



Compaq Evo D310v

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- Intel[®] Celeron[®] processor 1.80 GHz
- +128MB PC2100 DDR SDRAM
- 20GB Ultra ATA Hard Drive*
- •48X Max CD-RW Drive¹¹ •Integrated Intel[®] Extreme AGP Graphics
- Integrated AC97 Audio
- Integrated Intel[®] PRO 10/100 NIC
- Microsoft[®] Windows[®] XP Home
- +1-Year Worldwide Limited Warranty^t
- Monitor not included

\$469

Lease for \$20 a month"

Compag Evo D310 Microtower

-Intel® Pentium® 4 processor 2.00 GHz
-128MB PC2100 DDR SDRAM
-40GB Ultra ATA Hard Drive®
-48X Max CD-ROM Drive!
-Integrated Intel® Extreme AGP Graphics
-Integrated Intel® Extreme AGP Graphics
-Integrated Intel® PRO 10/100 NIC
-Microsoft® Windows® XP Home
-1-Year Worldwide Limited Warranty⁴
-Monitor not included

\$599 Lease for \$25 a month"

Compag Evo D510 Small Form Factor

- Intel[®] Pentium[®] 4 processor 2.40 GHz
- 256MB PC2100 DDR SDRAM
-40GB Ultra ATA Hard Drive[®]
-48X Max CD-RW Drive[#]
- Integrated Intel[®] Extreme AGP Graphics
- Integrated Intel[®] PRO/100 VM Network Connection
- Microsoft[®] Windows[®] XP Professional
- 3-Year Worldwide Limited Warranty[‡]
- Monitor not included
Get even more:
- \$7500 17" CRT Monitor: Add \$150
- 1501 15" TFT Monitor: Add \$100
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\$799

Lease for \$34 a month"

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Compaq Evo D510 Small Form Factor

Intel[®] Pentium[®] 4 processor 2.66 GHz
 512MB PC2100 DDR SDRAM
 80CB Ultra ATA Hard Drive*

- •48X Max CD-RW Drive#
- Integrated Intel® Extreme AGP Graphics
- Integrated Intel[®] Audio
- Integrated Intel[®] PRO/100 VM Network Connection
- Microsoft[®] Windows[®] XP Professional
- •3-Year Worldwide Limited Warranty[†]
 •Monitor not included

Get even more:

•\$7500 17" CRT Monitor: Add \$150 •1501 15" TFT Monitor: Add \$300

\$999 Lease for \$42 a month^{**}

hp xw4000 workstation with 19" Monitor

Intel® Pentium® 4 processor 2.40 GHz
 40GB Ultra ATA-100 Hard Drive (7200 rpm)*
 128MB DDR SDRAM

- •nVidia 200NVS Graphics Controller
- +16X DVD/CD-RW Combo Drive

Integrated AC97 Audio

 Integrated Intel® PRO/100 VM Network Connection

•Microsoft® Windows® XP Professional •3-Year Worldwide Limited Warranty¹

•P930 19" CRT Monitor

Lease for \$55 a month**

hp xw6000 workstation with 18" Flat Panel Monitor

Intel® Xeon^{1%} processor 2.40 GHz
80GB IDE 7200 rpm Hard Drive*
512MB DDR SDRAM
nVidia 200NVS Graphics Card
Integrated Dual Channel Ultra320 SCSI
and Ultra ATA/100
48X IDE CD-ROM Drive
Integrated AC97 Audio
Integrated Gigabit (10/100/1000)
Ethernet Controller
Microsoft® Windows® XP Professional

•3-Year Worldwide Limited Warranty¹ •L1825 18" Flat Panel Monitor

\$2,398 Lease for \$100 a month"



charges). Offer valid through 4/30/03 on all lease transactions with a total transaction amount between \$499 and \$50,000. Lease products available through HPFSC to qualified commercial customers in the U.S. and subject to credit approval and execution of standard HPFSC documentation. Other restrictions may apply. HPFSC reserves the right to change or carciel this program at any time without notice. IPITU V90/V92 Modems are designed only to allown faster downloads from KS6flex- or V90/V92-compliant digital sources. Maximum achievable download transmission rates are currently unknown, may not teach 56 Kbps and will vary with line conditions. IV48X CD-RW drive data transfer rates may vary as follows: for recording to CD-R media, the max transfer rate may be up to 4800 Kbps (use 48X discs for best performance); for writing to CD-RW media, the max transfer rate may be up to 1500 Kbps



hp iPAQ™ h1910 Pocket PC

Extend your desktop's capabilities with the lightest & thinnest iPAQ[™] Pocket PC.

-Intel® PXA 250 XScale Processor, 200 MHz
-Color TFT Display 240 x 320: 65,536 colors
-16MB NANDFlash ROM; 64MB SDRAM
-Integrated SD memory card slot
-Microsoft® Pocket PC 2002
-Removable 900 MAH Battery
-1-Year Worldwide Limited Warranty¹

\$299

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iPAQ™ h3950 Pocket PC

The most powerful & expandable iPAQ™ Pocket PC with new dazzling display

-Intel® PXA 250 XScale Processor, 400 MHz -Color TFT Display 240 x 320: 65,536 colors -64MB StrataFlash ROM; 64MB SDRAM -Integrated SD memory card slot -Microsoft® Pocket PC 2002 -1-Year Worldwide Limited Warranty¹





hp deskjet 3820 color printer

Professionally prints everything from your desktop.

Up to 4800 optimized dpi***

•On-screen ink-level indicator, cancel button •Up to 12 ppm rich black text and up to 10 ppm color

•Space-saving design with fold-up paper tray

\$99

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hp officejet v40xi all-in-one

•Affordable all-color printer, fax, scanner and copier •Up to 1200 optimized dpi***

•Up to 8 ppm rich black text and up to 7 ppm color

\$179

hp deskjet 450ci mobile printer

•Mobility, flexibility and convenience •Stunning results with up to 4800 optimized dpi*** •Up to 9 ppm rich black text and up to 8 ppm color

\$299

hp LaserJet 1200 printer

Personal printer, optional copy and scan capabilities
Up to 1200 optimized dpi***
-15 ppm rich black text

\$399



hp tc2110

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Intel® Pentium® 4 processor 2.00 GHz
 128MB ECC SDRAM (upgradeable to 1.5GB)
 40GB ATA 7200 rpm IDE Hard Drive®
 Embedded Dual-Channel U/33/66/100
 IDE Controller
 3-Year Worldwide Limited Warranty®

\$598 Lease for \$25 a month"

hp ProLiant ML310

Intel® Pentium® 4 processor 2.53 GHz
256MB ECC DDR SDRAM
40GB ATA 7200 rpm IDE Hard Drive*
Integrated Dual Channel Ultra ATA-100 Adapter with RAID 0, 1 & 1+0 capability standard
ProLiant Essentials Foundation Pack (includes SmartStart* & Insight Manager**)
1-Year Worldwide Pre-Failure and Limited Warranty*

\$1,048 Lease for \$44 a month"

> hp ProLiant ML350 G3

Intel[®] Xeon^{**} processor 2.20 GHz
256MB ECC DDR SDRAM
18.2GB Wide Ultra3 10,000 rpm SCSI Hard Drive*
Integrated Dual Wide Ultra3 SCSI Adapter
6 x 1^{*} Hot Pluggable Hard Drive Bays
ProLiant Essentials Foundation Pack (includes SmartStart** & Insight Manager**)
-3-Year Worldwide Pre-Failure and Limited Warranty¹

\$2,088 Lease for \$87 a month"

0% FOR 24 MONTHS

For a limited time, get 0% lease rate on purchases made before April 30, 2003.* Visit us at www.hp.com for additional offers.

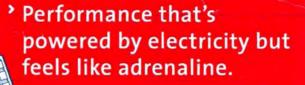
HP recommends Microsoft® Windows® XP Professional for Business.

Prices shown are HP direct prices; reseller and retailer prices may vary. Prices shown are subject to change and do not include applicable state and local sales tax or shipping to recipient's destination. Photography may not accurately represent exact configurations priced. "For hard drives, GB-billion bytes. "48X Max CD-ROM Drive data transfer rates may vary from 6750 Kbps to 7800 Kbps. "Certain restrictions and exclusions may apply For complete warranty details, call 1-800-345-1518 (LS)." "Implicit lease rate, assuming lessee does not exercise a fair-market-value purchase option at the end of the lease term and timely returns the leased equipment to Hewlett-Packard Financial Services Company (HPFSC) at the end of the lease term and disregarding any charges payable by lessee other than rent payments (such as taxes, fees and shipping

SMALL AND MEDIUM BUSINESS

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COMPAG





Compaq Evo D510 Small Form Factor

•1501 15" TFT Monitor: Add \$300



Every Compaq product you see here is designed and built to meet the demands of business. Well-known reliability and performance come standard, a result of testing in real-live business environments. Not surprisingly, our seasoned service and support team is very familiar with workplace-related questions. It all adds up to technology that does its job so you can do yours.



Compaq Evo N1020v Notebook Bundle with Port Replicator, mouse, keyboard, monitor stand & 15" LCD Flat Panel Monitor Actual monitor stand not pictured.

·Intel® Pentium® 4 processor 2.00 GHz

- -14.1" TFT XGA Display
- -256MB DDR SDRAM

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- ·30GB SMART Ultra ATA Hard Drive*
- DVD-ROM Drive
- •ATI Radeon IGP 340M Integrated UMA 4X
- •AGP Graphics with 32MB DDR SDRAM Shared •JBL Pro Speakers
- Integrated Mini PCI 56K V.92 Modem¹¹
- -Integrated 10/100 NIC
- •Microsoft® Windows® XP Professional
- +1-Year Worldwide Limited Warranty
- •Port Replicator, mouse, keyboard, monitor stand & 15" LCD Flat Panel Monitor



Compaq Evo N1020v

-Intel® Pentium® 4 processor 2.40 GHz
-15" TFT XGA Display
-256MB DDR SDRAM
40GB SMART Ultra ATA Hard Drive®
-VDD/CD-RW Drive
-ATI Radeon IGP 340M Integrated UMA 4X
-AGP Graphics with 32MB DDR SDRAM Shared
-JBL Pro Speakers
-Integrated Mini PCI 56K V.92 Modem^{1†}
-Integrated 10/100 NIC
-Microsoft® Windows® XP Professional
-1-Year Worldwide Limited Warranty⁸



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Compaq Evo N800v Notebook Bundle with Port Replicator, mouse, keyboard, monitor stand & 15" LCD Flat Panel Monitor

-Mobile Intel® Pentium® 4 Processor 2.00 GHz - M -15" TFT XGA Display -256MB DDR SDRAM -40GB SMART Ultra ATA Hard Drive® -DVD-ROM Drive -ATI Mobility Radeon 7500 (64 bit graphics video) with 32MB DDR SDRAM -3LB. Pro Speakers -Integrated Mini PCI 56K V.92 Modem¹¹ -Integrated 10/100 NIC -Microsof® Windows® XP Professional -1-Year Worldwide Limited Warranty¹ -Port Replicator, keyboard, mouse, monitor stand and 15" LCD Flat Panel Monitor



