.pcworld.com/32102</a>	\$299	79	Fair/0.3	Very good	\$25 1/2	<b>FEATURES:</b> 4800-by-1200-dpi maximum resolution; tabloid maximum paper size; CompactFlash, SD, SmartMedia, and Sony Memory Stick slots; preview monitor; parallel port. <b>SUMMARY:</b> Details in a test photo were sharper than in the original image. Inks can last up to 70 years under glass without fading. (★★★★☆ Jan 03)
5	Canon i70 Color BubbleJet Printer <b>NEW</b> <a href="http://find.pcworld.com/34334">find.pcworld.com/34334</a>	\$299	79	Good/0.7	Very good	\$22/1	<b>FEATURES:</b> 4800-by-1200-dpi maximum resolution; legal maximum paper size; portable; IrDA port (works only with Windows); direct-connect port for Canon digital cameras. <b>SUMMARY:</b> Portable printer competently output text and photos with excellent detail and accurate color in test images. (★★★★☆)

**FOOTNOTE:** \*Cost for standard tricolor cartridge; photo cartridge costs \$35. **HOW WE TEST:** Our test image measures 5 by 7 inches, at 2929 by 2092 dpi. Visit [find.pcworld.com/34616](http://find.pcworld.com/34616) for detailed information on how we test photo printers. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. **CHART NOTES:** The overall rating for each photo printer is based on output (37 percent), features (20 percent), ease of use (14 percent), speed (10 percent), support policies (7 percent), cost of ink (7 percent), and price (5 percent). All units have a USB 1.1 port unless otherwise noted. See [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.

**TEST Center** PORTABLE PRINTERS RARELY earn a place on our charts, and that is especially true of photo printers. But we were impressed with Canon's \$299 i70 portable photo printer. This small box weighs a mere 2.9 pounds and measures 2 inches tall by a foot wide—small enough to take with you to family events or to handle business

applications where a quick print is needed. The best part is that you don't have to remain tethered to a desk to get great prints. Although the i70's test photos appeared a bit too blue, the pictures were detailed, and they rivaled—and in some cases even surpassed—those from standard-size desktop printers. The i70 also produced clean, clear text, making it ideal for times when you need to whip out a fast letter while on the road. An AC power adapter comes bundled with the printer, but for truly convenient printing, Canon sells a Portable Kit, which costs \$100 and includes a rechargeable lithium ion battery that the company says is good for 450 pages of prints on each 2-hour charge.

## TWO NEW MODELS MISS

ANOTHER NEW CANON unit we tested, the \$250 i950 Photo Printer, fell short of the chart. Spitting out photos at 1.5 pages per minute, it's nearly twice as fast as the Canon i850, the speediest model to earn a place on this month's Top 5. The i950 produces prints remarkably quickly, but both Canon's i850 and its i70 did a better job of printing text. The six-color i950 follows the trend of dropping legacy ports—it has a USB 1.1, but no parallel port.

Hewlett-Packard's \$200 Photosmart 7350 also missed the chart. It offers the same high photo print quality and slow speed—just over 0.3 ppm—as the fourth-

place HP Photosmart 7550, but delivers much pokier text printing speed: 1.3 ppm. In our tests, both the 7350 and the 7550 created extremely detailed and sharp glossy photos, with warm skin tones and pleasing colors. And like the 7550, the 7350 offers a plethora of media slots with support for nearly all types of digital camera media, including CompactFlash and SmartMedia. But unlike the Photosmart 7550, the 7350 costs a mere \$200.



**CANON'S i850 PHOTO PRINTER**, the least-expensive model in the Top 5 this month, is also the fastest printer on the chart.



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# TOP 10 MONITORS

Visit [find.pcworld.com/34553](http://find.pcworld.com/34553) for reviews of all products tested this month and ranked in this chart.

PRICES FOR FLAT-PANEL monitors haven't flattened out: On average, they've plunged nearly 50 percent in a little more than a year. The Hansol H750, for example, costs a mere \$389—one of the lowest prices we've seen for a 17-inch LCD. Other flat-panels debuting this month, such as NEC's Multi-

Sync LCD1760V, boast improvements like faster pixel redraw rates, a relatively recent development. Even so, our top Best Buy recommendation goes to the Dell UltraSharp 1702FP, a sturdily built, no-frills panel that blends top-notch image quality, a competitive price, and outstanding support.

	17-INCH LCD MONITOR	Street price (2/24/03)	Overall rating	Quality of text/graphics	Comments
1	<b>Best Buy</b> Dell UltraSharp 1702FP <a href="http://find.pcworld.com/19922">find.pcworld.com/19922</a>	\$549	90	Very good/ Very good	<b>FEATURES:</b> 17-inch viewable area, 17.3 by 8.7 by 18.1 inches, 18.5 pounds, dual video inputs, TCO'95-compliant, three-year warranty, 24-hour daily toll-free tech support. <b>SUMMARY:</b> Midnight-gray model is bulkier than most, but it's priced well, and it garnered the second-highest scores for graphics quality. The six-button controls are easy to navigate and use. Retested this month. (★★★★☆)
2	<b>Best Buy</b> Samsung SyncMaster 172T <a href="http://find.pcworld.com/31385">find.pcworld.com/31385</a>	\$680	88	Very good/ Very good	<b>FEATURES:</b> 17-inch viewable area, 15.2 by 8.5 by 15.6 inches, 10.3 pounds, dual video inputs, TCO'95-compliant, three-year warranty, 24-hour daily toll-free tech support. <b>SUMMARY:</b> Svelte silver-tone model's unique hinged folding base allows it to extend up and out. Colors looked bold and bright on test photo screens, and text quality shone on business-document screens. Retested this month. (★★★★☆)
3	Samsung SyncMaster 172B <a href="http://find.pcworld.com/34136">find.pcworld.com/34136</a>	<b>NEW</b> \$599	87	Very good/ Very good	<b>FEATURES:</b> 17-inch viewable area, 15.1 by 8.5 by 15.6 inches, 10.3 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. <b>SUMMARY:</b> This stylish, thin-bezeled unit rendered the best overall text and graphics among models here with only an analog video input. The built-in speakers emitted so-so sound. Extras include a headphone jack and a thumbwheel volume control. (★★★★☆)
4	Eizo Nanao FlexScan L565 <a href="http://find.pcworld.com/34169">find.pcworld.com/34169</a>	<b>NEW</b> \$799	87	Outstanding/ Outstanding	<b>FEATURES:</b> 17-inch viewable area, 15 by 7 by 16.4 inches, 12.8 pounds, dual video inputs, MPRII compliant, three-year warranty, 8-hour weekday toll-free tech support. <b>SUMMARY:</b> Very expensive black display feels sturdily constructed. Colors looked rich and vibrant, and text was crisp. Icons on the screen-control buttons are difficult to see. The built-in speakers produced subpar sound. (★★★★☆)
5	NEC MultiSync LCD1760V <a href="http://find.pcworld.com/34133">find.pcworld.com/34133</a>	<b>NEW</b> \$530	86	Very good/ Very good	<b>FEATURES:</b> 17-inch viewable area, 14.7 by 7.7 by 15.1 inches, 11.7 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. <b>SUMMARY:</b> The unit's silver-framed bezel is easy on the eyes. Text appeared sharp on business-document screens, but graphics looked excessively bright. Downloadable software helps adjust on-screen images via mouse and keyboard. (★★★★☆)
6	LG Electronics L1710B <a href="http://find.pcworld.com/34142">find.pcworld.com/34142</a>	<b>NEW</b> \$500	85	Very good/ Very good	<b>FEATURES:</b> 17-inch viewable area, 14.6 by 8.8 by 16.6 inches, 14.5 pounds, dual video inputs, three-year warranty, 13-hour weekday, 8-hour Saturday toll-free tech support. <b>SUMMARY:</b> Less expensive than others with dual video inputs, this unit displayed natural-looking colors on photo test screens. Two USB 1.1 ports are a nice extra at this price. Colorific software helps match screen colors to print jobs. (★★★★☆)
7	Hitachi CML1745XW <a href="http://find.pcworld.com/34130">find.pcworld.com/34130</a>	<b>NEW</b> \$575	85	Very good/ Good	<b>FEATURES:</b> 17-inch viewable area, 14.7 by 8 by 15.5 inches, 11 pounds, dual video inputs, three-year warranty, 12-hour weekday toll-free tech support. <b>SUMMARY:</b> Generic-looking model displayed crisp text on test screens. Colors were less vibrant than those on competing products. The on-screen display menu is well designed and boasts three presets for sharpening text and graphics. (★★★★☆)
8	ViewSonic VG700 <a href="http://find.pcworld.com/34202">find.pcworld.com/34202</a>	\$469	85	Very good/ Good	<b>FEATURES:</b> 17-inch viewable area, 16.6 by 7.5 by 16.1 inches, 17.2 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. <b>SUMMARY:</b> Black with silver accents, this sporty-looking LCD displayed crisp text. Reds and yellows looked warm, but facial tones had a pinkish cast. Extensive on-screen controls and an intuitive menu design make adjustments easy. Retested this month. (★★★★☆)
9	Hansol H750 <a href="http://find.pcworld.com/34331">find.pcworld.com/34331</a>	<b>NEW</b> \$389	85	Very good/ Fair	<b>FEATURES:</b> 17-inch viewable area, 15 by 6.6 by 16.4 inches, 12.7 pounds, analog video input, three-year warranty, 9-hour weekday toll-free tech support. <b>SUMMARY:</b> This gray flat-panel carries a jaw-droppingly low price. It handled text screens easily. Its graphics quality lagged behind others', with muted and unnatural-looking colors on some photo screens. Built-in speakers emitted tinny sound. (★★★☆☆)
10	ViewSonic VE175 <a href="http://find.pcworld.com/34199">find.pcworld.com/34199</a>	<b>NEW</b> \$439	84	Very good/ Fair	<b>FEATURES:</b> 17-inch viewable area, 16.3 by 9.1 by 16.5 inches, 13.6 pounds, analog video input, three-year warranty, 24-hour daily toll-free tech support. <b>SUMMARY:</b> Appealingly priced, this no-frills model lacks the high style of many others, including its VG700 sibling. Small letters and fonts were legible on Web and document screens. Colors looked wan compared to others, however. (★★★☆☆)

**FOOTNOTE:** \* Includes both digital (DVI) and analog inputs. The digital input must be used with a graphics card that has a digital output. **HOW WE TEST:** Twelve judges rate how well each monitor displays 13 text and graphics images at a native resolution of 1280 by 1024. Some test screens are from the DisplayMate for Windows Multimedia Edition utility ([www.displaymate.com](http://www.displaymate.com)). See [find.pcworld.com/34613](http://find.pcworld.com/34613) for more details on how we test monitors. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. **CHART NOTES:** Overall ratings are based on text and graphics quality (20 percent each), price (25 percent), features and ease of use (20 percent), and service and support (15 percent). All monitors are TCO'99-compliant unless otherwise stated. Monitor dimensions are given as width by depth by height; measurements include the base. See [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.



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# TOP 10 SCANNERS

TOP 100

TEST  
Center

Visit [find.pcworld.com/34424](http://find.pcworld.com/34424) for reviews of all products tested this month and ranked in this chart.

EPSON RAISES THE STAKES on scanner resolution this month with a 3200-dpi optical model, which debuts as our new Corporate Best Buy. It has a 4-by-9-inch transparency area as well as a generous software bundle. Meanwhile, HP's

new Scanjet 5550c, with its 35-page-capacity automatic document feeder, provides an affordable option for small offices that need to scan a lot of documents quickly. Microtek's ScanMaker 6800 replaces the ScanMaker 6700.