Compaq Evo N610c

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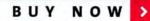
- •Mobile Intel® Pentium® 4 Processor 2.20 GHz - M
- •14.1" TFT SXGA Display
- +256MB DDR SDRAM
- -40GB SMART Ultra ATA Hard Drive*
- DVD-ROM Drive
- -ATI Mobility Radeon 7500 (64 bit graphics video) with 32MB DDR SDRAM
- Compaq Premier Sound[™] Enhanced Stereo
- Audio System
- Integrated Mini PCI 56K V.92 Modem^{tt}
- Integrated 10/100 NIC
- •Microsoft[®] Windows[®] XP Professional •3-Year Worldwide Limited Warranty[‡]

\$1,849 Lease for \$77 a month"

Compaq Evo N610c Notebook Bundle with Port Replicator, mouse, keyboard, monitor stand & 15" LCD Flat Panel Monitor

•Mobile Intel® Pentium® 4 Processor 1.80 GHz - M •14.1" TFT SXGA Display -256MB DDR SDRAM -30GB SMART Ultra ATA Hard Drive* ·DVD/CD-RW Drive ATI Mobility Radeon 7500 (64 bit graphics video) with 32MB DDR SDRAM •Compaq Premier Sound[™] Enhanced Stereo Audio System Integrated Mini PCI 56K V.92 Modem¹¹ Integrated 10/100 NIC Microsoft[®] Windows[®] XP Professional •3-Year Worldwide Limited Warranty ·Port Replicator, keyboard, mouse, monitor stand and 15" LCD Flat Panel Monitor

\$1,949 Lease for \$82 a month"



Toll Free 1-888-811-9582 www.hp.com/go/pcworld At your local reseller.

COMPAQ



(use 4X-12X high-speed media discs for best performance); for reading CD media, the max transfer rate may be up to 6000 Kbps. Actual transfer rates may vary depending on media quality. "'4800 x 1200 optimized dpi color printing on premium photo papers and 1200 x 1200 input dpi. 02003 Hewlett-Packard Development Company. LP. During the HP-Compaq product transitions, some HP iPAQ[™] products and packaging may be labeled with the Compaq brand. Microsoft and Windows are registered trademarks of Microsoft Corporation in the United States and/or other countries. Intel, Intel Inside, the Intel Inside Logo, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Other products mentioned herein may be trademarks or registered trademarks or their respective companies.

THE NATION

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Document needs approval. Now.



Boss in China. File in Chicago.

Needs video conferencing

Managing collaboration 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. Want specific

Sent 19

examples? Windows XP Professional offers built-in audio and video-conferencing capabilities that make the whole experience easy and intuitive for your end users. With the Send for Review feature, Office XP Professional lets users easily assign roles to everyone involved in the document review

Client wants real-time updates

Wants to share Ideas

cycle, while automatically providing the correct tools for each reviewer and allowing changes to be easily merged back into the original document. And finally, several new features make deployment easier than ever. For more ideas about managing your desktops, visit **microsoft.com/desktop**

Annual or trademarks of Microsoft Campronion In the Collud States a hiro

Can't locate the document

Microsoft

Boss wants to s

SAMSUNG DIGITall one's invited

> Outstanding performance. Affordable price. Stylishly compact. Dream machine.

The Samsung ML-1700 monochrome laser printer series.



- GDI, 90 MHz and USB
- ML-1750: 17 ppm, 1200 dpi, PCL6. 166 MHz, USB 2.0 and Parallel
- Special features include 3x5-inch index card printing and TonerSave button

ML-1710: 17 ppm, 250 sheet cassette, Now that's DigitAll attraction.

Office DEPOT

Today, small businesses, home offices (and everyone else) can afford beautiful laser outputs. Samsung built these printers to work hard and be dependable. You'll get fast 17 ppm output and a 250 sheet capacity to handle your biggest documents. The ML-1700 series. With its good looks and reliability, it just may steal all the attention.

Visit www.samsungusa.com/printer or call 1-800-SAMSUNG

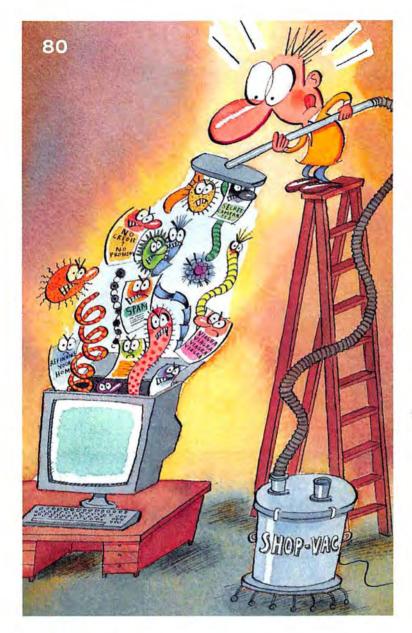






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MICRO CENTER



COVER STORY /

80 Internet Fixes

Online annoyances and security threats are multiplying and getting more sophisticated. But you can protect yourself. Our complete guide to Net dangers —from the latest viruses and worms to aggressive ads—tells you what's out there and points you to the patches you need to keep the pests at bay.

Cover Illustration by Hal Mayforth





FEATURES

96 Insider Secrets for PC Buyers If you're looking for a new



know about specs, buzzwords, and shopping options. With our advice you can make a smart decision and get the perfect PC.

HARD DRIVES

109 The Whole Drive Guide

system, you need to be in the

We provide tips to keep your hard disk humming, rank some of the really big drives now available, and identify things to consider such as the new Serial ATA interface—if you're in the market for a drive.

PROJECTORS

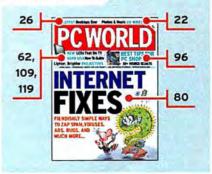
119 Bright Lights, Big Pictures

Lightweight, multipurpose projectors add a shine to everything

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from business PowerPoint presentations to after-hours entertainment. We find the winners among 16 candidates.

ON THE COVER





An LCD like you've never seen. Or heard.

The new BenQ FP591 embodies revolutionary thinking on enjoyment. Next-generation technology drives a fast 16 ms response time enabling dynamic screen motion for DVD, gaming, standard applications or even TV. The super-bright display and extra-high contrast delivers stunning colors and pictures. Video is embraced by SRS[®] sound processing technology for enjoying high-quality stereo surround sound. A host of additional features and a contemporary case, make the FP591 the centerpiece of any space.



BenQ FP591

The Next-Generation 15" LCD Display

- · Stylish ultra-slim modern design
- · 16 ms signal response time for dynamic screen motion
- · Dual stereo speakers with SRS® surround sound
- Ultra-high 500 cd/m² brightness
- · 450:1 contrast ratio for extraordinarily clear, sharp picture quality
- Dual D-Sub analog and DVI-D digital signal support
- Digital Photo Frame displays digital camera pictures directly (optional)

For more information, visit www.BenQ.com/2003/PCWorld-FP591 Email us at ProdInfo.us@BenQ.com or call (866) 700-2367



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TOP 100 /

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COMING UP IN MAY

Cheap Tweaks: Don't miss our free and low-cost enhancements for PCs, PDAs, apps, and more. Put It on DVD: We look at outstanding software packages for video editing and DVD authoring.

REVIEWS

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Top 5 Corporate PCs

Meet the top performers built for corporate environments. find.pcworld.com/34064

Stop Spam: We test popular e-mail filters to see which ones keep the junk out of your in-box. Reviewing User Reviews: Learn how to distinguish postings you can trust from ones to ignore.

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Our first look at a graphics card based on the Ge-Force FX 5800 Ultra chip reveals few advantages.

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The recording industry is now pursuing individuals who download copyright-protected content.

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150 Step-By-Step Uncover Windows-based Easter eggs—cleverly hidden features of otherwise serious applications.

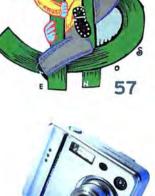
152 Hardware Tips

Determine your system's power needs; learn which discs work best with your CD-ROM drive.

154 Answer Line

Restore your Windows Registry; easily back up data on multiple PCs that are networked together.





hp ProLiant DL360 G3 server

- ▶ 2.4GHz Intel® Xeon® processor
- Memory: 512MB std., 8GB max.
- ▶ 533MHz Front Side Bus
- Embedded Smart Array 5i+, with 64MB memory, optional BBWC
- 291.2GB max. internal storage

eTrust Antivirus

- Provides enterprise-class protection against virtually all forms of costly virus attacksfrom the PDA to the gateway
- Reduces virus infections
- Simplifies and automates updating
- Eases administration
- "Locks down" security policies at the desktop and provides FREE signature updates

CTrust etrust Astitivus





HP LaserJet 4200n printer

- Resolution: 1200 x 1200 dpi, HP ProRes 1200 Technology
- Print speed: 35 ppm
- RAM: 64MB std., 416MB max.
- Paper handling: 100-sheet multipurpose tray, 500-sheet input tray
- Duty cycle: 150,000 pages per month
- 300MHz processor
- Network ready



PL191M

- 19" active-matrix LCD
- Maximum resolution: 1280 x 1024
- Contrast ratio: 500:1
- Built-in speakers and USB hub
- Analog and digital inputs
- 3-year Customer First warranty with 2-day relacement





CDW 421527

The Right Technology. Right Away.™

CDW.com 800-306-4239





We have more brands, so you have more choices.



Satellite 2410-S185 notebook

- 1.8GHz Mobile Intel[®] Pentium[®] 4 Processor-M
- Memory: 128MB
- 30GB hard drive
- 8X Max DVD-ROM drive
- 14.1" active-matrix display \$119
- 56Kbps modem and 10/100 Ethernet
- Windows XP Professional
- 1-year limited parts and labor warranty



TOSHIBA



Sun Fire[™] V100 Server

- ▶ 550MHz Sun UltraSPARC® Ili processor
- Memory: 256MB
- 40GB hard drive
- ▶ 24X Max CD-ROM drive
- Two 10/100 Ethernet adapters
- Solaris 8 operating system



SHARE



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The Right Technology. Right Away.

Some people order technology direct from the manufacturer.

Of course, some people have more patience than others.

C D W . c o m

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This Month We Look at Sleek Scanners, Powerful Portable Projectors, and More

A FULL LIST OF THE NEWCOMERS we cover in this issue follows, along with each item's star rating, if any (some models are ineligible for a rating). Visit find-it-number/10860 for more on *PC World's* Star Ratings.

DESKTOP PCs

- 130 CyberPower XP800 Dream Special ****
- 130 Dell Dimension 4550 ****
- 26 Falcon Northwest Mach V Athlon XP 3000+
- 130 Gateway 500X *****
- 130 MPC Millennia 910a ****
- 26 Polywell Poly 880NF2-3000
- 26 Sys Technology Sys Performance 3000+

NOTEBOOK PCs

- 134 Compaq Presario 3005US ***☆☆
- 134 Fujitsu LifeBook S Series ★★★★☆
- 74 Sharp Actius MM10 ***
- 134 Sotec 3120X *****
- 134 Toshiba Satellite 1955-S803 ★★★★☆
- 66 Toshiba Satellite Pro 6100 Series

COLOR LASER PRINTERS

- 137 HP Color LaserJet 5500n ★★★★☆
- 137 Minolta-QMS Magicolor 2300 DeskLaser ★★★★☆
- 137 Oki Data Oki C7300n ****
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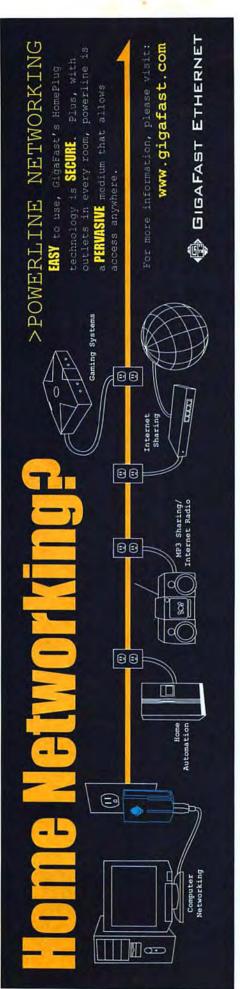
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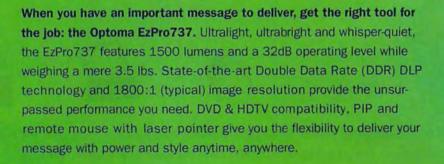
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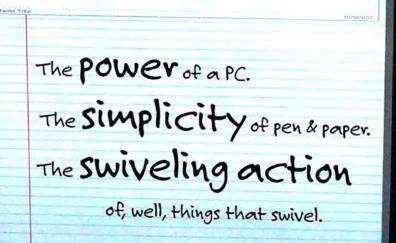


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Security Today? It's Patch as Patch Can

Until there's a cure for holey software, there's this month's cover story.

CONFESSION TIME: Sometimes I fret that if tech companies were ever to get their act together, it would rob *PC World* of some of our best fodder. But whenever this notion starts gnawing at me, something happens that leaves me thinking, with both regret and relief, "Not in this lifetime."

Consider the attack of the Slammer worm in late January. In just 10 minutes, Slammer used a security hole in Microsoft's SQL Server database to replicate its way around the world, bogging down Internet traffic, screwing up ATMs, and knocking much of South Korea offline (see find.pcworld.com/34040). Though Microsoft released a fix for the hole last summer, countless companies hadn't installed it. No shock there.

But among the unprepared was... Microsoft itself, which confessed that it had left some of its servers and desktops unpatched and vulnerable.

All of which puts Bill Gates and crew in the same leaky boat as the rest of us who use Windows PCs. We're increasingly awash in waves of security glitches and a flotsam of patches designed to mend them. Even Net veterans could use a hand in making sense of it all.

So for this month's cover story, "Internet Fixes" (page 80), we called upon two of the savviest tech journalists we know. Contributing Editor Kim Zetter reports on the latest Net-borne security dangers, as well as on new developments with such nuisances as spam and sneaky ads. Meanwhile, longtime contributor Dylan Tweney tracks down fixes for a multitude of apps, from the notoriously holey (the Swiss cheese known as Outlook) to the relatively secure (Eudora). Absurd but true: Among the fixes that Tweney covers are patches for buggy patches.



THE FIXERS ARE IN: "Internet Fixes" sleuths Kim Zetter and Dylan Tweney.

All that squashing of security bugs is enough to make Windows types feel like digital Orkin Men. Patches, says Tweney, put "the burden on users to see that their PCs are secure, when the onus should be on vendors to make sure that they're shipping a secure product."

It's enough to make you consider bolting to a safer gated community like Linux or the Mac. Or you could wait for the next version of Windows. But "Longhorn" is due no earlier than late 2004, and we won't know how safe it is until the bad guys have a chance to bang on it.

Me, I'd cheerfully wait even longer for a Longhorn that could be described with

> a straight face as bulletproof. I'd be even cheerier if the day came when we didn't need to publish articles like this one. For now, though, "Internet Fixes" is a must-read.

A BETTER PCWORLD.COM

NOW FOR some good news: We just unveiled a new PCWorld.com with a fresh look and a home page that puts more features at your fingertips. Also new: Product Guides that meld related content on topics from desktops to digital cameras. The end result is a Web site that's simpler to traverse, easier on the eyes, and more useful than ever.

Finally, a change I report with

sadness: Kevin McKean, our editorial director, has moved on. Luckily for his *PC World* compatriots, he'll be only an elevator ride away, serving as CEO of *InfoWorld* (www.infoworld.com), our sister publication for IT movers and shakers.

If you've enjoyed reading this magazine over the past three years as much as we've enjoyed bringing it to you, thank Kevin for his sage leadership—and wish him well, as we do, in his new world.

Harry McCracken (mageditor@pcworld.com) is editor of PC World.

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What's new and what's next in technology



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FROM PC TO REC ROOM

WE TRY OUT THE FIRST UNITS IN A NEW CLASS OF DEVICES THAT WED YOUR ENTERTAINMENT SYSTEM AND PC. BUT THE UNION ISN'T ALWAYS IDYLLIC. BY ANUSH YEGYAZARIAN

YOUR CD COLLECTION, photographs, and home videos are all neatly digitized and organized—on your hard drive. But what if you'd like to look at pictures or listen to music in a cozier setting?

An increasing number of PC and consumer electronics vendors are betting that you'll spring for a new category of products designed to move your music and memories from your computer to your existing TV and stereo gear over a wired—or wireless network. Judging from what we've seen so far, however, these first-generation devices may not be tempting enough. They're too expensive, and too limited in what they can do.

We looked at four pioneering products—the CD3O C300 Extended-Range Wireless Network MP3 Player with Digital Output, the HP Digital Media Receiver EW5000, the Prismiq MediaPlayer, and the Sony RoomLink—that move digital media from your PC to your home entertainment center, wherever it may be.

All support ethernet connections for wired networks (which generally provide the best performance); all but the Sony also support 802.11b Wi-Fi (though Sony promises to offer an 802.11a adapter soon) for wireless communications with your computer. Except for the Prismiq, these were preproduction units.

The products attach to TVs and stereos via standard A/V cables and ports (see the features table on page 25); prices for the devices ranged from \$199 to \$299. To find out how these units performed in realworld settings, we took them home and tried them out in our own living rooms.

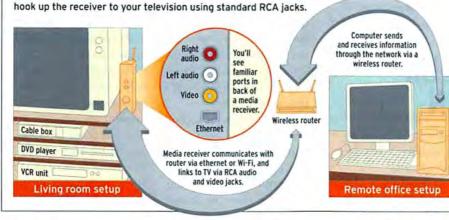


SONY'S ROOMLINK streams video, music, and photos to your den.

HOW IT WORKS ,

BEAM YOUR PC MEDIA TO A TV

YOU WON'T NEED MUCH NEW hardware in order to transmit your digital photographs or videos: Simply connect a media receiver to your wired or wireless network and



Installing these systems is supposed to be no harder (and in many cases far easier) than setting up a network. All use software to set up a computer as your primary media server and search your hard drive for supported file types (in some cases you designate the directories to be searched). You can then create either special folders or playlists to organize your files for playback. Navi-

gation then shifts from the computer to the living room, using a supplied remote control, your TV, or both. All four of the devices support music files; all but CD3O's C300 also support still images, video, or both.

still images, video, or both. The Prismiq MediaPlayer adds Internet features as well. The menus of these prod-

ucts are fairly straightforward. Where applicable, you choose a media category (pictures, music, or video), select content from the available folders or individual files, then sit back and enjoy the show. At least, that's the theory. In practice, however, setting up and using these devices isn't always simple, and each one has limitations.

REALITY CHECK

NONE SUPPORT all major file formats for music, video, and still images. And all of them work best if you do some additional prep work at the PC: For example, only the CD3O lets you set playlists in your

Using these devices isn't always simple, and each has limitations.

living room; none let you shift the order of pictures for a slide show from there. Moreover, if you haven't organized your files into multiple small folders and granular categories, you may not be able to easily access a specific file—say, that new Dave Matthews track from the living room without hitting the arrow keys a lot.

All of these products have software restrictions, as well.

The HP Digital Media Receiver, for example, requires you to use Musicmatch Jukebox music organizer software to set up your playlists.

The HP device works over either a wired or an 802.11b wireless network. But because 802.11b's 11-mbps top speed is considered inadequate for streaming full-screen, fullmotion video (and also to keep costs down), this version of the

> Digital Media Receiver forgoes video to focus on music and photos.

In our trials with a preproduction HP box plugged into the video and audio

jacks of a 10-year-old TV and connected to a PC over an 802.11b Wi-Fi network, setup took only a few minutes. Photos looked terrific on screen, and music quality was good, within the normal limitations of the TV's speakers and the MP3 file format. At the PC, we could organize our pictures into slide shows and pair them with music—a nice touch. Two minor caveats:

IN BRIEF

Tidbyte

PRODUCT ACTIVATION TURBULENCE: Some users are finding TurboTax's new product activation feature taxing. The company's policy, which allows customers to print or electronically file their taxes only from the copy of the software that is activated, is designed to ensure that multiple users don't pass around a single version of the application.

Consumers complain that the restrictions unfairly punish taxpayers who want to use their legally purchased version of TurboTax on more than one computer. Some are concerned that they won't be able to access previous returns if they purchase a new PC. Intuit says that's not a problem: After October 16the last day for you to file amended or extended personal returns-the product activation limitations end.

Intuit isn't budging on its new policy, citing piracy concerns. The company also says it opted to wait on product activation until the technology had matured.

Did You Know?

WORK THE WEB: Policing employee Web use may not be in your company's best interest, a new study says.

5.9 HOURS week surfing while

Employees who spend 3.7 hours per

week surfing while on the job spend an average 5.9 hours weekly online at home for work-related purposes.

AGENT ANTERNAL TECHNISCH READINED STATUTE OF THE DR. DRATY OF MARTINAR READING IN THE STATUTE OF REGISTER. We couldn't figure out how to change the music without interrupting the slide show, and we couldn't adjust slide display times. It's still a nice product—but at \$299, pricey. and photos, but you'll need a Sony VAIO desktop PC with current Giga Pocket software to act as a server—a major show-stopper—and you must import video into Giga Pocket, which supports only MPEG-1 and MPEG-2 files. (Videos in

Sony's RoomLink lets you stream video along with music

EXTRAS FOR YOUR DIGITAL DOMAIN

THE LINE BETWEEN traditional home or even car entertainment and computing will get blurrier as a slew of new products hit store shelves. Here are some of the more intriguing efforts:

◆ Pacific Digital's MemoryFrame MF570: Essentially an LCD with memory and enough intelligence to show a digital slide show, this 5-by-7-inch display (viewable area: 3 by 5 inches) costs \$329; an 8-by-10-inch version is due by midsummer. The idea isn't new, but the latest displays can bypass your PC entirely by download-ing snapshots directly from any USB-equipped camera.