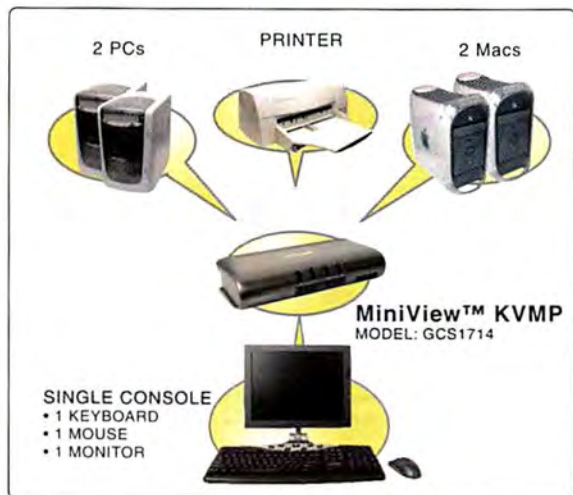
SMALL-OFFICE SCANNER		Street price (2/26/03)	Overall rating	Scan quality (color/monochrome)	Scan speed (color/monochrome, in seconds per document)	Comments
1	<b>Best Buy</b> Epson Perfection 1660 Photo <a href="http://find.pcworld.com/31166">find.pcworld.com/31166</a>	\$149	81	Very good/ Very good	41/14	<b>FEATURES:</b> USB 2.0, USB 1.1, 1600 by 3200 dpi, 10.9-by-4.6-by-17.7-inch case, 6.8 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; no ADF. <b>SUMMARY:</b> Quick scans and great all-around image quality make for an excellent value. Price drops \$30. (★★★★☆ Dec 02)
2	Canon CanoScan 5000F USB <a href="http://find.pcworld.com/34409">find.pcworld.com/34409</a> <b>NEW</b>	\$200	80	Outstanding/ Outstanding	35/24	<b>FEATURES:</b> USB 2.0, USB 1.1, 2400 by 4800 dpi, 10.9-by-4.2-by-20-inch case, 7.5 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; no ADF. <b>SUMMARY:</b> This Canon impressed judges with its fine image quality, dazzling color fidelity, and good detail, plus fairly speedy scans. (★★★★☆)
3	Visioneer OneTouch 9000 USB <a href="http://find.pcworld.com/29882">find.pcworld.com/29882</a>	\$100	78	Fair/ Fair	36/25	<b>FEATURES:</b> USB 2.0, USB 1.1, 1200 by 4800 dpi, 11.9-by-2.6-by-17-inch case, 5.1 pounds, 8.5-by-11.7-inch scanning area; no transparency adapter or ADF. <b>SUMMARY:</b> A low price and generous software make this model a good value. Its image quality could be better, though. (★★★☆☆ Sept 02)
4	HP Scanjet 5500c <a href="http://find.pcworld.com/31163">find.pcworld.com/31163</a>	\$300	78	Good/ Very good	21/17	<b>FEATURES:</b> USB 2.0, USB 1.1, 2400 by 2400 dpi, 12.2-by-6.7-by-21.6-inch case, 11.6 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; no ADF. <b>SUMMARY:</b> Home-oriented unit with snapshot feeder reigns as speed champ; like other HPs, it makes terrific gray-scales. (★★★★☆ Dec 02)
5	Microtek ScanMaker 4900 <a href="http://find.pcworld.com/29124">find.pcworld.com/29124</a>	\$150	77	Good/ Good	39/42	<b>FEATURES:</b> USB 1.1, 2400 by 4800 dpi, 11.8-by-2.4-by-19.3-inch case, 5.7 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; no ADF. <b>SUMMARY:</b> Solidly constructed scanner provides great-looking color photos in a hurry, but its quick-start buttons can be tricky to configure. (★★★★☆ Aug 02)
6	Canon CanoScan Lide 30 USB <a href="http://find.pcworld.com/29883">find.pcworld.com/29883</a>	\$80	76	Outstanding/ Very good	109/43	<b>FEATURES:</b> USB 1.1, 1200 by 2400 dpi, 10-by-1.3-by-15.1-inch case, 3.3 pounds, 8.5-by-11.7-inch scanning area; no transparency adapter or ADF. <b>SUMMARY:</b> The CIS-based Lide 30 has a slim profile and produces vivid, accurate color. But this unit ranks among the slowest we've tested. (★★★☆☆ Sept 02)
7	HP Scanjet 5550c <a href="http://find.pcworld.com/34406">find.pcworld.com/34406</a> <b>NEW</b>	\$300	76	Good/ Very good	35/19	<b>FEATURES:</b> USB 2.0, USB 1.1, 2400 by 2400 dpi, 19.2-by-6.3-by-13.4-inch case, 16.9 pounds, 8.5-by-11.7-inch scanning area; optional transparency adapter; includes ADF. <b>SUMMARY:</b> The only SOHO model we've seen lately with an ADF, this HP posted middling image-quality scores. (★★★☆☆)
CORPORATE SCANNER		Street price (2/26/03)	Overall rating	Scan quality (color/monochrome)	Scan speed (color/monochrome, in seconds per document)	Comments
1	<b>Best Buy</b> Epson Perfection 3200 Photo <a href="http://find.pcworld.com/33827">find.pcworld.com/33827</a> <b>NEW</b>	\$399	84	Very good/ Very good	52/15	<b>FEATURES:</b> USB 2.0, USB 1.1, FireWire, 3200 by 6400 dpi, 11.9-by-4.8-by-18.7-inch case, 13.2 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; no ADF. <b>SUMMARY:</b> Even with extra resolution, the Perfection 3200 was reasonably speedy. We expected to see better-looking photos. (★★★★☆)
2	Microtek ScanMaker 6800 <a href="http://find.pcworld.com/34400">find.pcworld.com/34400</a> <b>NEW</b>	\$399 (with FireWire card)	82	Very good/ Good	39/42	<b>FEATURES:</b> USB 2.0, USB 1.1, FireWire, 2400 by 4800 dpi, 11.4-by-4.5-by-19.7-inch case, 8.1 pounds, 8.5-by-11.7-inch scanning area; includes transparency adapter; optional ADF. <b>SUMMARY:</b> Microtek's newest professional-level scanner includes Digital ICE, an automated scratch- and tear-fixing technology. (★★★★☆)
3	Microtek ScanMaker 8700 Pro Design <a href="http://find.pcworld.com/15843">find.pcworld.com/15843</a>	\$900 (with FireWire card)	76	Very good/ Good	31/24	<b>FEATURES:</b> USB 1.1, FireWire, 1200 by 2400 dpi, 15.3-by-6.3-by-22.3-inch case, 25.5 pounds, 8.5-by-14-inch scanning area; includes transparency adapter; optional ADF. <b>SUMMARY:</b> The 8700 is still the fastest corporate model here—and the only one with a legal-size scanning bed. (★★★★☆ Aug 02)

**FOOTNOTES:** <sup>1</sup> Tested using USB 2.0 interface. <sup>2</sup> Tested using FireWire interface. **HOW WE TEST:** See [find.pcworld.com/34424](http://find.pcworld.com/34424) for our test methodology. **CHART NOTES:** Scans are of a 2-by-2-inch color photo at 1200 dpi and black-and-white line art at 300 dpi. Case dimensions in order: width, depth, height. See [find.pcworld.com/10860](http://find.pcworld.com/10860) for details on PC World's Star Ratings.





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# TOP 10 DIGITAL CAMERAS

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Visit [find.pcworld.com/34421](http://find.pcworld.com/34421) for reviews of all products tested this month and ranked in this chart.

CAMERAS OF MANY SHAPES and sizes hit the *Top 10 Digital Cameras* chart this month, from the svelte (but expensive) Olympus Stylus 300 Digital to the chunky (but cheap) Fujifilm FinePix 2650 Zoom. At 2.1 inches deep, the Fujifilm is nearly twice as thick as the Olympus. Though the Stylus 300

has a waterproof case and nice features, it took mediocre photos. Canon's S230, meanwhile, is a 3.2-megapixel addition to the company's popular Digital Elph line. The unranked Kyocera FineCam S5 is a 5-megapixel camera priced at under \$500; its hard-to-use controls kept it off the chart.

	CAMERA: UNDER \$500	Street price (3/3/03)	Overall rating	Image quality	Ease of use	Battery life/ shots	Comments
1	<b>Best BUY</b> Olympus C-4000 Zoom <a href="http://find.pcworld.com/30476">find.pcworld.com/30476</a>	\$450	84	Outstanding	Good	Outstanding/ 700	<b>FEATURES:</b> 4-megapixel resolution, 16MB SmartMedia card, 32mm to 96mm focal range, USB and video output, 14 ounces. <b>SUMMARY:</b> Inexpensive for an advanced camera, the C-4000 blends great image quality, manual exposure settings, and a long battery life. Menus can be confusing. (★★★★☆ Nov 02)
2	<b>Best BUY</b> Fujifilm FinePix 3800 Zoom <a href="http://find.pcworld.com/32450">find.pcworld.com/32450</a>	\$330	82	Very good	Good	Outstanding/ 546	<b>FEATURES:</b> 3.24-megapixel resolution, 16MB XD-Picture Card, 38mm to 228mm focal range, USB and video output, 13.8 ounces. <b>SUMMARY:</b> The 3800 has a longer zoom and battery life than most models and is styled like a single-lens reflex camera. Its price has fallen by \$70 since last month. (★★★★☆ Feb 03)
3	Konica Digital Revio KD-400Z <a href="http://find.pcworld.com/32435">find.pcworld.com/32435</a>	\$360	79	Outstanding	Very good	Fair/ 177	<b>FEATURES:</b> 4-megapixel resolution, 16MB Memory Stick media and Secure Digital media slot, 39mm to 117mm focal range, USB and video output, 7.3 ounces. <b>SUMMARY:</b> This camera earned very high image-quality scores, but the documentation is weak and the battery life only fair. (★★★★☆ Feb 03)
4	Fujifilm FinePix 2650 Zoom <b>NEW</b> <a href="http://find.pcworld.com/34388">find.pcworld.com/34388</a>	\$180	79	Good	Good	Good/ 341	<b>FEATURES:</b> 2-megapixel resolution, 16MB XD-Picture Card, 38mm to 114mm focal range, USB and video output, 8.5 ounces. <b>SUMMARY:</b> The FinePix 2650 Zoom produces good-quality images, has a reasonably good battery life, and is attractively priced. It's a bit bulky, however, and the controls are slightly awkward to use. (★★★☆☆)
5	Olympus D-550 Zoom <a href="http://find.pcworld.com/30839">find.pcworld.com/30839</a>	\$290	78	Outstanding	Fair	Very good/ 398	<b>FEATURES:</b> 3-megapixel resolution, 16MB SmartMedia card, 36mm to 100mm focal range, USB and video output, 11.6 ounces. <b>SUMMARY:</b> This boxy camera takes sharp, evenly exposed photos and includes a few extra features, such as a Virtual Mode Dial for fast changes to settings and a panorama mode. (★★★★☆ Oct 02)
6	Fujifilm FinePix A303 <a href="http://find.pcworld.com/32453">find.pcworld.com/32453</a>	\$255	78	Very good	Good	Good/ 353	<b>FEATURES:</b> 3.24-megapixel resolution, 16MB XD-Picture Card, 38mm to 114mm focal range, USB output, 7 ounces. <b>SUMMARY:</b> One of the first cameras to use the new XD media, this unit packs a lot into a small, lightweight package, with above-average image quality. Price falls \$44 this month. (★★★★☆ Feb 03)
7	Canon Powershot S230 Digital Elph <b>NEW</b> <a href="http://find.pcworld.com/34394">find.pcworld.com/34394</a>	\$370	77	Very good	Good	Fair/ 243	<b>FEATURES:</b> 3.2-megapixel resolution, 16MB CompactFlash media, 35mm to 70mm focal range, USB and video output, 7.7 ounces. <b>SUMMARY:</b> This light and compact camera delivers strong image quality and such features as an intuitively designed panorama mode that shows you the previous image for aligning. (★★★★☆)
8	Pentax Optio 330GS <a href="http://find.pcworld.com/33713">find.pcworld.com/33713</a>	\$300	77	Fair	Good	Outstanding/ 631	<b>FEATURES:</b> 3.2-megapixel resolution, 16MB CompactFlash media, 38mm to 114mm focal range, USB and video output, 8.1 ounces. <b>SUMMARY:</b> This point-and-shoot is solid, compact, and fairly easy to use. Its LCD panel folds out for self-portraits, and you can shoot and then view (with an included viewer) 3D images. (★★★★☆ Apr 03)
9	HP Photosmart 720 <a href="http://find.pcworld.com/30494">find.pcworld.com/30494</a>	\$299	77	Very good	Fair	Good/ 306	<b>FEATURES:</b> 3.18-megapixel resolution, 16MB internal memory and Secure Digital media slot, 34mm to 102mm focal range, USB and video output, 12.1 ounces. <b>SUMMARY:</b> This large, relatively heavy model lacks a macro mode, and the controls feel slow, but it takes nice-looking photos. (★★★★☆ Nov 02)
10	Olympus Stylus 300 Digital <b>NEW</b> <a href="http://find.pcworld.com/34391">find.pcworld.com/34391</a>	\$400	75	Fair	Very good	Good/ 286	<b>FEATURES:</b> 3.2-megapixel resolution, 16MB XD-Picture Card, 35mm to 105mm focal range, USB and video output, 6.9 ounces. <b>SUMMARY:</b> A small, sleek, weatherproof camera, the Stylus 300 includes a remote control but produces lackluster images. The panorama mode works only with Olympus memory cards. (★★★★☆)

**HOW WE TEST:** To gauge picture quality, we take a series of shots, with and without flash, at 640 by 480 resolution and at the camera's highest resolution. We photograph a complex still life and a mannequin to see how well each camera captures details and subtle colorings such as skin tones. A panel of judges reviews the on-screen and printed photos and assigns image-quality scores; we then average those scores. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. **CHART NOTES:** Each camera's overall rating is based on price (25 percent), picture quality (20 percent), ease of use (15 percent), features (20 percent), battery life (10 percent), and support (10 percent). For all ratings, higher is better. Camera resolutions are expressed in effective pixels, focal range is identified as 35mm equivalent, and camera weights include batteries. For details on PC World's Star Ratings, see [find.pcworld.com/10860](http://find.pcworld.com/10860).



# Hawking's Carefree Wireless Stay Connected Anywhere, Anytime.

## Your office network

Your office



**H-WU36D:** Hi-Gain 6dB Directional Wireless USB Network Adapter



**H-AI65D:** 6dB Indoor Directional Antenna



**H-AI65I:** 6dB Indoor Omni Directional Antenna



**H-AO14SD:** 14dB Outdoor Directional Antenna



**H-AO85I:** 8dB Outdoor Omni Directional Antenna



**H-WU36D:** 6dB Directional Wireless USB Adapter



Wireless Router



**WB320:** Wireless Bridge



**WU250:** Wireless USB Network Adapter



**H-WP102:** Wireless PCI Card



**WE120P:** Wireless CardBus Card

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### HOW IT WORKS



**OMNI-DIRECTIONAL:** MULTI-DIRECTIONAL BOOSTED SIGNAL



**DIRECTIONAL:** STRONG CONCENTRATED BOOSTED SIGNAL



**H-AI65I:** Omni HIGH-GAIN ANTENNA



EXTENDED WIRELESS SIGNAL  
UP TO 100% PERFORMANCE INCREASE

WIRELESS ROUTER



**H-WU36D:** WIRELESS USB NETWORK ADAPTER PLUS 6DB HI-GAIN ANTENNA COMBO



**H-AI65D:** DIRECTIONAL ANTENNA

**H-WP102:** WIRELESS PCI CARD

### WHERE TO BUY

**amazon.com**  
and you're done.

**Fry's**

**Outpost.com**

**CompUSA Business.com**  
THE TOTAL TECHNOLOGY SOLUTION FOR BUSINESS

**COMPUTERS**  
**4sure**  
AN OFFICE MAX COMPANY

**MICRO CENTER**

**PC Mall**

**buy.com**

**CDW**

**Insight**



**CAREFREE**  
▶ WIRELESS  
▶ NETWORKING  
▶ MULTIMEDIA



# MORE REVIEWS

TOP 100

TEST  
Center

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/33971](http://find.pcworld.com/33971) for products on the *Top 10 Color Laser Printers* chart). Next month we'll look at monochrome lasers, 15-inch LCD monitors, and digital cameras \$500 and over.



CRT MONITORS still cost less than LCDs; the priciest unit on our *Top 10 17-Inch CRT Monitors* chart, Sony's CPD-E240, will set you back just \$250.

THE OLYMPUS C-5050 ZOOM takes great digital images, in large part due to its 5-megapixel CCD and its fast lens.



COLOR LASER PRINTERS <a href="http://find.pcworld.com/33971">find.pcworld.com/33971</a>	17-INCH CRT MONITORS <a href="http://find.pcworld.com/34022">find.pcworld.com/34022</a>	REWITABLE DVD DRIVES <a href="http://find.pcworld.com/33869">find.pcworld.com/33869</a>	DIGITAL CAMERAS \$500 AND OVER <a href="http://find.pcworld.com/33392">find.pcworld.com/33392</a>
1 <b>Best BUY</b> Oki Data Oki C7300n <a href="http://find.pcworld.com/33929">find.pcworld.com/33929</a>	1 <b>Best BUY</b> CTX VL700 <a href="http://find.pcworld.com/33725">find.pcworld.com/33725</a>	1 <b>Best BUY</b> Sony DRU-500A <a href="http://find.pcworld.com/31409">find.pcworld.com/31409</a>	1 <b>Best BUY</b> Olympus C-5050 Zoom <a href="http://find.pcworld.com/33212">find.pcworld.com/33212</a>
2 <b>Best BUY</b> Brother HL-4000CN <a href="http://find.pcworld.com/29201">find.pcworld.com/29201</a>	2 <b>Best BUY</b> NEC MultiSync FE791SB <a href="http://find.pcworld.com/30290">find.pcworld.com/30290</a>	2 <b>Best BUY</b> Pioneer DVR-A05 <a href="http://find.pcworld.com/32642">find.pcworld.com/32642</a>	2 <b>Best BUY</b> Nikon Coolpix 4300 <a href="http://find.pcworld.com/32000">find.pcworld.com/32000</a>
3 Lexmark C750n <a href="http://find.pcworld.com/33956">find.pcworld.com/33956</a>	3 Sony CPD-E240 <a href="http://find.pcworld.com/33647">find.pcworld.com/33647</a>	3 Toshiba SD-R5002 <a href="http://find.pcworld.com/32645">find.pcworld.com/32645</a>	3 Canon PowerShot G3 <a href="http://find.pcworld.com/32516">find.pcworld.com/32516</a>
4 Minolta-QMS Magicolor 3100 DN <a href="http://find.pcworld.com/29202">find.pcworld.com/29202</a>	4 Samsung SyncMaster 700NF <a href="http://find.pcworld.com/10571">find.pcworld.com/10571</a>	4 Alera Technologies DVD-R Quad Cruiser <a href="http://find.pcworld.com/33680">find.pcworld.com/33680</a>	4 Fujifilm FinePix S602 Zoom <a href="http://find.pcworld.com/30470">find.pcworld.com/30470</a>
5 Ricoh Aficio CL5000 <a href="http://find.pcworld.com/33947">find.pcworld.com/33947</a>	5 Iiyama Vision Master Pro 413 <a href="http://find.pcworld.com/13260">find.pcworld.com/13260</a>	5 LG Super-Multi DVD-Writer GMA-4020B <a href="http://find.pcworld.com/31067">find.pcworld.com/31067</a>	5 Sony Cyber-shot DSC-F717 <a href="http://find.pcworld.com/31526">find.pcworld.com/31526</a>
6 Minolta-QMS Magicolor 2300 DeskLaser <a href="http://find.pcworld.com/33926">find.pcworld.com/33926</a>	6 Compaq S7500 <a href="http://find.pcworld.com/30239">find.pcworld.com/30239</a>	6 Philips DVDRW 228 <a href="http://find.pcworld.com/31418">find.pcworld.com/31418</a>	6 Nikon Coolpix 4500 <a href="http://find.pcworld.com/30845">find.pcworld.com/30845</a>
7 Oki Data Oki C9500dxn <a href="http://find.pcworld.com/33932">find.pcworld.com/33932</a>	7 NEC MultiSync FE771SB <a href="http://find.pcworld.com/33659">find.pcworld.com/33659</a>	7 CenDyne DVR-105 <a href="http://find.pcworld.com/33677">find.pcworld.com/33677</a>	7 HP Photosmart 850 <a href="http://find.pcworld.com/31994">find.pcworld.com/31994</a>
8 Xerox Phaser 6200n <a href="http://find.pcworld.com/33959">find.pcworld.com/33959</a>	8 Dell M782 <a href="http://find.pcworld.com/21763">find.pcworld.com/21763</a>	8 Memorex DVD+RW/+R Internal ReWritable Drive <a href="http://find.pcworld.com/31421">find.pcworld.com/31421</a>	8 Casio QV-R4 <a href="http://find.pcworld.com/31997">find.pcworld.com/31997</a>
9 HP Color LaserJet 5500n <a href="http://find.pcworld.com/33941">find.pcworld.com/33941</a>	9 KDS USA XF-7b <a href="http://find.pcworld.com/33656">find.pcworld.com/33656</a>	9 Aopen DVRW2412PRO <a href="http://find.pcworld.com/32582">find.pcworld.com/32582</a>	9 Olympus C-50 Zoom <a href="http://find.pcworld.com/33209">find.pcworld.com/33209</a>
10 Lexmark C910n <a href="http://find.pcworld.com/20822">find.pcworld.com/20822</a>	10 AOC 7F <a href="http://find.pcworld.com/33653">find.pcworld.com/33653</a>	10 Panasonic LF-D521 <a href="http://find.pcworld.com/31415">find.pcworld.com/31415</a>	10 Nikon Coolpix 5700 <a href="http://find.pcworld.com/31118">find.pcworld.com/31118</a>
From the April 2003 Issue	From the April 2003 Issue	From the April 2003 Issue	From the March 2003 Issue



# HERE'S HOW

EDITED BY MICHAEL S. LASKY, DENNIS O'REILLY, AND ERIC DAHL



## WINDOWS TIPS

SCOTT DUNN

### Banish Windows Blowups Before They Occur

**ALL  
Versions**

PC MANUFACTURERS and software designers could develop a crash-proof computer, but you'd have to be on *Forbes's* list of the 100 richest people in the world to afford it. Still, there's plenty we regular-Joe and -Josephine PC users can do to keep our machines from aging prematurely, slowing down, or developing the computer equivalent of arteriosclerosis.

The easiest way to keep a PC healthy is to avoid changes: Don't add new hard-

ware or software, ever. In the real world, though, change is inevitable, and the computer industry is a veritable drug pusher when it comes to keeping customers jonesing for ever more upgrades. Here are my golden rules on software updates and maintenance.

**If it ain't broke, don't fix it:** Though Intuit is pushing Quicken 2003, I'm still using Quicken 98 and loving it. Why change?

**Keep your software spy:** One exception to rule number one is to limit your use of

really old 16-bit applications. Generally, your system will be happier with applications designed for today's 32-bit operating systems. Almost all Windows software created in the last five years is 32-bit, but if you're not certain, check the product's manual or the manufacturer's Web site.

**Avoid milestone upgrades:** Don't buy software ending in ".0"—this usually signals new features that may not be adequately debugged. If you really need the software, go for the older version—for example, 2.0c or 2.1 if 3.0 is the latest thing. Not only is it likely to have fewer bugs, but it will also run much faster because it was designed for older machines.

**Watch what you're doing:** Before installing new software, take a snapshot of your system so you can learn how the installer altered it. One great way to view changes made to your Registry is with the freeware utility RegShot (see **FIGURE 1**). Use it just before and after installing software to get a report (in text or HTML format) of the Registry modifications made by the installation. Go to [find.pcworld.com/33461](http://find.pcworld.com/33461) for your copy. If you want to monitor how installers add, remove, or change files on your hard drive, and if you don't mind spending a few bucks, check out this month's *Windows Toolbox*.

**Master maintenance:** Set up an ongoing regimen for system maintenance, including defragmenting your hard disk and checking it for errors. A simple way to automate your PC maintenance chores is to use Windows' Scheduled Tasks feature. You can use Windows' built-in utilities, or visit [find.pcworld.com/33464](http://find.pcworld.com/33464) to check out the third-party maintenance tools recommended in last May's "Tools for Trouble-Free Computing."

**Crush crashes:** Some software claims to



## 146 WINDOWS TIPS

The Eleven Commandments of Windows trouble avoidance; FileWatch keeps tabs on changes to your PC.

## 150 INTERNET TIPS

Stop security patches from disabling important features in your software; a free backup utility for Outlook.

## 152 STEP-BY-STEP

Don't toss that old PC! Convert it to a network file server, print server, or Internet Connection Sharing point.

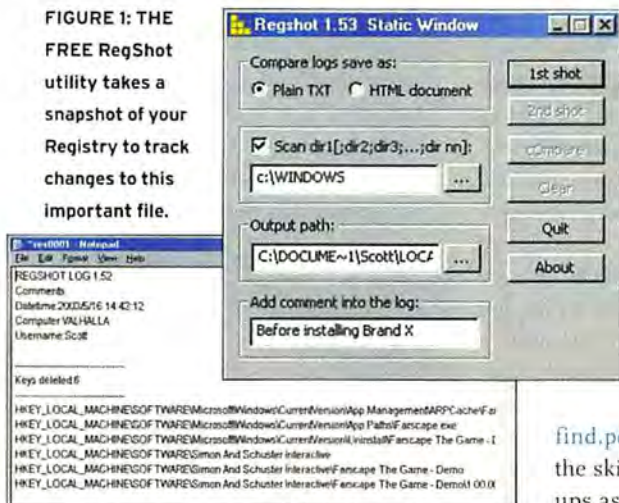
## 154 HARDWARE TIPS

Improve the performance of your hard drive via partitioning; a free utility gives you fast access to system info.