 Rockford Fosgate's Omnificar stereo: This \$599 unit, with assistance from a \$99 Wi-Fi upgrade, can wirelessly transfer tunes or spoken audio from a PC to its own 20GB hard drive and play them back in your car.

Philips Streamium MC-i250: The latest in Philips's Streamium line of audio microsystems not only lets you play Internet audio, standard CDs, and MP3 CDs, it also lets you pipe content wirelessly from your PC to a Streamium stereo.

Philips IPronto TSI6400 universal remote: Designed for well-heeled gadget freaks, the \$1699 IPronto features a highresolution 6.4-inch LCD touch screen and can control lighting and security cameras as well as standard home-entertainment gear. It can also connect to the Internet via a Wi-Fi network and serve up program guides, MP3s, and e-mail.

D-Link DVC-1000 I2eye VideoPhone: This \$299 video camera-equipped device connects to a standard phone, a TV, and an ethernet network to let you add video to your phone calls. You don't need a PC, but you do need a broadband connection.



other formats must be converted using Sony's Movie-Shaker.) Sony supports most popular still-image formats, but you must store all still photos in one particular master folder. And though you can rip your music into most formats and store it wherever you wish, you need to use the SonicStage for VAIO software to create playlists that Room-Link will recognize.

That said, a preproduction RoomLink's video and audio quality were very good. From your TV, you can set the length of the pause between photos in a slide show, or choose whether to repeat the slide show. You can also pair music with a particular slide show. If you have a cable TV feed near your VAIO PC, you can use the whole setup as a digital video recorder-complete with electronic program guideand use RoomLink to stream recorded shows from the computer to the TV set. At the TV, you can also set the computer to record by using standard VCR-like commands.

While the RoomLink now lacks wireless support, Sony says it plans to offer a \$200 module to add 802.11a wireless capability; the standard's 54-mbps speed is, in theory, fast enough to stream fullmotion, full-screen video.

The Prismiq MediaPlayer streamed music with no appreciable sound degradation, and it's the only unit in this group that offers Internet functions such as basic Web browsing and AOL instant messaging. You'll want to get the optional keyboard (\$50) if you do much surfing or chatting—entering text using the remote's phone-like keypad is too awkward for any but the most basic tasks. And while the device's interface isn't pretty, you get used to it.

The still-photo viewing feature was not ready on our shipping unit, but Prismiq says it will be added via a free, downloadable software upgrade that should be available by the time you read this.

The MediaPlayer was the only product we reviewed to support low-resolution video over 802.11b wireless. Playback was adequate, with few perceptible dropped frames. The device lacks support for video formats other than MPEG-1, MPEG-2, and unencrypted .vob (DVD) files. We did have difficulty seeing some supported video files, which the company blamed on problems with the way those files were encoded.

SAY THE WORD?

THE CD30 C300 streams only music, and its remote control bypasses the TV by using textto-speech technology. You press a button to choose how you wish to browse-by artist, genre, album, or track-and then hit arrow keys to hear a robotic-sounding rendition of your choices in alphabetical order (alternatively, you can spell out a selection on the phone-like keypad). But textto-speech isn't really ready for prime time: Many song titles and artist names sounded strange (the B-52s, for example, became the "Bee-hyphenfive-two-ess"), and some were almost unrecognizable.

The music quality in our early preproduction model was acceptable, although we had to turn the stereo volume way up to get just moderately loud sound. CD3O's remote also has buttons for not-yet-



implemented Internet radio features due by summer.

A coming wave of products that weren't ready for testing aim to supplant or even bypass the PC—for a price.

Pioneer's DigitaLibrary, due in May, will have its own 80GB hard drive and a CD-ROM drive. It will let you enjoy media files from your networked PC and stream Internet music and video content from partners such as Launch.com (broadband is required). However, the Digita-Library will go for \$1200, plus another \$900 for "branches" that connect to stereos or TVs in other rooms. Yamaha's MusicCast, for music only, has such high-end audio features as a built-in digital amplifier, a library of CD album information, and almost any stereo connector you could want—for \$2800 (including a server and a client station).

Competition will also come from PCs running Microsoft's Windows XP Media Center Edition, which provides an easy-to-use interface, lots of integrated features, and DVR functions. But these PCs from Alienware, Gateway, HP, and others—carry highend desktop price tags.

THE LOWDOWN

WILL THE products we tried out find buyers? Probably not many, at first. Prices need to come down and the kinks must be worked out before we can wholeheartedly recommend these devices.

If you must buy now, and video support isn't a priority, consider HP's Digital Media Receiver—or if you already have a VAIO desktop with current Giga Pocket technology, Sony's RoomLink.

But again, we recommend waiting. If nothing else, you will likely have more choices: Linksys, Motorola, and Sonicblue expect to ship similar products later this year.

IN BRIEF

Product Pipeline

BARGAIN BASEMENT: Sam's Club is joining the growing list of discount retailers selling PCs online. Samsclub. com is offering PCs made by **CPUBuilders by Stratitec for** less than \$300 (monitor not included). The entry-level model offers a 1.1-GHz processor, 256MB of RAM, a 20GB hard drive, a CD-ROM drive, a popular version of Linux with a modified user interface, and software, including a Web browser, an e-mail program, and basic office productivity apps.

Tidbyte

FAIR WARNING: Want to receive e-mail notices about any gaping security holes in your Microsoft products? The glant software maker now has a newsletter that discusses new product patches and other security issues for nontechnical home users. Subscribe at find. pcworld.com/34052.

FEATURES COMPARISON

FIRST DIGITAL LIVING ROOM DEVICES: HOW THEY STACK UP

PRODUCTS THAT LINK YOUR computer to your home entertainment system focus on different media. Think about what kind of filesand what kind of network-you have before you buy. (Note that all four of the devices we looked at can work over standard ethernet.)

PRODUCT	Price	Video/ music	Photos	Wireless (Wi-Fi 802.11b) support	Ports included	File formats supported	Comments
CD30 C300 Network MP3 Player find.pcworld.com/34025	\$249'	No/Yes	No	Yes	RCA audio; coaxial and optical digital audio	Audio: MP3, WMA, WAV	Provides good music quality; remote uses awkward text-to- speech for navigation.
HP Digital Media Receiver EW5000 find.pcworld.com/34028	\$299²	No/Yes	Yes	Yes	RCA audio, composite video, S-Video	Audio: MP3, WMA; Photo: JPEG, GIF, BMP, PNG	Offers solid playback; blends music and still images well.
Prismiq MediaPlayer find.pcworld.com/34031	\$249	Yes/Yes	No'	Yes	RCA audio, stereo digital audio, compos- ite video, S-Video	Audio: MP3; Video: MPEG-1, MPEG-2, .vob*	Had trouble reading some MPEG files; handles AOL instant messaging and Web browsing.
Sony RoomLink find.pcworld.com/34034	\$199	Yes/Yes	Yes	No ³	RCA audio, optical digital audio, compos- ite video, S-Video	Audio: MP3, ATRAC3, ATRAC3plus, WAV; Photo: JPEG, TIFF, GIF, BMP, PNG; Video: MPEG-1, MPEG-2	Delivers good-quality playback, but requires at least one Sony VAIO PC. Ethernet only.

¹ Ethernet-only version costs \$199.

³ Coming via software upgrade ⁴ Unencoded DVD video. Forthcoming \$200 adapter will add 802.11a

PROCESSOR

AMD'S LATEST IS A WINNER

BIGGER CACHE BOOSTS PERFORMANCE OF ATHLON 3000+ PROCESSOR.

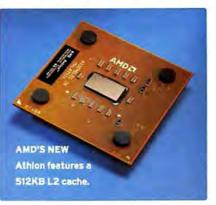
AMD HAS WON its game of "cache up" with Intel. The newest Athlon XP processors, code-named Barton, have double the Level 2 cache of previous models. Our first tests show the results: Bartonbased Athlon XP 3000+ systems flew through productivity work, just topping the fastest Pen-

tium 4 systems we've tested. AMD-based PCs also continue to triumph in the pricing contest, often selling for hundreds less than comparably configured P4 computers.

RECORD BREAKERS

WE TESTED three high-end PCs carrying the Athlon XP 3000+: Polywell's \$2155 Poly

TEST REPORT



880NF2-3000; Sys Technology's \$3153 Sys Performance 3000+; and Falcon Northwest's \$3275 Mach V Athlon XP 3000+. All of them had 1GB of 333-MHz DDR memory and a slew of high-end components, including ATI's Radeon 9700 Pro graphics card. The Polywell and Falcon machines ran Windows XP Home while the Sys ran Windows XP Professional (a negligible factor in our PC World-Bench 4 tests). Polywell sent a preproduction unit; the other two PCs were shipping models.

The Sys PC raced in with a score of 137 on our benchmark—the fastest result of any system to date. The Poly-

well checked in at 136; the Falcon, at 134—all insignificant performance differences.

By comparison, the zippiest 3.06-GHz P4 system we've tested, a previously reviewed \$2860 Sys unit with 512MB of 1.066-GHz RDRAM, scored 132, just slightly lower than our top-performing Athlon XP 3000+ system. Three additional 3.06-GHz P4 systems equipped with 1GB of memory that we tested for the January hyperthreading story (find.pcworld.com/ 34076) averaged 121. That means the top Athlon XP PC scored about 13 percent higher, a noticeable difference.

For comparison we also tested AMD-based Poly and Falcon systems using the original, non-Barton Athlon XP 2800+ chip; PC WorldBench 4 results fell by 2 to 4 points. In several other tests, however including Nero Burning ROM and Musicmatch—the 3000+ PCs performed slightly below the 2800+ systems.

The 3000+ systems' average time of 226 seconds in the AutoCAD test trounced the P4 PCs' average time of 273 seconds. The 3000+ PCs also outperformed the Intel-based systems in the Photoshop, Premiere, Nero Burning ROM, and Unreal Tournament tests; the P4 machines prevailed in the Musicmatch and Return to Castle Wolfenstein tests.

ATHLONS TOP P4 SYSTEMS ON MOST TESTS

LOWER SCORE IS BETTER HIGHER SCORE IS BETTER PC WorldBench 4 Photoshop AutoCAD Musicmatch Castle Unreal SYSTEM CPU AUGI Gauge (seconds) 7.0.1 7.2 (seconds) (seconds) (fps) (fps) Sys Technology Sys Performance 3000+ 2.167-GHz 137 99 219 159 90 222 Athlon XP 3000+ Polywell Poly 880NF2-3000 2.167-GHz 136 99 230 165 100 222 Athlon XP 3000+ **Polywell Poly** 2.25-GHz 134 222 99 241 161 100 880NF2-2800 Athlon XP 2800+ **Falcon Northwest** 2.167-GHz 134 103 229 99 234 166 Mach V Athlon XP 3000+ Athlon XP 3000+ **Falcon Northwest** 2.25-GHz 130 101 241 160 101 230 Mach V Athlon XP 2800+ Athlon XP 2800+ Sys Technology Sys Performance 3066 3.06-GHz 132 n/a n/a n/a n/a n/a Pentium 4 Average results 3.06-GHz 121 107 273 144 117 213 for three systems Pentium 4



HOW WE TEST: The Sys 3066 had 512MB of memory; all others had 16B. Athlons used DDR333 SDRAM; P4s used PC1066 RDRAM. P4 systems were tested with hyperthreading turned off; all were tested with PC WorldBench 4 and assorted other benchmarks. For a complete explanation, visit find, pcworld.com/34079. 'Original Athlon XP 2800+ chip with 256KB L2 cache. ⁴ Tested earlier for the *Top 100*; results included for comparison. $n^2 =$ Not available. THE 3000+ SKINNY

AMD 15 shipping three new Barton-based processors: The Athlon XP 3000+ (running at 2.167 GHz), a new XP 2800+ (2.083 GHz), and the first XP 2500+ (1.833 GHz). All three include a 512KB L2 cache and a 333-MHz frontside bus. The 2800+ Barton-based CPU replaces an existing Athlon XP 2800+ chip that AMD shipped in small quantities to five PC vendors in fall 2002.

The original 2800+ chip, which runs at 2.25 GHz, is faster than both its replacement and the 3000+ chip. What gives? According to AMD, the 2800+ model number is based on the level of

DESPITE NOTICEABLY SLOWER clock speeds, computers based on the latest version of AMD's Athlon XP chip often outperform PCs running Intel's fastest 3-GHz processor in our tests.

CREATURE O CREATEO PREMIERE O



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to an investment of the second sec

Discover the whole Indi DVD story at www.tdk.com, The Digital Sweetspot^w. performance the chip delivers in PCs when running certain applications. The new 2800+ uses cache instead of megahertz to reach that level of application performance.

By the time you read this, all 2800+ chips shipping in PCs should be Barton-based models, according to AMD.

The company plans to ship an Athlon XP 3200+ processor by mid-2003, and in September it will debut its oft-delayed Athlon 64 CPU. AMD's future chip pairs 64-bit technology with a faster memory interface that should lead to improved performance.

GRAPHICS

Intel also plans several new chips, including a 3.2-GHz P4 that should be ready by April, says Kevin Krewell, general

Mach V Athlon XP 3000+ Falcon Northwest Street: \$3275 find.pcworld.com/33995

Poly 880NF2-3000

Polywell Street: \$2155 find.pcworld.com/33998

Sys Performance 3000+ Sys Technology Street: \$3153 find.pcworld.com/34001 manager at research firm In-Stat/MDR. The company will follow that with a 3.4-GHz chip, code-named Prescott, offering twice the P4's current L2 cache (1MB) and improved hyperthreading, he says.

In the meantime, your best deal is likely a computer with AMD's Athlon XP 2800+ chip, since the prices of such systems are noticeably lower than those of 3000+ PCs (about \$200) but their performance is not. And the price differences between Athlon XP 3000+ machines and 3-GHz P4 systems can run as high as \$600. —Laurianne McLaughlin

NEW NVIDIA DISAPPOINTS

GEFORCE FX 5800 ULTRA CARD IS LOUD, LARGE, AND LACKLUSTER.

NVIDIA CLAIMS that graphics boards based on its GeForce FX 5800 Ultra are the fastest on the market, which is partly true. Problem is, our reference board with the new chip is also

the loudest and biggest graphics card around and the chip doesn't always outperform the competition, exclusive *PC World* tests prove.

The 5800's most impressive test result: Our preproduction unit ran Unreal Tournament 2003 at 126 frames per second in 1600-by-1200 resolution and 32-bit

color, besting its main competitor—an ATI Radeon 9700 Pro-based board—by 25 fps.

However, at real-world resolutions the 5800 Ultra couldn't always outrun the 9700 Pro. For example, at 1024 by 768 the ATI chip ran Unreal Tournament at 175 fps; the 5800 logged 168. In our 1024-by-768 antialiased Unreal Tournament test, both ran at 154 fps—but testers preferred the image quality of the Radeon. The 5800's inability to signifi-



cantly outperform the 9700 Pro is notable since boards based on the NVidia chip will sell for about \$400, roughly \$80 more than comparable 9700 Pro-based cards.

Physically, the NVidia-based graphics card is sure to turn heads, as its cooling system is so big that it blocks the adjacent PCI slot. The complex assembly cools the board's 500-MHz chip and its 128MB of 1-GHz DDR-II memory.

During our tests the 5800

Ultra's fan produced bearable noise when running 2D graphics, but it was unacceptably loud when running 3D graphics. NVidia says shipping cards won't run the fan in 2D, and will run it quieter in 3D mode. Even granting some improvement, I'm still left asking: Who pays a premium

for a noisy card that doesn't blow away the competition?

Meanwhile, ATI isn't standing still. The company plans to ship boards based on its new Radeon 9800 Pro chip in March, giving graphics aficionados yet another option.

-Eric Dahl



SKIP THOSE STICKERS: Epson's Stylus Photo 960 ink jet printer lets you forgo sticky labels to print directly on CDs and DVDs that have ink-jet-printable surfaces. The \$349 model now comes with template software and a tray for holding your CDs. find.pcworld.com/34007

Tidbytes

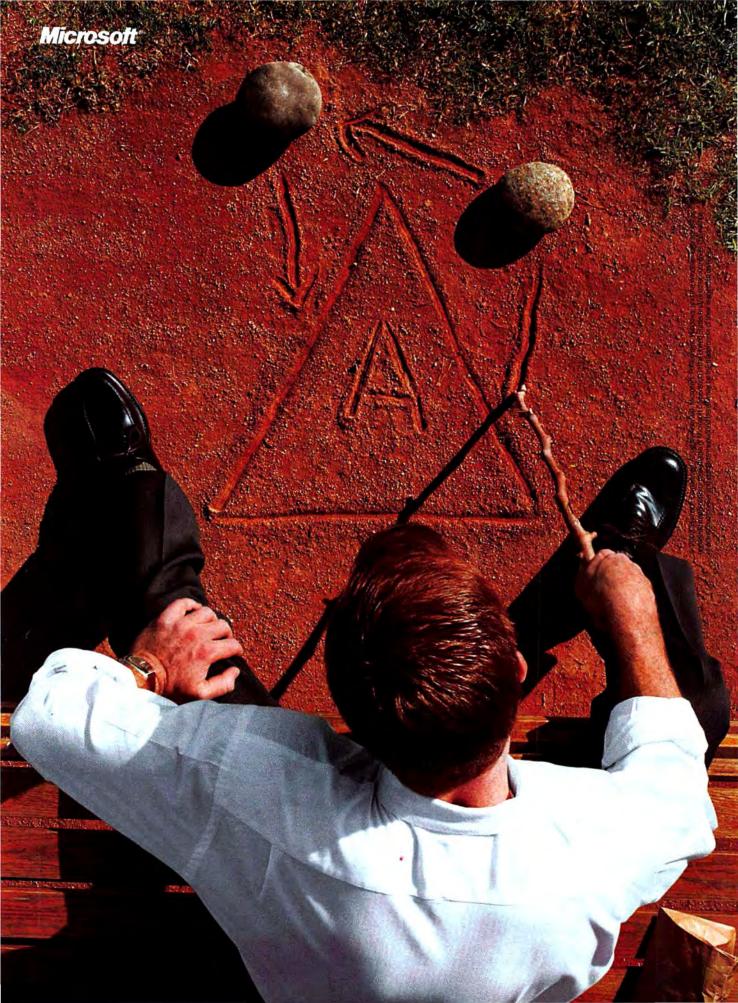
BUDDIES TOGETHER: IBM and America Online are set to test the integration of IBM's Lotus Sametime instant messaging software and AIM Enterprise Gateway, AOL's newly launched business IM service. Should the tests succeed, users of both services will be able to communicate using one screen name, one password, and a consolidated contact list.

EYE ON YOU: A recently leaked 120-page proposal by U.S. Attorney General John Ashcroft calls for new laws to significantly expand government access to private e-mail messages and Web surfing. Among other things, the Domestic Security Enhancement Act of 2003 draft asks for felony status for use of encryption to conceal a crime and that electronic surveillance be permitted after Congress declares "a national emergency" rather than a war. The proposal is under fire from privacy advocates.



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WIRELESS NETWORKING

BEST WI-FI EVER: 802.11G

EARLY PRODUCTS ARE FAST, AFFORDABLE, AND WORK WITH POPULAR 802.11B GEAR.

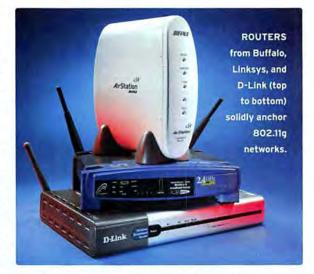
WIRELESS-NETWORK shoppers take note: 802.11g, the latest Wi-Fi standard, is fast, compatible with its popular but slower 802.11b sibling, and affordably priced. But there is some fine print for you to consider.

First, the nomenclature: Today's 11-megabits-persecond 802.11b wireless networks are fine for broadband Internet access (which typically tops out at about 1 mbps) but a bit poky for large internal file transfers or streaming video. However, 54-mbps, corporate-oriented 802.11a is expensive-and because its radio uses the 5-GHz band and 802.11b uses the 2.4-GHz band, upgrading to an 802.11a network means either scrapping 802.11b gear or buying even-pricier hardware that can support both standards.

But 802.11g promises the same speed as 802.11a and the ability to coexist with 802.11b equipment on one network, since it too uses the 2.4-GHz band.

The catch is, the first retail products are based on a nearfinal spec. The IEEE isn't expected to ratify the standard before June, and the Wi-Fi Alliance needs a ratified standard to begin certifying cross-vendor compatibility. These so-called pre-g products aren't guaranteed to work with either final versions or each other.

But judging from informal tests of the first shipping prestandard 802.11g hardware from Buffalo, D-Link, and Linksys, you shouldn't shy away from these early birds—if you need to buy now. Not only are these products fast and—at \$125 to



\$149 for gateways—only a bit more expensive than 802.11b equivalents, but in our tests they worked seamlessly with each other as well as with 802.11b gear from other vendors. One caveat: Vendors say that these products will need only free, downloadable firmware updates to meet final certification standards, but there are no ironclad guarantees.

How about performance? With an all-802.11g network, we got real-world throughput ranging from 10 to 15 mbps, or about four times the 2.5 to 4 mbps we've historically recorded for all-802.11b networks (see chart). Speeds dropped when WEP (Wired Equivalent Privacy) encryption was turned on or when we used both 11g and 11b cards on the same WEPdisabled network, but they still beat out 802.11b-only speeds. Even 802.11b cards ran about 15 percent faster when connected to an 11g gateway than when connected to an 11b gateway.