## 156 ANSWER LINE

Keyboard shortcuts from <Alt>-A to <Ctrl>-Z; bring .jpg thumbnails back to Windows Explorer; delete bad AutoComplete entries in IE; fast drive-letter changes in Windows.

FIGURE 1: THE FREE RegShot utility takes a snapshot of your Registry to track changes to this important file.



the Backup tab). This feature allows you to back up your Registry and other critical system files in one step (see FIGURE 2).

If you want to back up just the Registry, go to [find.pcworld.com/33470](http://find.pcworld.com/33470) to read "Care and Feeding of the Windows Registry." Then browse to [find.pcworld.com/33488](http://find.pcworld.com/33488) to get the skinny on all kinds of back-ups as described in last June's

"How to Evade Data Disaster."

**Take your time:** Never install multiple programs or drivers one after the other. Before loading something new, wait several days after an installation to ensure that the program is working and didn't mess up anything else. If you install five programs in one day, you'll have trouble figuring out which is to blame if something goes wrong. Similarly, when manually deleting software or files in your Windows folders, make backup copies of the files on a removable medium or in a temporary folder and wait several days or weeks before deleting the backups, just in case you erase a file you need.

**Get a good driver:** It's surprising the number of seemingly unrelated system problems that can arise from buggy drivers for graphics adapters, sound cards, and other hardware. If you don't know who manufactured your devices, you may be able to find out by peeking into Windows' Device Manager: Right-

click *My Computer* and choose *Properties*. In Windows 9x and Me, click the *Device Manager* tab. In Windows 2000 and XP, click the *Hardware* tab, then the *Device Manager* button. Click the + sign next to any hardware category (or double-click the name) to see a list of components in that category. If the component name doesn't include the name of the manufacturer, right-click the entry and choose *Properties*. The manufacturer's name should be listed on the General tab (see FIGURE 3). Plug the name into your favorite Internet search engine to find the maker's Web site, then search the site to see if any recommended updates are available for the device.

Don't install new drivers willy-nilly, though. Update drivers only if your PC is acting quirky. And as always, keep the old drivers on hand in case you need to revert. The instructions with the new drivers should say what files are being upgraded; if they don't, refer to the next tip.

**Be a pest:** If your PC crashes more often than a remedial driver's ed. student, or if its documentation is unhelpful, tell the manufacturer. In the honey-beats-vinegar department, be sure to let ven-

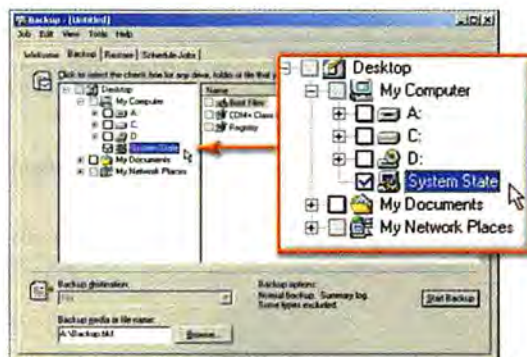


FIGURE 2: BACK UP CRITICAL system files, including the Registry, by selecting the System State option.

prevent crashes—or at least mitigate them. Among other tricks, the programs intercept under-the-hood crash messages as they travel between your applications and Windows, then try to fix the problem before your system freezes up. If the crash stopper can't reverse the damage, it attempts to stall the crash long enough for you to save the files you're working on. One such product is CrashProof, which is part of V Communications' SystemSuite 4. The suite costs \$54 to download from [www.v-com.com](http://www.v-com.com), and \$60 for a CD-ROM (with rescue disc). To get an anticrash program without any other tools, check out TFI Technology's \$30 StayAlive 2002. Go to [find.pcworld.com/33467](http://find.pcworld.com/33467) to download a 30-day trial copy.

**Back(up) to basics:** We've said it before, but we'll say it again. You need to back up your system regularly, as well as those times just before you make any major changes to your computer. The backup utility included with Windows 2000 and XP has a check box for an option called System State (in XP, start in *Advanced Mode* and look under *My Computer* on



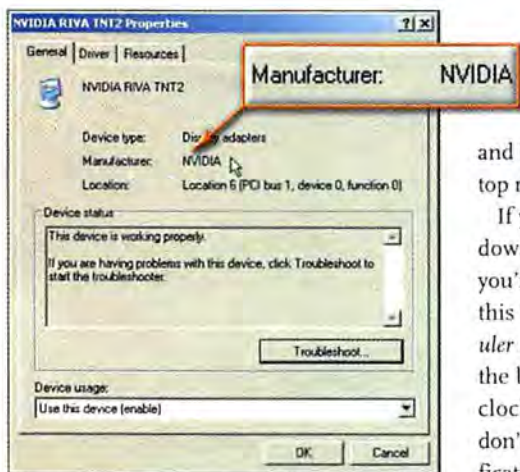


FIGURE 3: FIND YOUR HARDWARE vendors in Device Manager's Properties dialog boxes.

dors know when they do things right, too. **Stay up-to-date:** The Windows Update feature automates downloads of the latest security patches and other fixes for your OS from the Internet. It's generally a good idea to keep up with the most critical fixes (unless you read otherwise in *PC World*). Fortunately, Windows Update doesn't force any download on you, but lets you review each one before installing.

You can check for updates manually by choosing **Start>Windows Update (Start>All Programs>Windows Update** in Windows XP). But it's easier to let Windows do the checking for you. This feature is built into Windows 2000 (service pack 3), Windows Me, and XP. For other Windows versions, you may have to download and install Microsoft Windows Critical Update Notifi-

cation. (If you're not sure which service pack was last applied to Windows 2000, right-click *My Computer* and choose *Properties* and look in the System description in the top right of the dialog box.)

If you use Windows 98, 98 SE, or Windows 2000 (prior to service pack 3) and you're not sure whether you already have this feature, double-click the *Task Scheduler* icon in your system tray (the area on the bottom-right of the screen near your clock), if such an icon is there. If you don't see a Windows Critical Update Notification icon in the Scheduled Tasks window (or if there is no Task Scheduler icon in the tray), then this utility isn't installed.

To install the tool, point your browser to [windowsupdate.microsoft.com](http://windowsupdate.microsoft.com). Although this page changes occasionally, here are the steps as of press time: In the left panel, click *Pick updates to install* to expand that category. Underneath, click your version of Windows (for Windows 9x or 2000) or *Critical Updates and Service Packs* (for Windows 2000 service pack 2). Scroll through the list of recommended updates on the right; when you see Windows Critical Update Notification (9x, 2000) or Windows Automatic Updating (Windows 2000 service pack 2), click *Add* for that item. Select the updates you want, and click *Review and install updates*. When you're done reviewing, click *Install Now*.

If you don't want update alerts, uninstall it: Open Control Panel, double-click *Add/Remove Programs*, select *Microsoft Windows Critical Update Notification*, and click *Add/Remove or Change/Remove*.

With Windows Automatic Updating for Windows 2000 service pack 2, Windows 2000 service pack 3, or Windows Me, turn off automatic updates by opening Control Panel and double-clicking the *Automatic Updates* icon. Select one of the options (I prefer the *Notify* setting) and click OK. In Windows

XP, right-click *My Computer* in Explorer or on the desktop and choose *Properties*. In the System Properties dialog box, click the *Automatic Updates* tab. Make sure

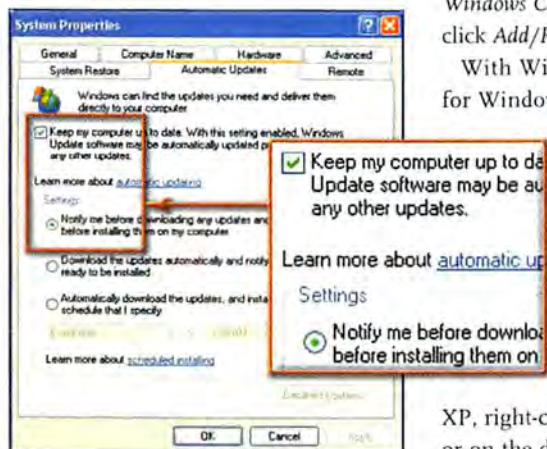


FIGURE 4: ADJUST YOUR WINDOWS Update settings in the System Properties dialog box.

## WINDOWS TOOLBOX

### Keep Tabs on System Changes With FileWatch

IF YOU'RE LIKE ME, you don't trust most installers. Are they putting files where I want them or leaving junk lying around where it's hard to clean up? Maybe you're more concerned about what other users are doing to your computer. Either way, the \$30 FileWatch 5 program from Kevin Gearhart can give you a complete report of changes to your PC in seconds. Start by creating a "catalog" of all disks and folders you want to track (including, but not limited to, removable media). Then when you want a report on what items have been added, removed, or modified,



just open the catalog you want to use as the basis for comparison. FileWatch also tracks changes to Registry entries and files. Go to [find.pcworld.com/33485](http://find.pcworld.com/33485) to download a 30-day trial version.

*Keep my computer up to date* is checked. (If you haven't kept XP up-to-date, you may not see the check box, but you'll still see similar configuration options.) Choose an option (again, *Notify* provides the most control) and click OK (see FIGURE 4).

Windows Update includes Internet Explorer fixes; see *Internet Tips* on page 150 for information on problems related to a recent IE 6 security update.

Send Windows-related questions and tips to [scott\\_dunn@pcworld.com](mailto:scott_dunn@pcworld.com). We pay \$50 for published items. Visit [find.pcworld.com/31607](http://find.pcworld.com/31607) for more Windows Tips. Scott Dunn is a contributing editor for PC World.



# Best of the Best

Use best components to build best systems



Bravado 2240 & Sensation 1300  
March 2003

November 2002

November 2002

January 2003

November 2002

Bravado 2230  
November 2002

Bravado 2230  
November 2002

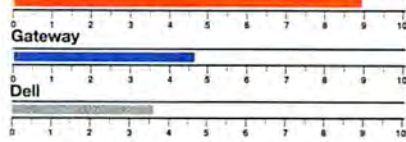


Boost software performance with  
QuantSpeed™ architecture  
Make gaming opponents wish they had an  
AMD Athlon™ XP processor  
3DNow! Professional technology brings digital  
photos and video files to life with rich,  
vibrant colors and textures



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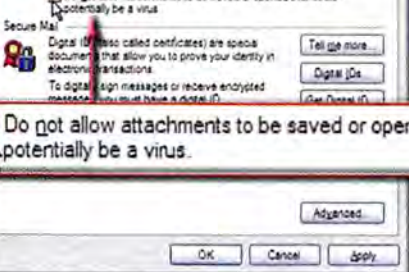
# INTERNET TIPS

SCOTT SPANBAUER

## Avoid the Side Effects of Security Updates

IN THESE DAYS of heightened online security threats, it's a good idea to download and install security updates as soon as software makers release them. Unfor-

tunately, these updates often come with glitches that cause unexpected side effects. Internet Explorer 6 Service Pack 1, which Microsoft posted late last year, is no exception. Soon after the update appeared (it's also part of Windows XP Service Pack 1), I started receiving letters from readers complaining that IE 6's version of Outlook Express could no longer open certain types of file attachments. This is a safety feature Microsoft added to Outlook Express to stop e-mail viruses—and clueless users—from launching attachments that could infect the PC.



**FIGURE 1: YOU CAN OVERRIDE attachment blocking in Outlook Express, if you need to, by disabling it in the Options dialog box.**

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Personally, I think the inability to open file attachments is a limitation we all could live with. Microsoft added the security feature long ago to Outlook 2000 and

2002, and it's never bothered me. I don't need or want to receive as e-mail attachments the kinds of dangerous executable and script files that the feature blocks, and I'm delighted that millions of novice e-mail users can't either. However, if you absolutely must send these kinds of files back and forth (you can find a list of restricted file types at [find.pcworld.com/33662](http://find.pcworld.com/33662)), it's easy to override the restriction.

To completely disable file-attachment restrictions in Outlook Express, choose **Tools>Options**, click the **Security** tab, uncheck **Do not allow attachments to be saved or opened that could potentially be a virus**, and finish by clicking **OK** (see **FIGURE 1**). Alternatively, you can remove certain individual file types from the restricted list. To do so, open an Explorer window (My Computer, for example), choose **Tools>Folder Options**, select the **File Types** tab, locate the file type that you want to remove in the list of registered file types, click the **Advanced** button, uncheck **Confirm open after download**, click **OK**, and then click **Close**.