If you already have an 802.11b setup, and don't feel a compelling need for a faster network, there's no reason to upgrade to 802.11g immediately. But if you're planning to buy Wi-Fi equipment anyway, we'd recommend these prestandard products. The risk is minimal; the rewards are clear. —Becky Waring

HANDS ON

802.11G DELIVERS THE GOODS

NEW 802.11G NETWORKS outpace existing 802.11b Wi-Fi networks, even when slowed down by

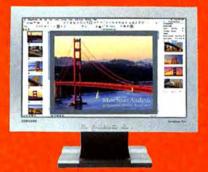
WEP (Wired Equivalent Privacy) encryption or older, slower network adapters.

802.11G TRANSFER (mbps) 802.11b transfer (mbps, WEP off) GATEWAY/ROUTER Price WEP off, 802.11b card on network WEP off WEP on **Buffalo AirStation G54** \$129 11.1 3.8 Broadband Router AP 8.2 9.4 find.pcworld.com/33974 D-Link AirPlus XtremeG High-Speed 2.4GHz Wireless Router \$120 15.5 10.3 4.3 R find.pcworld.com/33977 Linksys Wireless-G Broadband Router \$149 11.1 6.3 6.6 4.8 find.pcworld.com/33980

We tested 802.11g throughput by transferring an 87MB file from a Windows 2000 desktop (connected to the gateway by 100-mbps ethernet) to a Windows XP notebook equipped with the gateway vendor's own 802.11g card. We also ran the test substituting an 802.11b card for the 802.11g card on the notebook. For more details, see find.pcworld.com/33983.



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CONSUMER ALERT

NOW THEY'RE AFTER YOU: MUSIC COPS TARGET USERS

RECORDING INDUSTRY EXPANDS FOCUS AND GUNS FOR FILE TRADERS.

MILLIONS OF people download copyrighted songs and even movies from the Internet with little fear of being caught. That's about to change.

"[The music industry is] starting to move down the food chain," says Lawrence Hertz, a partner at New York law firm Hall Dickler Kent Goldstein and Wood, and a specialist in online law.

He predicts that music publishers and other content owners will soon use 1998's Digital Millennium Copyright Act much more aggressively—prosecuting not only companies like Napster but also individuals who download copyrighted content—and that they will start with the biggest users of peer-to-peer networks.

The new strategy became evident last year when the Recording Industry Association of America served Verizon with a subpoena demanding that the service provider disclose the identity of a user who uploaded more than 600 songs while connected to the company's Internet service.

Verizon protested, but recently a U.S. district court judge ruled in favor of the RIAA and ordered Verizon to reveal the user's identity.

Verizon asked for a stay of the judge's order; at press time this was still pending, but approval seemed unlikely. "If this ruling stands, consumers will be caught in a digital dragnet," says John Thorne, Verizon senior vice president and deputy general counsel. If the stay is denied,

JOHN THORNE, Verizon deputy general counsel.

> Verizon says it will seek a stay at the appeals court level.

> "It's going to have quite a huge impact on privacy," says Gwen Hinze, staff attorney for the Electronic Frontier Foundation. The EFF argues that the ruling lets copyright holders get users' identities merely by alleging copyright infringement (a fairly easy standard to meet)—without review by a judge and without giving users any chance to protect themselves or their identities.

> The music industry says that it's just defending itself from digital piracy, which has contributed to two successive years of declining CD sales.

"Most consumers are get-

ting what they want on the Internet, and it's really hurting this industry," says Brian Dunn, senior VP of corporate development for Macrovision, a provider of copyright-protection technologies. Dunn predicts that cash-strapped music labels could start paring promotion budgets for new artists in the coming year, while moving to include copy protection on all of their CDs. (So far, only a handful of majorlabel releases in the

copy protection.)

United States use

SOME MAJOR copyright holders appear to be satisfied with the powers they have under existing laws. Touting a "market-oriented" approach to copyright protection, the RIAA, along with the Business Software Alliance and the Computer Systems Policy Project, recently issued a statement agreeing to pursue such protection without government intervention.

But the movie industry, which is conspicuously absent from the group announcement, continues to support the notion of legal mandates. "We are not prepared to abandon the option of seeking technical protection measures via the Congress or an appropriate regulatory agency," says Jack Valenti, president and

IN BRIEF

Downloads

Head to find.pcworld.com/34103 to locate these files.

- 1. Window Washer 4.8 1572KB Protect your privacy by cleaning up your PC activity history.
- 2. FreeRAM XP 1.22 517KB Is your PC acting sluggish? Free up memory with this tool.
- 3. Beyond Compare 2.0.1 1585KB Compare files or directories and reconcile the differences between them.
- 4. Norton Personal Firewall 2003 748KB Secure your data while online and receive notifications of breach attempts.

5.1HateSpam 3.1.191 4360KB Gain control over that everincreasing flood of time-wasting e-mail in your in-box.

CEO of the Motion Picture Association of America.

There is one attempt in the works to mitigate the DMCA's harsher aspects: the Digital Media Consumers' Rights Act, recently introduced by Representative Rick Boucher (D-Virginia). The act-supported by an array of technology and telecommunications companies, including Intel, Philips, and Verizon-would let users circumvent copyright protection for "fair use" purposes, such as making backup copies of CDs or opening e-books in more than one reader, an activity the DMCA now prohibits (see "Hollywood vs. Your PC," find.pcworld.com/34019).

Whatever happens legislatively, the days when you could download all the songs or movies you wanted for free, without fear of prosecution, seem nearly at an end.

-Dylan F. Tweney

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* Source: U.S. Department of Labor Occupational Outlook Handbook.

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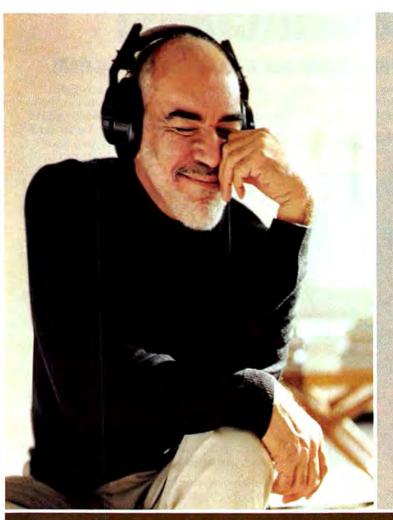
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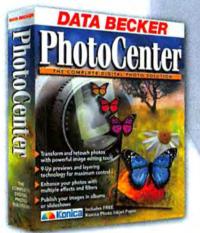
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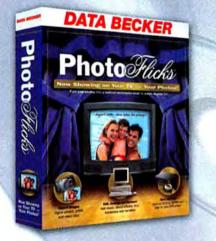
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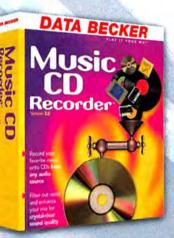
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CHECKING OUT ONLINE STORES

PERSONAL VIDEO RECORDERS

후 후 한 귀 : 신

WIRELESS NETS GETTING EASIER



'CAMERA CONFIDENTIAL' DRAWS KUDOS, TIPS

DANIEL TYNAN AND Tom Spring turned in an excellent investigative report on the questionable tactics of online camera retailers ["Camera Confidential," February]. I'll bet you've heard from a lot of people who, like me, got thoroughly burned.

My vendor's site listed a \$449 camera as in stock; it wasn't. The camera became a \$733 purchase after adding inflated shipping charges and overpriced accessories. UPS said the camera shipped 4 days later than the retailer's e-mail said. My credit card was charged 18 days before shipping. *E. Rettig, Alto, New Mexico*

YOUR ARTICLE SHOWS that the problems predigital photographers have dealt with for years are continuing, mostly because consumers still think price is the only thing to check. Build a relationship with a local dealer—in the long run it will save you money. Or choose an online dealer for services, not costs. Finally, if the price seems too good to be true, it is.

Michael Baker, Falls Church, Virginia

HERE'S A WAY to do a quick background check for any Web site (not the only check you may need, but still helpful): Do a "whois" search on the site domain to see who it's registered to. I did such searches for two online camera retailers; one site had suspiciously little data, with an expiration date for its domain name early this year. The other site had complete information, and its domain name was registered through November 2010.

Go to www.networksolutions.com/ cgi-bin/whois/whois to do a search. Pauly Wicklund, Tampa

AT LEAST ONE retailer can ensure you get a discount. Find an item that you want in a Sears store, and locate the same item online using a price comparison service.

At an online discount store, print the page with the price for the item; be sure to get the store's phone number, as well. Take this page to Sears; a salesperson will call the online store to verify that the price

FACE-OFF

Ad Blocking: Theft or Surfers' Right?

DON'T! In February's Letters, Jim Kelly complains about Web sites that block viewing if you're using an ad blocker.

I run a moderately large site, thanks to the generous sponsors who advertise on it. People like Kelly are robbing Web designers of income. I think such practices are even worse than digital music theft. At least music artists have income from live performances. If Kelly wants to continue to use his ad-blocking software, I have a feasible solution: He can pay each site he looks at 15 cents per visit-that is what he is costing it. I applaud the designers who are implementing features to block ad blockers, because they are helping me retain my revenue. In the future, I may add such code to my own site.

Brian Fusco, Pittsburgh

is legit. If it is, Sears will match it, but will add local sales tax and perhaps shipping. You can return or exchange the item the next day with no hassle.

Sheldon La Follette, El Paso, Texas

YOUR "FOLLOWING THE TRAIL" sidebar on page 120 of how gray-market goods end up in U.S. stores may have miscommunicated the role of freight forwarders.

Freight forwarders have a fiduciary duty to both the shipper and the U.S. government not to divert goods. It is incorrect to say that they send a bogus bill of lading: A forwarder doesn't issue those documents, and a carrier will not do so either, for liability reasons. Either action—diversion or a false bill of lading—would be illegal on the forwarder's part. Diversions are possible due to insufficient screening of buyers of merchandise by the manufac-

DO! To those sites that attempt to stop ad blockers: You guys had better get a clue. If you block me because of my ad blocker, I won't see your site. I won't have to put up with your pop-up ads, or be able to read your unobnoxious ones. Since I won't see your site, neither you nor your advertisers will have *any* chance of gaining my business. Yes, I vote with my wallet, and I do tell my friends. (Fundamental law of business: The satisfied customer tells 10 people. The unhappy customer tells 100. The angry customer with access to the Internet tells *thousands*.)

Bottom line: You are welcome to try to gain my attention, but not if you resort to tricks and behavior reminiscent of the telemarketers who call during dinner.