If the file type that you want to unblock isn't listed, click the **New** button, enter the appropriate file extension, click **OK**, and then modify the **Confirm open after download** setting as described above. Note, however, that some file types, including .exe and .zip files, can't be unblocked—Outlook Express ignores the settings in the File Types dialog box. To open attachments of those types, you must either use the first technique identified above (disable all file-attachment restrictions) or have the sender rename the file with either a different file extension or none at all.

## STICK WITH PLAIN TEXT IN OUTLOOK EXPRESS

WHILE WE'RE ON the subject of safety and Outlook Express, Internet Explorer 6 Service Pack 1 has one more feature that can make OE more secure against mail-borne viruses and Trojan horses.

Flaws in the way Microsoft's mail program automatically renders HTML messages (the ones that have full Web-page graphics and text) allow carefully crafted viruses to launch automatically. But a new feature blocks this automatic rendering; instead it gives you a chance to read the accompanying text-only version of the message (if any) and to open, ignore, or delete the HTML attachment.

To view all incoming e-mail messages as plain text, choose **Tools>Options**, click the **Read** tab, check the **Read all messages in plain text** option under **Reading Messages**, and click **OK**.

Send your questions and tips to [nettips@spanbauer.com](mailto:nettips@spanbauer.com). We pay \$50 for published items. Go to [find.pcworld.com/31523](http://find.pcworld.com/31523) for more Internet Tips. Scott Spanbauer is a contributing editor for PC World.

## OUTLOOK PERSONAL FOLDERS BACKUP

AS AN ADDENDUM to the December 2002 column ("Take Control of Your Inbox and Address Book," [find.pcworld.com/33914](http://find.pcworld.com/33914)), reader Vinny Insinga of Manhasset, New York, offers yet another backup tip for Outlook. Insinga recommends Microsoft's nifty, free Outlook add-in called Personal Folders Backup, which backs up the app's .pst files. Personal Folders Backup works with Outlook 2000 and 2002 and will prompt you to back up your .pst files at the frequency and to the location you specify. Besides backing up your main .pst file, the add-in gives you the choice of backing up any other .pst files stored in the same folder.

Point your browser to [find.pcworld.com/33917](http://find.pcworld.com/33917) to download the 175KB utility and to look at Microsoft's complete instructions for installing, using, and removing Personal Folders Backup.



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## STEP BY STEP

STAN MIASTKOWSKI

## New Tricks for an Old PC

YOU'VE JUST LAID down the bucks for a brand-new, state-of-the-art PC with a warp-speed processor and all the trimmings. You have oodles of RAM and a hard drive with storage space that extends to the horizon. Now, what about the PC it replaced? Do you toss it out, donate it to a charity, or just let it gather dust? How about none of the above? That old computer can make itself useful, especially if you have a home or small-office network.

In *PC World's* September 2002 issue,

Kirk Steers provided some general guidelines in "What Should You Do With Your Old Computer?" (see [find.pcworld.com/34184](http://find.pcworld.com/34184)). This month, we cover the how-to of using your old PC for specific tasks.

Many common computing chores don't require a cutting-edge machine. Practically any old PC can act as a network file server, a network print server, or a sharing point for an Internet connection. A 133-MHz Pentium-based system with 32MB or 64MB of RAM has plenty of power for

## THE TOP DOWN

**Benefits:** No need to toss your old PC.

**Cost:** \$0-\$150

**Expertise level:** Beginner to intermediate

**Time required:** 15 minutes to 2 hours

**Tools required:** Phillips screwdriver, anti-static wrist strap (recommended)

basic network tasks. And Windows 98 SE and Windows Me have sharing capabilities built in. You just need to enable them.

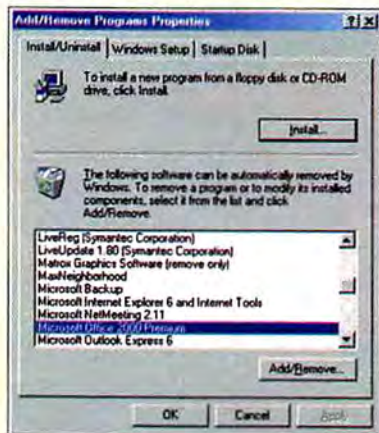
For some projects, you'll need more power—a faster processor, more RAM, and perhaps a hardware upgrade. But the bottom line is that reusing your old PC can add functionality to your computing experience, while making you feel good by keeping hard-to-recycle products away from the landfill.

Stan Miastkowski is a contributing editor for *PC World*. Send questions and comments to him at [stan\\_miastkowski@pcworld.com](mailto:stan_miastkowski@pcworld.com).

## COMMON PREPARATORY TASKS

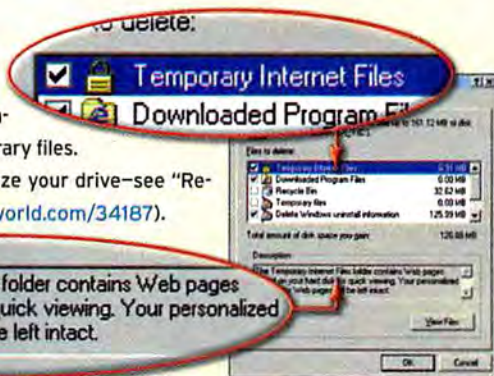
YOU NEED TO perform several steps to prepare your old PC for its new role.

**1 Remove unneeded programs.** If your old PC will merely sit on a network and won't run applications, go to *Start•Settings•Control Panel*, and double-click *Add/Remove Programs* (*Start•Control Panel•Add or Remove Programs* in XP). Uninstall all the programs you won't be using. After you're done, use Windows Explorer to check the Program Files directory for unnecessary data files.



**2 Clean up the drive.** Most hard drives contain large quantities of browser cache and temporary files. To sweep them out—and to optimize your drive—see "Reclaim Hard-Drive Space" ([find.pcworld.com/34187](http://find.pcworld.com/34187)).

The Temporary Internet Files folder contains Web pages stored on your hard disk for quick viewing. Your personalized settings for Web pages will be left intact.



**3 Install a network card.** If your old computer doesn't have a network adapter, you'll need to install one (unless you plan to use your old system as a stand-alone PC). Network adapters are readily available and inexpensive, starting at about \$15.

To install the card, turn off and unplug your PC, and then remove the cover. To avoid static damage, wear an antistatic wrist strap while working inside your PC. Find a free PCI slot, remove its cover, carefully insert the network card into the slot, and fasten it down with a screw. When you restart your PC, Windows should detect the card. Follow the vendor's directions to install the driver.





## PROJECT: NETWORK FILE SERVER

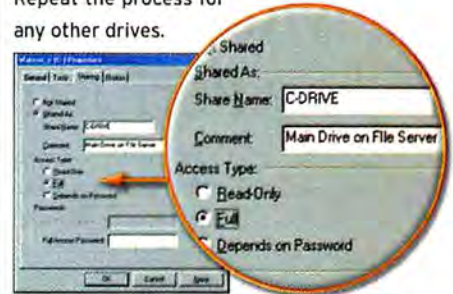
**Processor:** Pentium-133 or above  
**RAM:** 32MB or above  
**Hard drive:** 10GB or above  
**Operating system:** Windows 98 or above  
**Network card required?** Yes  
**Other suggested add-ins:** Large (80GB+) hard drive (\$100 and up)

A NETWORKED PC used to store files does not need a lot of horsepower. If your old PC's hard drive is 20GB or larger, it probably has enough space for basic file sharing and backup. But if you want to store lots of files, make large backups, or share digital media (photos or MP3 files), you'll probably want to install a second, larger-capacity hard drive.

**1 Enable file sharing.** Right-click *Network Neighborhood* (Windows 98) or *My Network Places* (Me, 2000, or XP), and choose *Properties*. In 98 or Me, click the *File and Print Sharing* button, check *I want to be able to give others access to my files*, and click *OK*. In 2000 or XP, right-click your local area connection, select *Properties*, and check *File and Printer Sharing for Microsoft Networks*. Then restart your PC.



**2 Share the drive(s).** Double-click *My Computer*, right-click the icon for the drive or folder that you want to share, and choose *Sharing*. Follow the directions on the screen to set up sharing. You can specify full access, read-only access, or password-based access. Repeat the process for any other drives.



## PROJECT: NETWORK PRINT SERVER

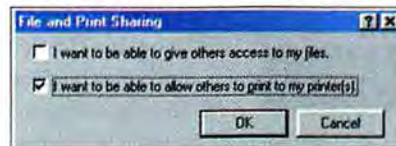
**Processor:** Pentium-133 or above  
**RAM:** 32MB or above  
**Hard Drive:** 1GB or above  
**Operating system:** Windows 98 or above  
**Network card required?** Yes  
**Other required add-ins:** Printer

BUYING A PRINTER for each computer in your home or office can get expensive. It's easier for everyone to share a single printer. You can use an old PC as a print server, and then put the printer in a handy location where everyone has access to it.

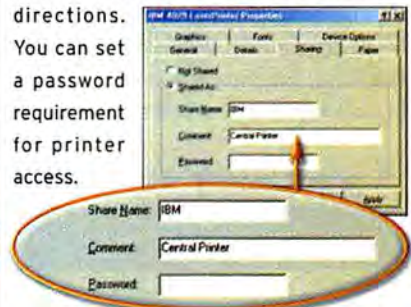
Note that you can combine file and print sharing on one PC.

**1 Install the printer.** Follow the printer manufacturer's directions to hook up your printer and install drivers for it.

**2 Enable printer sharing.** Follow the instructions from the preceding project to enable file sharing. In 98 and Me, also check *I want to be able to allow others to print to my printer(s)* in the dialog box in Step 1 of the project above. Then restart your PC.



**3 Share the printer.** In Windows 98, Me, or 2000, select *Start>Settings>Printers*; in XP, select *Start>Printers and Faxes*. Right-click the icon of the printer you want to share, and choose *Sharing*. Follow the directions. You can set a password requirement for printer access.



## PROJECT: INTERNET CONNECTION SHARING POINT

**Processor:** Pentium-266 or above  
**RAM:** 64MB or above  
**Hard drive:** 5GB or above  
**Operating system:** Windows 98 SE or above  
**Network card required?** Yes  
**Other required add-ins:** Modem, second network card, or USB port

SHARING A NET connection has become increasingly popular in homes and small offices. Sure, you can buy a commercial router as a central connection point for shared broadband or dial-up Internet access, but your old PC makes a perfect low-cost alternative.

**1 Install the modem or network card(s).** If you use a dial-up Internet connection, you'll have to install a modem. If you use a broadband connection, you'll need a network card to connect to your local network (see "Common Preparatory Tasks," Step 3). And you'll need a second network card for the cable or DSL modem, unless you have a USB broadband modem.

**2 Install Internet Connection Sharing.** In 98 or Me, open *Add/Remove Programs* in Control Panel, and select the *Windows Setup* tab. Double-click *Internet Tools* (98) or *Communications* (Me). Check *Internet Connection Sharing*, click *OK*, and run *Internet Connection Sharing Wizard* or *Home Networking Wizard*. In 2000 or XP, right-click *My Network Places*, pick *Properties*, right-click the broadband modem connection, and select *Properties*. In 2000, click the *Sharing* tab, and check *Enable Internet Connection Sharing for this connection*. In XP, click the *Advanced* tab, and select *Allow other network users to connect through this computer's Internet connection*.





## HARDWARE TIPS

KIRK STEERS

# Divide a Disk to Conquer Slow Performance

BIGGER ISN'T ALWAYS better. Today's gargantuan hard drives come from the factory formatted with a single partition and drive letter—the ubiquitous 'C:'. If you split your hard drive into several partitions, each with its own drive letter, you gain speed and free wasted disk space, making file management much easier.

Windows' partitioning tools work well with new or blank hard drives but are impractical for drives that already hold your apps and other data. If you can transfer the files off the drive and back onto it after the repartitioning, these utilities may be worth using. In Windows 9x and Me, run `fdisk`, either from a DOS prompt or by clicking *Start*•*Run* and typing `fdisk` in

PowerQuest's \$70 PartitionMagic 8 lets you easily add, delete, and resize disk partitions without losing data. You can adjust cluster sizes and convert partitions from and to FAT32, the file system that Windows 98 and Me use, and the NT File System, which Windows 2000 uses (XP uses either system). Another good partitioner is V Communications' \$30 Partition Commander. Go to [find.pcworld.com/33923](http://find.pcworld.com/33923) to download a trial version.

## FASTER, SAFER DRIVES

ARE DRIVE PARTITIONS worth the hassle? For many users, yes. Here's why.

**Storage space:** Windows divides your hard drive into segments called *clusters*. When

writing a file to the hard drive, Windows fills as many clusters as it needs to hold the file. The final cluster is only partially filled, so if your drive is formatted with, say, 16KB clusters and you save a 6KB e-mail file, there's 10KB of unused disk space in that cluster.

Multiply that by the thousands of files on a hard drive, and you get a big chunk of wasted storage.

Large partitions under FAT32 require large cluster sizes (see **FIGURE 1**), but cutting your cluster size—from 32KB to 16KB, or even 8KB, for example—can

free a substantial amount of disk space. Partitions with cluster sizes smaller than 8KB won't save much storage space, however.

**Faster performance:** Windows maintains a large file on the hard drive, called a swap file, that extends your PC's physical memory (aka RAM) when you run out. If you place the swap file in its own partition, it will never get fragmented, which will help Windows quickly find data in the file and swap it back to your PC's RAM. Make your swap file's partition at least twice as large as your RAM. Then change the location of your swap file in your Virtual Memory settings to the drive letter of your new partition. In Windows 9x and Me, right-click *My Computer* and choose *Properties*. Click the *Performance* tab and select the *Virtual Memory* button. In Windows 2000, right-click *My Computer*, select *Properties*, choose the *Advanced* tab, click the *Performance Options* button, and select *Change* under 'Virtual memory'. In Windows XP, right-click *My Computer*, choose *Properties*, click the *Advanced* tab, and click the *Settings* button under *Performance*. Now click the *Advanced* tab and the *Change* button under 'Virtual memory'.

**Safer data:** Storing your data files in their own partition can shield them from problems elsewhere on your hard disk. If Windows becomes corrupted, simply reformat and reinstall the OS in its own partition with no fear of losing important data files stored in other partitions. ■

Visit [find.pcworld.com/31511](http://find.pcworld.com/31511) for more Hardware Tips columns. Send your tips and questions to [kirk\\_steers@pcworld.com](mailto:kirk_steers@pcworld.com). We pay \$50 for published items. Kirk Steers is a contributing editor for PC World.

## DON'T WASTE YOUR DISK SPACE

PARTITION SIZE	Default FAT32 cluster size (Windows 98, Me, XP)	Default NTFS cluster size (Windows 2000, XP)
1GB to 2GB	4KB	2KB
2GB to 8GB	4KB	4KB
8GB to 16GB	8KB	4KB
16GB to 32GB	16KB	4KB
32GB to 2TB	32KB	4KB

**FIGURE 1: SMALLER HARD-DRIVE PARTITIONS** maximize the storage available to you by reducing unused cluster space.

the Open text box. In Windows XP and 2000, use the Disk Management tool instead: Right-click *My Computer*, select *Manage*, and click *Disk Management*. Misusing these tools can be disastrous, so consult Microsoft's Knowledge Base first; browse to [find.pcworld.com/33503](http://find.pcworld.com/33503) for more on `fdisk`, and to [find.pcworld.com/33506](http://find.pcworld.com/33506) to learn about Disk Management.

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REASSIGNMENTSUse Your Keyboard for  
Faster Windows Control

I RECENTLY discovered some great new keyboard shortcuts. What are some of your favorites?

*Qing Yuan Ong, Stanford, California*

WE TEND TO THINK of Windows as a mousing environment, but it's often easier to get from place to place, file to file, or app to app using keystroke combinations. Below you

letter in the menu option's name (or the first letter if none is underlined). For example, to get to the Run box in a jiff, type <Windows>-R. You can also navigate the menus via cursor keys (<Home>, <Page Down>, the arrow keys, and so on).

**Bonus tip:** Hold down <Windows> while you repeatedly press <Tab> to cycle through the buttons on your taskbar.

#### Zip around your desktop:

Holding down <Alt> while you repeatedly press <Tab> cycles you through your open applications. Pressing <Alt>-<Space> opens the control menu in the upper-left corner of the current application window. Close the current application by pressing <Alt>-<F4>.

**Bonus tip:** To open the control menu in the upper-left corner of the current document window in Office and in some other applications, press <Alt>-<Hyphen>; and to close the current document, type <Ctrl>-<F4>.

Pressing <Shift>-<F10> or <Application> will bring up the context menu for the selected object—the same as right-clicking it. <Windows>-M and <Windows>-D minimize all open windows and return you to the desktop. <Shift>-<Windows>-M reopens all the windows (<Windows>-D will restore them, too, if that's the key combination you used to minimize them). **Bonus tip:** In Windows Explorer, folder windows, and the desktop, press <Alt>-<Enter> to open a

selected object's Properties dialog box, and <Windows>-<Break> to open System Properties (the <Break> key is on the upper right of most keyboards).

**Rush through menus:** <Alt> and <F10> take you to the current window's menu bar. Once there, you can navigate with the arrow keys, or quickly pop open a menu item by pressing its underlined letter (<Alt> then V to open the View menu, for example). After the menu is open, press the option's underlined letter to select it. For instance, in many programs, pressing <Alt> followed by F followed by P opens the File menu, then selects the Print option—no key combinations needed.

**Explore in an instant:** Enter <Windows>-E to launch Windows Explorer, then just press <Backspace> to move to the parent folder of your current folder. Type <F2> to rename the selected folder or file, and <F3> to search for a file.

**Make short(cut) work of files and documents:** These shortcuts aren't necessarily part of Windows itself, but they are supported by many applications:

<Ctrl>-S saves your current work to disk. Get in the habit of pressing this often.

<Ctrl>-O opens a new document.

<Ctrl>-Z and <Alt>-<Backspace> undo the last thing you did (often repeatedly).

<Ctrl>-Y undoes the last undo (or redoes).

<Ctrl>-A selects everything in the open window, whether it's all the files in a folder, or the entire document. ▶



FIGURE 1: IF WINDOWS EXPLORER doesn't preview .jpg files, a command-line tweak may fix the problem.

will find some useful keyboard shortcuts.

First, some quick definitions of two keys found on Windows keyboards: The <Windows> key is the one with the Windows logo. The <Application> key is the one with the illustration of a mouse pointer selecting from a menu. Note that many keyboards have two <Alt> keys and two <Ctrl> keys, and some key combinations work with one but not with the other.

**Start faster:** Instead of clicking the Start button, press either <Ctrl>-<Esc> or <Windows> to open the Start menu. To select an item from the menu, hit the underlined

## CHANGE A DRIVE LETTER

WINDOWS XP and 2000 let you change the letter assigned to a drive other than your system volume or boot volume ('C:' instead of 'D:', for example). Right-click *My Computer* and select *Manage*. In the Computer Management program's left pane, select *Disk Management* under *Storage*. Right-click the drive or partition you want to change and select *Change Drive Letter and Paths* (*Change Drive Letter and Path* in Windows 2000). Click the *Change* button (*Edit* in Windows 2000). Select a new drive letter in the 'Assign the following drive letter' drop-down menu ('Assign a drive letter' in Windows 2000). Click *OK*, then *Yes*.



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**<Ctrl>-X** deletes the selection and moves it to the clipboard.

**<Ctrl>-C** copies the selection to the clipboard without deleting it.

**<Ctrl>-V** pastes the clipboard contents into the active program or onto the desktop.

**<Ctrl>-I** turns italics on or off.

**<Ctrl>-B** turns bold on or off.

**<Ctrl>-U** turns underlining on or off.

**<Ctrl>-F** and **<F3>** launch the program's search or find tool.

**<Ctrl>-<Home>** moves the cursor to the beginning of the open file or document.

**<Ctrl>-End** moves the cursor to the end of the open file or document.

**<Ctrl>-<Tab>**, **<Ctrl>-<Shift>-<Tab>**, **<Ctrl>-<Page Down>**, and **<Ctrl>-<Page Up>** move you from tab to tab in a dialog box.

#### Microsoft Office 2000 and 2002:

**<Ctrl>-C** twice displays Office's clipboard.

**<Ctrl>-<Down Arrow>** expands the currently displayed menu to full length.

**<F5>** or **<Ctrl>-G** opens the Go To dialog.

**<Shift>-<F5>** takes you to a previous revision—or in a newly opened document, to where the insertion point was when the document was last closed.

**<F7>** launches the spelling checker.

#### Microsoft Word 2000 and 2002:

**<Ctrl>-<Space>** turns on default formatting (Normal style) for subsequent typing or the current selection.

**<Ctrl>-0** (zero above the letter keys) adds or removes a line's worth of spacing above the current paragraph(s).

**<Ctrl>-1** (above the letter keys) converts the current paragraph or selected paragraphs to single-line spaces.

**<Ctrl>-2** (above the letter keys) double-spaces the current paragraph(s).

**<Ctrl>-5** (above the letter keys) applies 1.5-line spacing to the current paragraph(s).

**<Alt>-5** (on the numeric keypad) selects the entire current table.

**<Alt>-<Shift>-D** inserts an updating date.

**<Alt>-<Shift>-T** inserts an updating time.

**<Shift>-<F7>** launches the thesaurus.

#### Excel 2000 and 2002:

**<Ctrl>-<Space>** selects the current column.

**<Shift>-<Space>** selects the current row.

**<Ctrl>-<Semicolon>** inserts the date.

**<Ctrl>-<Colon>** inserts the time.

**<Ctrl>-<Double Quote>** enters a copy of the cell above (without formatting).

**<Ctrl>-1** will bring up the Excel Format Cells dialog box.

**<Ctrl>-<Page Up>** and **<Ctrl>-<Page Down>** move up and down through worksheets.

**<Ctrl>-<Enter>** instead of **<Enter>** fills the selected cells with copies of the active cell.

#### Internet Explorer:

**<Ctrl>-0** brings up the Open dialog box for browsing to another Web site.

**<Ctrl>-N** opens a new browser window to your home page.

**<Alt>-D** selects the Address bar.

**<Backspace>** is the same as choosing the Back button.

**<Shift>-<Backspace>** is the same as clicking the Forward button.

#### RESTORING .JPG THUMBNAILS

**I HAVE SOMEHOW** lost the ability to preview .jpg files in Windows Explorer. How do I get it back?

*George Kolar, Orland Park, Illinois*

THIS IS A COMMON problem with Windows 98, 2000, and Me, although not—as far as I can tell—with XP: Windows Explorer suddenly loses the ability to preview .jpg and other image file types (see **FIGURE 1**). This is often caused by ill-behaved installation programs that take over the .jpg association when loading a graphics application. A program can grab just the .jpg association and not interfere with this particular feature of Windows, but some apps associate themselves with more graphics formats in a needlessly aggressive and destructive way.

Fortunately, fixing the problem is pretty easy. The first step is to close all running applications. Then select **Start>Run**, type **regsvr32 thumbvwr.dll**, and press **<Enter>**. If you get an error message, try entering **regsvr32 %windir%\system\thumbvwr.dll** (in Windows 98 or Me) or **regsvr32 %windir%\system32\thumbvwr.dll** (in Windows 2000). After you reboot your computer, Explorer should preview your .jpg files once again.

If this doesn't work, go to [find.pcworld.com/33623](http://find.pcworld.com/33623) to read Scott Dunn's tip, "Preview Images in Windows Explorer," from the February 2001 *Windows Tips* column.

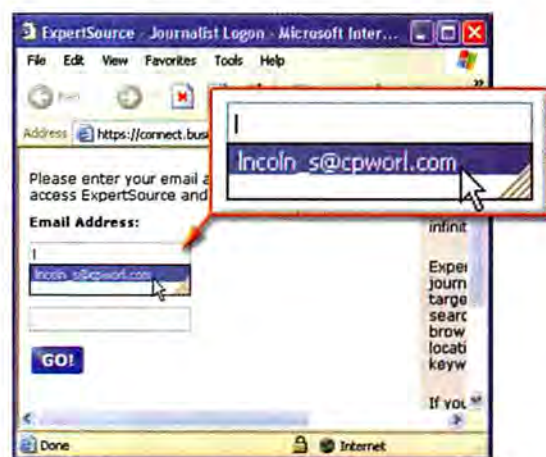
#### CHANGE IE'S AUTOCOMplete

**I LIKE THE WAY** Internet Explorer remembers and fills in the appropriate user name and password for sites where I'm registered. But some of the entries are wrong. How do I delete them?