J. A. Sanford, Hampton, Virginia

Slow boot / Won't boot up Slow / Aborted backup File corruption / Data loss RAM use / Cache problems Crashes Errors in programs System freezes System hangs Hard drive failures

Blue Screen of Death

١

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Mike Beckers, freight forwarder, Chicago

MOST USEFUL SITES

I FOUND the February cover story. "Really Useful Sites for Really Busy People," to be informative, and I have added many of the sites to my Favorites list. However, the toolbar at www.desktopnews.com takes up a lot of real estate on the desktop. It cannot be resized and other programs cannot run on top of it.

Barbara Runkel, via the Internet

WHY AM I not surprised? Four sites on sports? And maybe one on books. Tell me again how literate this country is. I must have missed it while I was waiting in line for tickets to Oprah Winfrey's show. Oh, I forgot-she stopped reading too. Guess I'm out of luck. Remember Fahrenheit 451? If that's too tough, you might try the movie-maybe there is even an e-book.

Harold Verdun, via the Internet

BUT WILL IT WORK?

KEVIN MCKEAN'S Up Front column [February] noted that personal video recorders download program guides from the Web

CORRECTIONS

IN MARCH'S "20 Days Without a PC," the artwork should have been credited to Barry Blitt.

In Top 5 Entertainment PCs (March) the Falcon Northwest Mach V 2800+ DV should have been listed at \$5245.

In February's "Really Useful Sites for Really Busy People," the magazine subscription site's URL should have been listed as www.themagazineboy.com.

A February In Brief item may have confused readers about the pricing of ClicVU's Spamex Disposable Email Address Service; it is \$10 a year, with a 30-day free trial.

In January's "Image Makers," the ink jet printer chart on pages 108-9 should have said the Canon 1550 Color Bubble Jet Printer has four ink cartridges.

PC World regrets the errors.

to find and record the programs you want.

I remember the absolute thrill I had when those TV-show code numbers first appeared. At last, I thought! Just type in a unique number, and when that number's show was about to start, your VCR would automatically start recording. No setting of days, channels, or times; no headaches with delays or postponements! How disappointing to find it wasn't so.

I wonder if the new personal video recorders will have similar problems.

Paul Paige, Phoenix

LETTERS

SETTING UP A WIRELESS NET ...

THANK YOU FOR an excellent article ("Wireless Networks That Do More," February]. I had been thinking for some time I wanted to take that plunge, and your article finally convinced me the time was right. This evening I spent less than 10 minutes installing a new router and notebook card. I don't think this would have been possible just a year or two ago.

R. Mueller, Marshfield, Wisconsin

... AND BACKING IT UP

THE SIDEBAR "Answers to Common Network Problems" suggests backing up a network to a large external drive. I'm more paranoid than that and would be afraid that both the drive and the system would crash and burn at the same time.

In my small network (five PCs), each machine's hard drive has a section containing the data from the other systems. If four go up in smoke, I still have my data.

And yes, there is also the offsite copy on CD, because I don't trust computers. Jonathan Schwartz, Burlington, Connecticut

PROPPING UP YOUR TABLET PC

IN YOUR "Tablet Test-Drive" article [News & Trends, February], Kymi Armour Matheson mentioned that she desired a way to prop up her Fujitsu slate computer apart from the docking station. I just purchased a copy holder for less than \$10. I think any book or copy holder will do for a slate.

David A. Beck, via the Internet

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Wi-Fi's G-Whiz Factor

The Buzz: From the same people who brought you the catchy moniker 802.11b -known in less techy circles as Wi-Ficomes 802.11g, the latest speedy wireless LAN standard (see News and Trends, page 34). Although the new spec won't get 1EEE ratification until around midyear, the big networking companies are already jumping the gun, offering a full slate of gflavored gateways and cards. With a transfer rate of 54 mbps, 802.11g is five times faster than the current 802.11b, yet it's also backward compatible. And what if the 802.11g spec changes between now and then? No problem: "If a firmware update is needed," says D-Link marketing VP Bradley Morse, "users will be able to download it for free from our Web site." Bottom Line: Let me get this straight: 802.11a (for high-bandwidth applications) came after 802.11b. Then came 802.11g, to be followed by 802.11e (better streaming of data), 11i (better security), and 11h (power management). Don't they teach the alphabet at engineering school?

Surf the Friendly Skies

The Buzz: You'll still have to switch your laptop off at takeoff and landing, but Lufthansa and British Airways have started trial programs offering high-speed Web access on their flights. Meanwhile, Scandinavian Airlines and Japan Airlines have similar trials in the wings. Boeing's satellite service, called Connexion, will cost passengers about \$30 on British Airways, and it will be free on Lufthansa—at least for now. **Bottom Line:** Once the service has rolled out on multiple airlines, expect to pay for the privilege. But don't fret: The little bag of minipretzels is still free.

Personal Video to Go

The Buzz: The latest gizmos for well-

heeled geeks on the go are handheld video players, portable devices that can store 10GB or more of data and play back photos or MPEG-4 movies (plus various audio formats) on a 3.8-inch color LCD screen. The Archos AV-340 (at right) should be available

in May, while Thomson, ViewSonic, and others have competing gadgets due later in the year, all in the \$400 to \$550 range. **Bottom Line:** The studios should consider reformatting their movies to fit the tiny screen. Coming soon to a microplex near

you: My Skinny Little Greek Wedding.

NAGGING QUESTION

Why Is It Called Spam?

DON'T BLAME Hormel Foods. The company may have introduced the canned meat back in 1937. But the spam designation-referring to unsolicited commercial e-mail-comes from a *Monty Python's Flying Circus* skit, circa 1970. A couple tries to order break-

The Business of Blogs

The Buzz: They started as online diaries jam-packed with random observations and more than the daily recommended allowance of self-indulgent twaddle. But the blog (for Web log) has grown up. Of course, private Netizens continue to post journal entries that detail cereal preferences and run-ins with the boss; but businesses, media outlets, and journalists now routinely blog (yep, it's a verb) as a way of keeping customers and readers informed. Even corporate America has jumped on the blog-wagon, with Intranetbased k-logs (knowledge blogs) that house

company documents, e-mail, comments, links, and the like—



much of it contributed by employees. **Bottom Line:** Leave it to big business to turn a frivolous pastime into a productivity tool. Now I'm looking forward to Grand Theft

Auto: Management Training Edition.

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

fast in a café where every menu item includes Spam. Meanwhile a clutch of helmet-headed Vikings break into song, chanting "Spam, Spam, Spam, Spam" and drowning out everyone in the joint. Funny stuff; sadly, spammers are now having the last laugh.

MADE WITH NO LIMITS IN MIND

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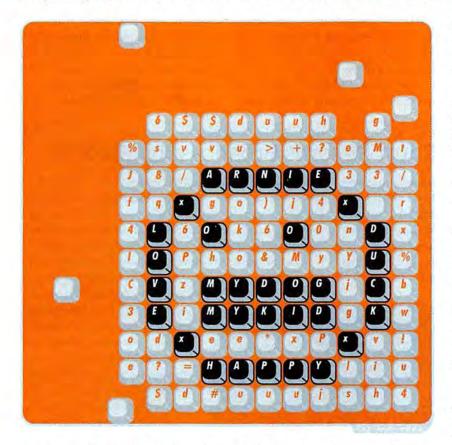


TIPS FOR SECURITY AND CONVENIENCE

PRIVACY WATCH: COURT RECORDS ONLINE ON YOUR SIDE: THE PALM SYNCING BLUES

Manage Passwords Safely—and Simply

Plagued by a plethora of passwords? Here's how to deal with them without driving yourself nuts.



YOU'RE DOING A LITTLE Web browsing at work when you come upon Widgetsnmore.com, a site that looks vaguely familiar. Suddenly, you see it: the multipurpose electronic gadget polisher you've coveted for weeks—and it's half price until 5 o'clock today! You click on the image to order it, and...uh-oh. The site asks for your password. What do you do? a. Enter your cat's name—you use the same simple password at every site. b. Frantically type word-and-number combinations you've used in the past. c. Set up a brand-new account. d. Give up, exit your browser, and learn to love your dull, unpolished gadgets.
e. Confidently enter *drk#3kl8nfl* and com-

plete the transaction. If you chose *e*, congratulations. You obviously have an advanced degree in password management. (Bonus points if you recently changed that password from its predecessor, *wr&g8zflg*.)

If you answered anything but *e*, you're invited to join the Problem Password Club. (True confession: Until I wrote this column, I would have chosen *b*.) For what it's worth, we're in the majority. A recent study by Jupiter Research shows that over half of the consumers it surveyed used the same user name and password at all or most of the sites they visit.

It's dangerous to be loose with passwords. If you use names or words, a hacker can use a program that tries the whole dictionary to access your account. And if you use the same password everywhere, a successful hacker can access your whole online life by breaking one code, says Rob Leathern of Jupiter Research.

We all know what we're supposed to do with our passwords: Make them cryptic, change them regularly, never share them with anyone, and so on. The problem is, strong passwords—those that contain upper- and lowercase letters, numbers, and punctuation—are considerably harder to remember than, say, your best friend's name. And given the choice, most of us understandably opt for convenience.

But take heart. Managing strong, secure passwords doesn't have to translate into endless hours of arduous mental calisthenics and memorization techniques. There are ways to achieve a comfortable balance between efficiency and security in your password-protected online life.

A SITE FOR FLUFFY

YOU PROBABLY HAVE accounts at sites where you haven't provided any sensitive information—at free online news services, for instance. It probably makes sense to use your cat's name as a password at all those sites. After all, do you really care if someone reads the New York Times online under your name? If you want a little more security, incorporate the first initial of the site into your password; at NYTimes.com, for instance, your password might be *fluffyn* while at Orbitz it might be *fluffyo*.

At any site that stores your financial information or sensitive personal information, you need to create a unique password. To make your passwords cryptic to outsiders (and resistant to dictionarylookup techniques) but memorable for you, try using the first letter from each word in a phrase—for example, *HiMbG* for "Hello, I must be going." You can combine that technique with using numbers for sounds, such as *Gr8* for "great." Using these tips to alter your user name as well—*h4d* instead of *hford*, for instance makes life even harder for hackers.

Reserve your strongest passwords for your most sensitive accounts. To remember your passwords, it might help to associate their format with their security level. Passwords for accounts containing financial data might include all possible kinds of characters, while those for less critical sites use only letters followed by a number.

DIGITAL ASSISTANCE

NO MATTER HOW MUCH you try to simplify it, though, handling passwords will always be a chore. Fortunately, dozens of good password management tools are available. I like Roman Lab Software's Any Password (www.romanlab.com)—a free, easy-to-use download that encrypts and stores all of your passwords and user names in a simple tree format.

Siber Systems' AI RoboForm (free for personal use) is a handy tool that memo-

rizes passwords and fills out online forms in a single click. You can download it at find.pcworld.com/33575. SplashID for Palm devices (available for \$20 at www. splashdata.com) allows you to store passwords encrypted on your PDA.