*Murray Hanson, La Verne, California*

THE FEATURE YOU'RE talking about is called *AutoComplete*, but the name is confusing because it also refers to the way Internet Explorer fills in URLs as you type them—an entirely different operation. The AutoComplete your question relates to is the one for IE forms—specifically user names and passwords.

To get rid of an AutoComplete listing, go to the Web site and start to type the troublesome entry. IE will pop up a list of existing options (see **FIGURE 2**). Highlight the one you want to delete, but don't click it (clicking will paste it into the field). Then press **<Delete>** and click **Yes**.



**FIGURE 2:** IT'S EASY to delete IE's AutoComplete entries, such as those inadvertently created with typos.

Another problem is that IE's AutoComplete stops asking if it should save entries. If you want it to ask, select **Tools>Internet Options**, click the **Content** tab, then click the **AutoComplete** button. Check **Prompt me to save passwords** and click **OK** twice. ■

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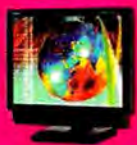
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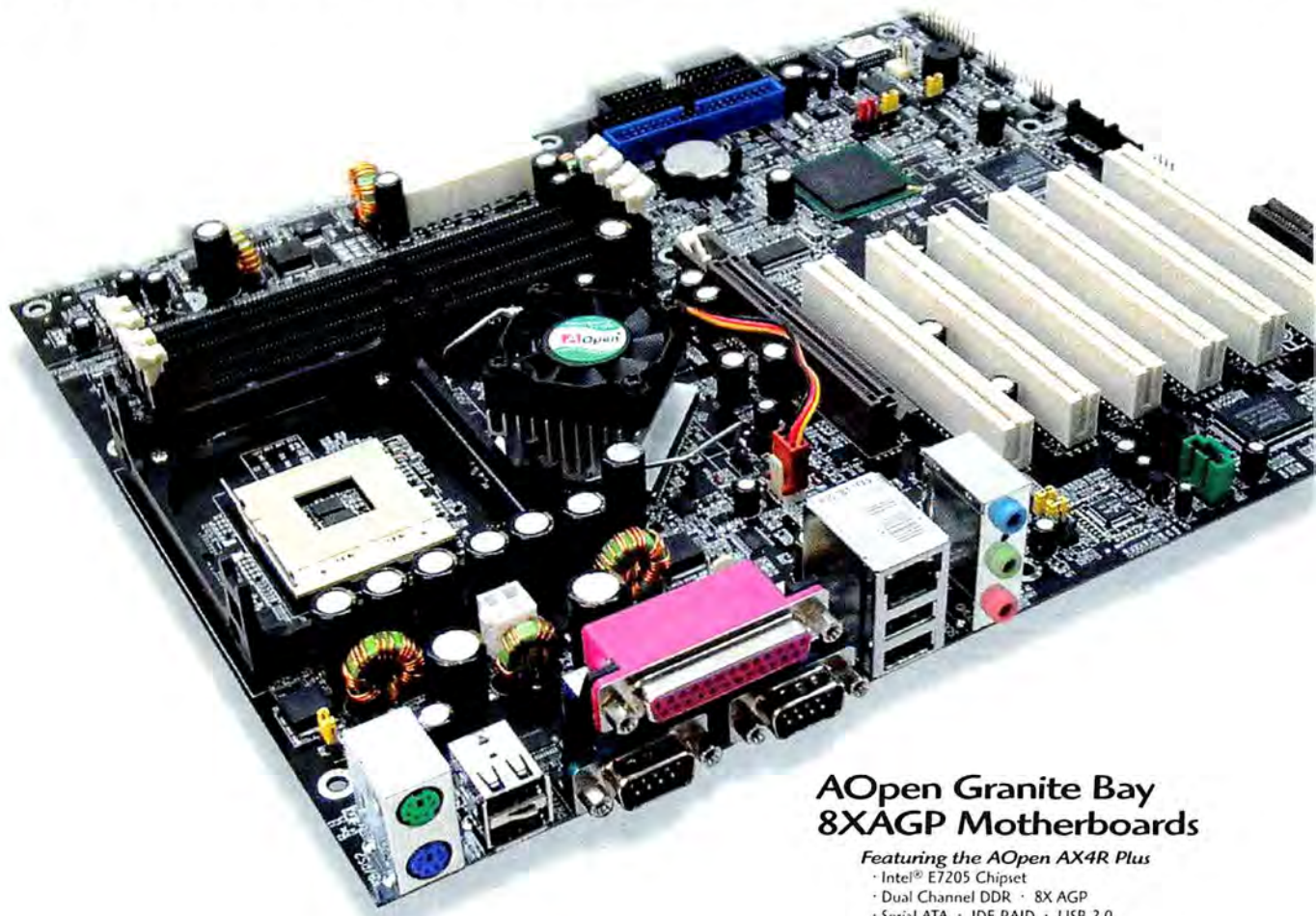


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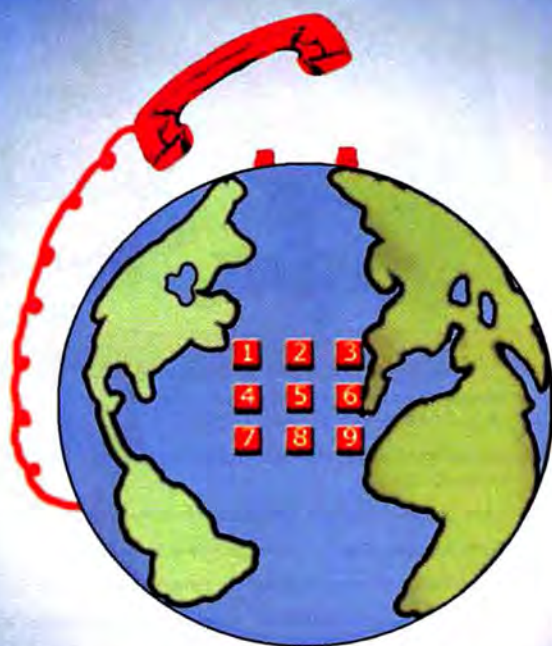
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## Early Adopters: Geeks or Pioneers?

How to buy cutting-edge technology products without driving yourself crazy.

I'M LOOKING ASKANCE at a pricey new product with important features missing. "Steve, you've got to understand," says the product's handler. "We're aiming this at early adopters." In the tech world, that usually means *hapless geeks who overpay for new but inadequate products*.

But smart early adopters fight that image. The trick is knowing which products to avoid. Take Research In Motion's BlackBerry 5810, which came out in 2002. The first phone-enabled version of RIM's popular e-mail handheld, the 5810 required you to use headphones to make a voice call. That worked fine until you got a call and had to untangle a nest of wires to answer it. So within months RIM released the 6700 series, with speaker and mike on the unit. The process will undoubtedly repeat itself with Palm's Tungsten W PDA, which—amazingly—mimics RIM's headphones-only design.

But sometimes the gain is worth the pain. I felt like a trailblazing wireless pioneer a couple of years ago when I installed 3Com's Home Wireless Gateway and a pair of PC Cards. Both of the cards eventually died, and I had to reboot the buggy gateway every other day to get an Internet address. Then it croaked too.

The replacements I bought from other vendors are far cheaper and more reliable. So, yes, as an early adopter, I paid a premium to get unfin-

ished technology. But even with those flaky first-generation products, the benefits of going wireless outweighed the downsides—at least for me.

### BEING THERE FIRST

THE LESSON HERE: Come in late, and you'll have a happier experience. But you may pay a cost in terms of the productivity you lose while sitting on the sidelines.

Besides, first-generation equipment sometimes turns out just fine. The hefty price I paid for Radio Shack's Model 100 laptop 20 years ago put me among a select few who could compute anywhere. Subsequent models in the line were never worth the bother. Years later, I bought Sony's first VAIO 505 notebook because

it was the first usable small Windows machine; new features in later models didn't really improve the concept.

Savvy early adopters make sure that the new products we buy feature significant improvements, not just incremental ones. That's why I never bought a Zip drive, but came early to the CD-RW party.

It's also essential to avoid products with serious, basically uncorrectable omissions, like that headphone-only phone design. If you don't have to buy the thing the day it comes out, wait a bit and search Web sites and discussion groups for real-world comments from the earliest of early adopters. (See "Public Opinions: Inside User Reviews" on page 121.)

And watch out for services or consumables whose disappearance could make a product useless. Long ago, computer magazines—including this one—printed software in a bar-code-like format called Cauzin SoftStrip. Early adopters who invested in the \$200 gadget necessary to

turn the pages into computer code were stuck when magazines ceased printing the pages.

But at least all those early adopters wound up with really unusual doorstops. ■

Visit [find.pcworld.com/31595](http://find.pcworld.com/31595) to see additional columns by Contributing Editor Stephen Manes. He has written about technology for two decades.



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- Windows® XP Professional, add \$79

**Introducing the NEW Inspiron 1100 notebook.** It's hard to take your eyes off this stylish little number. And its beauty isn't only skin deep. Inside you'll find an Intel® Pentium® 4 processor clocking speeds up to 2GHz. That kind of performance never goes out of style, no matter how high you climb the corporate ladder. But its most stunning feature? Check out the price. And of course it's backed by Dell's award-winning support and service. Order one today and soon you'll be creating quite a stir around the office.

**Dell notebooks have won more product awards  
than any major competitor each of the last 3 years.<sup>25</sup>**

### Dell Rated #1 in Intel-Based Notebook Satisfaction

*Technology Business Research*  
Corporate IT Buying Behavior and Customer Satisfaction Study  
Third Quarter 2002  
– December 2002



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Dell recommends Microsoft® Windows® XP Professional for Mobile Computing



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## Dell | Small Business Desktops

### NEW Dimension™ 2350 Desktop

#### Mainstream Desktop Solution

- Intel® Pentium® 4 Processor at 2.40GHz
- 128MB Shared\* DDR SDRAM
- NEW 60GB (7200 RPM) Ultra ATA/100 Hard Drive
- Integrated Intel® 3D Extreme Graphics
- 48x CD-ROM; Integrated Audio
- Integrated 10/100 Ethernet
- Windows® XP Home Edition; WordPerfect® Productivity Pack
- 1-Yr Limited Warranty; 1-Yr On-Site Service\*
- Monitor Not Included

**\$599** as low as **\$16/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S50405s

#### Recommended upgrades:

- 256MB Shared\* DDR SDRAM, add \$50
- Windows® XP Professional, add \$60
- NEW 15" E151FPb Flat Panel Display, add \$300

### Dimension™ 4550 Desktop

#### Advanced Desktop Solution

- Intel® Pentium® 4 Processor at 2.53GHz
- 256MB DDR SDRAM
- NEW 60GB (7200 RPM) Ultra ATA/100 Hard Drive
- 32MB ATI® RAGE™ Ultra Graphics Card
- 48x/10x/48x CD Burner; Sound Blaster Live! 5.1 Surround
- Integrated Intel® PRO 10/100 Ethernet
- Windows® XP Home Edition; Works Suite 2003
- 1-Yr Limited Warranty; 1-Yr On-Site Service\*
- Monitor Not Included

**\$799** as low as **\$22/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S50407s

#### Recommended upgrades:

- 512MB DDR SDRAM, add \$100
- 3-Yr Limited Warranty; 3-Yr On-Site Service; add \$119
- 15" 1504FP Dell UltraSharp™ Digital Flat Panel Display, add \$360

### OptiPlex™ GX260 Desktop

#### Network-Optimized, High-Performance PC

- Intel® Pentium® 4 Processor at 2.53GHz
- 256MB Shared\* DDR SDRAM
- 20GB (7200 RPM) Hard Drive
- Integrated Intel® Extreme Graphics
- 48x CD-ROM
- Integrated Intel® PRO Gigabit™ Network Connection
- OptiFrame™ Small Desktop Tool-less Chassis
- Windows® XP Professional
- 3-Yr Next Business Day On-Site Service\*
- Monitor Not Included

**\$749** as low as **\$20/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S30407a

#### Recommended upgrades:

- 80GB (7200 RPM) Hard Drive, add \$69
- 40x CD Burner, add \$80



## Dell | Small Business Notebooks

### NEW Inspiron™ 1100 Notebook

#### Essential, Budget-Friendly Notebook

- Intel® Celeron® Processor at 2GHz
- 14.1" XGA TFT Display
- 128MB Shared\* DDR PC2100 SDRAM
- 20GB Ultra ATA Hard Drive
- Integrated Intel® Extreme Graphics Up to 64MB Shared\* System Memory
- Fixed Internal 24x CD-ROM Drive
- Internal Modem and NIC Included
- Windows® XP Home Edition; WordPerfect® Productivity Pack with Quicken® New User Edition
- 1-Yr Mail-In Service

**\$899** as low as **\$24/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S80408

#### Recommended upgrade:

- Dell TrueMobile™ 1150 Wireless Networking PC Card, add \$49

### NEW Inspiron™ 5100 Notebook

#### Perfect Balance of Performance and Price

- Intel® Pentium® 4 Processor at 2.40GHz
- 14.1" XGA TFT Display
- 256MB DDR PC2100 SDRAM
- 30GB Ultra ATA Hard Drive
- 16MB DDR ATI® MOBILITY™ RADEON™ 7500 AGP 4X Graphics
- Fixed Internal 8x DVD Drive
- Internal Modem and NIC Included
- Windows® XP Home Edition; WordPerfect® Productivity Pack with Quicken® New User Edition
- 1-Yr Mail-In Service

**\$1199** as low as **\$33/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S80411

#### Recommended upgrade:

- Windows® XP Professional, add \$79

### NEW Latitude™ D600 Notebook

#### Network-Optimized Mobility Notebook

- Featuring Intel® Centrino™ mobile technology
- Intel® Pentium® M Processor at 1.30GHz
- Intel® PRO Wireless 2100 802.11b 11 Mbps Mini-PCI Wireless Card
- 14.1" XGA TFT Display
- 128MB DDR PC2100 SDRAM
- 20GB Ultra ATA Hard Drive
- 32MB DDR ATI® MOBILITY™ RADEON™ 9000 AGP 4X Graphics
- Modular 24x CD-ROM Drive
- Internal Modem and NIC Included
- Windows® XP Professional; 3-Yr Mail-In Service

**\$1399** as low as **\$38/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S70413a

#### Recommended upgrades:

- Latitude D/View Notebook Stand & Advanced Port Replicator, add \$268
- 3-Yr CompleteCare™ Accidental Coverage, add \$169



## Dell | Servers and Workstations

### PowerEdge™ 600SC Server

#### Entry-Level Value Server

- Intel® Celeron® Processor at 1.80GHz
- 128MB 266MHz ECC DDR SDRAM (Up to 4GB)
- 40GB (7200 RPM) IDE Hard Drive (Up to 120GB HD Avail.)
- Upgradeable to 480GB of Internal Hard Drive Storage
- Embedded Intel® PRO Gigabit™ NIC
- Five PCI Expandability Slots (4-64/33MHz, 1-32/33MHz)
- 1-Yr 24x7 Dedicated Server Phone Tech Support
- 1-Yr Next Business Day On-Site Service\*
- Small Business Pricing

**\$449** as low as **\$12/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S20404c

#### Recommended upgrades:

- Intel® Pentium® 4 Processor at 2.40GHz, add \$100
- IDE RAID Hard Drive Controller, only \$299
- System Including Windows® 2000 Server, only \$1245

### NEW PowerEdge™ 1600SC Server

#### Reliable, High-Performance Server

- Intel® Xeon® Processor at 2GHz
- Dual Intel® Xeon® Processor Capable (Up to 2.80GHz)
- 128MB 266MHz ECC DDR SDRAM (Up to 4GB)
- 36GB (10K RPM) SCSI Ultra320 Hard Drive (Up to 146GB HD Avail.)
- Upgradeable to 876GB of Internal Hard Drive Storage
- Embedded Intel® PRO Gigabit™ NIC
- Six PCI Slots (2-64/100MHz, 2-64/66MHz, 2-32/33MHz)
- 1-Yr 24x7 Dedicated Server Phone Tech Support
- 1-Yr Next Business Day On-Site Service\*
- Small Business Pricing

**\$799** as low as **\$22/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S20407c

#### Recommended upgrades:

- Hot-Swap Hard Drive Capability, add \$100
- PowerConnect 2124™ 24+1GB Ethernet Switch, add \$299

### Dell Precision™ 350 Workstation

#### NEW Affordable, Scalable Performance Workstation

- Intel® Pentium® 4 Processor at 2.53GHz
- 128MB Dual-Channel PC1066 RDRAM
- 20GB (7200 RPM) EIDE Hard Drive
- 32MB ATI® RADEON™ VE VGA AGP 4X Graphics
- 48x CD-ROM Drive; Integrated Sound
- Integrated Intel® PRO Gigabit™ Network Connection
- Windows® XP Professional; Mini-Tower Chassis
- Lifetime 24x7 Dell Precision™ Dedicated Tech Support
- 3-Yr Next Business Day On-Site Service\*
- Monitor Not Included

**\$899** as low as **\$24/mo.** (46 pmts\*)  
E-VALUE Code: 16964-S40408a

#### Recommended upgrades:

- 18" Dell UltraSharp™ 1800FP Flat Panel Monitor, add \$599
- 3-Yr Same-Day 4-Hour (5x10) On-Site Service; add \$199

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## Dell | Home Desktops

### Dimension™ 2350 Desktop

#### Affordable System

- Intel® Pentium® 4 Processor at 2GHz with 512K L2 Cache
- 128MB Shared® DDR SDRAM at 266MHz
- NEW 30GB Ultra ATA/100 Hard Drive (7200 RPM)
- 17" (16.0" v.i.s., 27dp) E772 Monitor
- Integrated Intel® 3D Extreme Graphics
- 48x/24x/48x CD-RW Drive with Roxio's Easy CD Creator®
- Integrated Audio
- Harman Kardon HK-205 Speakers
- 56K® DataFax Modem and Integrated 10/100 Networking
- Windows® XP Home Edition, WordPerfect® Productivity Pack with Quicken® New User Edition
- 6 Months of America Online® Membership Included
- 1-Yr Limited Warranty; 1-Yr At-Home Service\*

**\$699** Ask us about no payments for 90 days for well-qualified customers  
E-VALUE Code: 16964-D50406m

### Dimension™ 4550 Desktop

#### Superior Performance, Smart Value

- Intel® Pentium® 4 Processor at 2.53GHz with 533MHz Front Side Bus and 512K L2 Cache
- 128MB DDR SDRAM at 333MHz
- 60GB Ultra ATA/100 Hard Drive (7200 RPM)
- 17" (16.0" v.i.s., 27dp) E772 Monitor
- 64MB DDR NVIDIA® GeForce4 MX® Graphics Card with TV-Out
- NEW 48x/24x/48x CD-RW Drive with Roxio's Easy CD Creator®
- Sound Blaster Live! 5.1 Digital Sound Card
- Harman Kardon HK-395 Speakers with Subwoofer
- 56K® Modem and Integrated Intel® 10/100 Networking
- Windows® XP Home Edition, WordPerfect® Productivity Pack with Quicken® New User Edition
- 6 Months of America Online® Membership Included
- 1-Yr Limited Warranty; 1-Yr At-Home Service\*

**\$899** Ask us about no payments for 90 days for well-qualified customers  
E-VALUE Code: 16964-D50408m

### Dimension™ 8250 Desktop

#### Cutting Edge Technology

- Intel® Pentium® 4 Processor at 2.66GHz with 533MHz Front Side Bus with 512K L2 Cache
- 256MB PC1066 RDRAM
- 60GB Ultra ATA/100 Hard Drive (7200 RPM)
- 17" (16.0" v.i.s., 25dp) E772 Monitor
- 64MB DDR NVIDIA® GeForce4 MX® Graphics Card with TV-Out
- 16x DVD-ROM Drive
- NEW 48x/24x/48x CD-RW Drive with Roxio's Easy CD Creator® (2x Bay)
- Sound Blaster Live! 5.1 Digital Sound Card
- Harman Kardon HK-395 Speakers with Subwoofer
- 56K® Modem and Integrated Intel® 10/100 Networking
- Windows® XP Home Edition, WordPerfect® Productivity Pack with Quicken® New User Edition
- 6 Months of America Online® Membership Included
- 1-Yr Limited Warranty; 1-Yr At-Home Service\*

**\$1399** Ask us about no payments for 90 days for well-qualified customers  
E-VALUE Code: 16964-D50413m



## Dell | Home Notebooks

### NEW Inspiron™ 1100 Notebook

#### Notebook Essentials, Budget-Friendly

- Intel® Celeron® Processor at 2GHz
- 14.1" XGA TFT Display
- 256MB Shared® DDR PC2100 SDRAM
- 20GB Ultra ATA Hard Drive
- 8x DVD-ROM Drive
- Integrated Intel® Extreme Graphics
- Integrated Stereo Sound
- 94Whr Li-Ion Battery (12-Cell)
- Internal Modem and NIC Included
- Microsoft® Windows® XP Home Edition
- WordPerfect® Productivity Pack with Quicken® New User Edition
- 6 Months of America Online® Membership Included
- 1-Yr Limited Warranty; 1-Yr Mail-In Service

**\$999** Ask us about no payments for 90 days for well-qualified customers  
E-VALUE Code: 16964-D80409m

### NEW Inspiron™ 5100 Notebook

#### Perfect Balance of Performance and Price

- Intel® Pentium® 4 Processor at 2.40GHz
- 14.1" XGA TFT Display
- 256MB DDR PC2100 SDRAM
- 30GB Ultra ATA Hard Drive
- 24x CD-RW/DVD Combo Drive with Roxio's Easy CD Creator®
- 16MB DDR ATI® MOBILITY® RADEON™ 7500 AGP 4x Graphics
- Integrated Stereo Sound
- 94Whr Li-Ion Battery (12-Cell)
- Internal Modem and NIC Included
- Microsoft® Windows® XP Home Edition
- WordPerfect® Productivity Pack with Quicken® New User Edition
- 6 Months of America Online® Membership Included
- 1-Yr Limited Warranty; 1-Yr Mail-In Service

**\$1279** Ask us about no payments for 90 days for well-qualified customers  
E-VALUE Code: 16964-D80412m

### NEW Inspiron™ 8500 Notebook

#### Ultimate Multimedia Powerhouse

- Mobile Intel® Pentium® 4 Processor-M at 2GHz
- 15.4" Wide-Aspect UltraSharp® XGA TFT Display
- 384MB DDR PC2100 SDRAM
- 30GB Ultra ATA Hard Drive
- 24x CD-RW/DVD Combo Drive with Roxio's Easy CD Creator®
- 32MB ATI® MOBILITY® RADEON™ 9000 AGP 4X Graphics
- Integrated Stereo Sound
- 72Whr Li-Ion Battery with ExpressCharge™ Technology (9-Cell)
- Internal Modem and NIC Included
- Windows® XP Home Edition
- WordPerfect® Productivity Pack with Quicken® New User Edition
- 6 Months of America Online® Membership Included
- 1-Yr Limited Warranty; 1-Yr Mail-In Service

**\$1849** Ask us about no payments for 90 days for well-qualified customers  
E-VALUE Code: 16964-D80418m



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# The performance-driven desktop

for the value-minded shopper.



**Dell** | Home/Small Business

## Dimension™ 4550 Desktop

### Advanced Desktop Solution

- Intel® Pentium® 4 Processor at 2.53GHz
- 256MB DDR SDRAM
- NEW 120GB (7200 RPM) Ultra ATA/100 Hard Drive
- 64MB DDR NVIDIA® GeForce4 MX™ Graphics Card
- 48x/10x/48x CD Burner; Sound Blaster Live! 5.1 Sound
- Integrated Intel® PRO 10/100 Ethernet
- Windows® XP Home Edition; Works Suite 2003
- 1-Yr Limited Warranty; 1-Yr On-Site Service\*
- Monitor Not Included

**\$899**

Ask about our financing plans  
for qualified customers  
E-VALUE Code: 16962-S50408s

### Recommended upgrades:

- Windows® XP Professional, add \$60
- 3-Yr Limited Warranty; 3-Yr On-Site Service,\* add \$119
- NEW 15" E151FPs Flat Panel Display, add \$300

The Dimension 4550 is the perfect blend of power and value. More than a great system at a great price, the Dimension 4550 can give you enhanced productivity thanks to the power of its Intel® Pentium® 4 processor at up to 3.06GHz. Not to mention that it's a system that will grow with you, allowing you to easily add software and peripherals as needed. So you get one powerful desktop, built just for you, that's backed by Dell's award-winning service and support. The Dell Dimension 4550 – considering everything you're getting, it's a wonder the price doesn't have more zeroes.

## Dell Rated #1 in Intel-Based Desktop Satisfaction

21 Consecutive Quarters

Technology Business Research

Corporate IT Buying Behavior and Customer Satisfaction Study

3rd Quarter

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