Passport is Microsoft's inevitable entry in the field of information management. Used in combination with other services like Microsoft Wallet, it promises quick and easy shopping. The catch: Your information is stored on Microsoft's servers (surprise!) instead of on your system—a trade-off I'm not willing to make. And Passport works only on sites that have implemented it. Another high-profile player, Gator's EWallet, delivers plenty of e-shopping functionality but pelts you with ads and spam in exchange.

PRIVACY WATCH

Divorce and Other Court Records Broadcast by Browser

ATTENTION, SNOOPS AND CRIMINALS! Got a hankering to poke into the private lives of your neighbors or friends? Looking for a quick and easy victim for your latest identity theft? You don't need to pull a break-in: A few clicks on your local county court clerk's Web site may provide you with all the information you need.

Court clerks have always maintained public records detailing some of the most intimate and personal aspects of our lives, from

divorce filings to criminal proceedings. Now, many clerks are making those records available to anyone with an Internet browser.

In some cases, astoundingly sensitive information is available online. Ohio's public records law mandates probably the most comprehensive online access to court information in the nation. A cursory search through court records in Hamilton County, Ohio, gave me the names, birth dates, mailing ad-

dresses, phone numbers, Social Security numbers, and vehicle data of everyone who had a hearing at the court for a traffic ticket, for example. That's enough data for any stalker or identity thief.

"The top complaint the last three years is from people who don't like the financial matters in divorces being available, and the second complaint is that their Social Security number is available," says Hamilton County Clerk Jim Cissell. But he says that there's nothing he can do about it: The state's public records laws forbid court clerks to remove sensitive information from the records.

Of course, all this information has always been available to any-

tity thief asked a clerk for hundreds of divorce records, it would certainly prompt some suspicion. But that same thief can view or download thousands of records online without anyone noticing. In one Hamilton County example, a job seeker was turned down because the prospective employer retrieved the applicant's crim-

one willing to go down to the court clerk's office and ask for it. But

in this case, the Internet really does change everything. If an iden-

inal record from a data-mining service. A

judge had ordered the record deleteda not-uncommon ruling in situations involving less-serious offenses or young defendants. But the record remained available from the private firm, which had downloaded and stored it before the judge's order.

So should county court clerks remove all online records? It's not that clear-cut. After all, public records are supposed to be open to all, and online records can be a great convenience

for many people. In addition, they're an important resource for the disabled. "If I take [the online records] away," Cissell says, "it's kind of like taking the ramp away from the courthouse."

Cissell is working with state legislators in Ohio to find a balance between unfettered access to court records and the risks that such openness can pose to the privacy of people listed on the records. We can only hope that the compromise they work out will set a national precedent protecting the public's right to know, while preventing the abuses that can result from posting personal data online.

-Andrew Brandt





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9 seconds and 16 ppm full color, the Phaser 8200 is faster than 90% of today's office printers.[†] What's more, it's just one of a full line of office printers designed to help your business break out and sparkle. For more information, call 1-877-362-6567, ext.1887 or visit xerox.com/officeprinting/egg1887

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© 2002 XEROX CORPORATION. All rights reserved. Xerox* The Document Company* Phaser* and There's a new way to look at it* are trademarks of XEROX CORPORATION. * Estimated US retail price. Reseller price may vary. 'Based on current market data by IDC. Imperial Eggs by Priter Carl Fabergé: Spring Flowers, Chanticleer, Coronation. The Forbes Collection, New York © All Rights Reserved. Another convenient option is to have your browser remember your passwords. But you should exercise great caution with that approach. Don't use it if anyone you don't trust has access to your PC. And even if you live the life of a technologically savvy hermit, a hacker still might uncover the information—especially if you have a broadband connection that isn't protected by a sturdy firewall.

The passwords you choose can be your strongest defense or your weakest link. Jupiter's Leathern summarizes it this way: "At the end of the day, it's all about: 'Can someone guess this?'"

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

ON YOUR SIDE

Epidemic of Palm Syncing Problems

I KNOW OF at least three people (in addition to me) whose Palm M515 PDAs suddenly stopped syncing. Palm replaced the defective M515s with refurbished ones, but a couple of them (including mine) stopped syncing again. Now the company says I'll have to wait two months for a refurbished replacement. I could have sent the broken PDA for repair, but I can't afford to be without it that long. I asked to return the handheld for a refund, but the company refused.

Kalman Yeger, New York On Your Side responds: After I contacted Palm, the company's tech support personnel called Yeger but could not determine the cause of the problem, Palm spokesperson Marlene Somsak says. So Palm offered to replace Yeger's M515 with a new PDA. In addition, the company sent him a HotSync Reset Card, which Somsak said solved Yeger's syncing problems. This piece of hardware, which Palm is testing on a limited basis, is a Secure Digital card that pops into the handheld's card slot and carries out a routine that should restore the syncing capability in some percentage of malfunctioning PDAs.

Syncing problems may have any of a wide number of possible causes, Somsak says-from an excess of static electricity to software conflicts or driver problems on a user's PC. Palm users who experience syncing problems should contact the company's tech support staff at 847/262-7256 (note: this is a toll call). A tech will determine the right course of action.

-Grace Aquino

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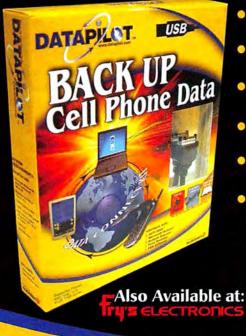
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Tools and Tips to Brighten Your Outlook

Five great ways to right what's wrong with the popular e-mail program.



EVERYBODY USES Microsoft Outlook, right? Except you cheapskates using Outlook Express, of course. Well, here's a scoop for you: Outlook stinks. There— I said it, and no lightning bolts have struck from Redmond (I put my rubber-soled boots on, though). For those of you who *do* use Outlook for your e-mail, I have some neat utilities and add-ons that make the program work the way I think it should.

I live in e-mail—often receiving 150 or more messages a day—and I regularly access my archive of roughly 15,000 messages. Outlook's meager skills at organizing and searching incoming e-mail leave me, well, unorganized. An Outlook buddy turned me on to a minor miracle: Caelo Software's \$40 Nelson Email Organizer.

I think of NEO as an Outlook-as-itshould-have-been e-mail interface. The program lets me arrange e-mail by critical—or hypercritical—people (my editor waiting for a past-due column, for example), by frequent correspondents, or by

LLUSTRATION: MELINDA BECK

date. NEO catalogs and indexes everything without messing with the actual messages. A button on Outlook's toolbar lets me instantly jump between Outlook and NEO for access to my calendar, tasks, contacts, and notes. NEO's automatic indexing makes searches startlingly fast.

Undoubtedly, many of NEO's most useful features will eventually be built into Outlook. But until then, buy NEO. The utility works with all versions of Windows and Outlook. Go to find.pcworld.com/ 33224 to download a 30-day trial version. Oulck tip: Instead of typing a due date for a task in Outlook 2000 or 2002, enter a description of it, such as the last Friday of the month. Outlook will automatically convert that to numerical format. Try some: the first Monday in March, 30 days from now, two months from last week, or Cinco de Mayo. Qué cool, no?

TROJAN LOOKOUT

EVEN WITH THE latest patches and security updates, Outlook's virus defenses remain weak. (Go to find.pcworld.com/ 33227 for the most recent fixes from the Microsoft Office Download Center.) SentryBay's nifty ViraLock encrypts addresses in Outlook and Outlook Express, rendering them inaccessible to viruses and Trojan horses. The encryption works on the fly and in the background. It applies to your e-mail folders and incoming mail as well, and addresses are decrypted as you send e-mail. The recipient sees nothing unusual in your message. Sure, your PC's

regular antivirus program protects you most of the time, but think of ViraLock as a \$20 insurance policy. Browse to find.pcworld.com/33773 to download a 30-day trial version.

Hey, you're probably thinking I forgot my usual backup lecture. No way. Microsoft's Personal Folders Backup utility makes tucking away critical .pst files in Outlook 2000 and 2002 practically automatic. Go to find.pcworld.com/33239 to download this great freebie. If you use other Microsoft Office apps, play it even safer by using the Save My Settings Wizard, which backs up all your Office 2000 and 2002 settings (such as dictionaries, templates, and AutoCorrect lists) in a single profile that the program uploads and stores on a Microsoft server. This wizard is included in Office XP, but if you use Office 2000, visit find.pcworld.com/33236 to download your free copy.

Finally, I found a terrific way to zap spam in Outlook and OE. In my informal tests, IHateSpam, a \$20 add-on from Sunbelt Software, successfully filtered out 80 percent of Outlook Express spam and a whopping 95.5 percent of my Outlook spam. Visit find.pcworld.com/33233 to read more about it.

If you want to make some news of your own, send me your Outlook tricks and utilities, then watch for them in an upcoming online newsletter. Go to find. pcworld.com/25821 to sign up.

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

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Tax (Bug) Trouble? Find Help Here

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We tackle the latest problems with TurboTax, TaxCut, Quicken, and Money.

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TAX TIME IS upon us. And as if handing your money over to Uncle Sam weren't upsetting enough, bugs in popular tax preparation and bookkeeping software are already driving many of you crazy. Problems have cropped up in Turbo-Tax, TaxCut, Quicken, and Money. Here's how to take care of some of the worst turkeys this tax season.

Federal editions of Intuit's TurboTax 2002 carry an antipiracy feature that requires users to go through product activation. Though you can install the program on two PCs, TurboTax will permit you to print, e-file, and create .pdf files on only one of them. Unfortunately, some users have not managed to get TurboTax to activate at all. Instead, they have encountered one of a number of error messages.

For example, you might run into a message that says 'Product Activation Error – Vendor

E Error 8, Tracking Code 120', and to fix the problem you'll need to follow different steps depending on whether your system runs Windows 98 or Me. or Windows 2000 or XP. Visit find.pcworld.com/33722 and click the Issues and Error Messages link to obtain Intuit's instructions on dealing with this error message and others. Check out our news story at find.pcworld.com/33863 for additional details about the TurboTax complaints.

If you're preparing your

SOUR NOTES: XP AND WINAMP STOP ATTACKS

MICROSOFT has fixed a hole in all versions of Windows XP that allows a bad guy who plants malicious code in an MP3 or Windows Media Audio (WMA) file to take control of your PC. Simply hovering your pointer over the infected file's icon-either on a Web site or on your hard drive-or opening or previewing an HTML e-mail message containing the file initiates the attack. Visit find.pcworld.com/33740 to download Microsoft's patch.

Nullsoft has patched a similar flaw in versions 2.81 and 3 of its Winamp music player. If you downloaded your copy of Winamp before December 17, you need to install the fixed version of the player you use. Go to find.pcworld.com/33743 to get the patches. taxes using H&R Block's Tax-Cut 2002, and your PC runs Windows XP, you will not be able to access the program's Help Central unless you have installed Service Pack 1 for Windows XP. SP-1 contains a patch that enables Help Central to run.

JGS & FIXES

Unfortunately, however, some users have experienced major problems with SP-1, which I wrote about a few months ago (go to find. pcworld.com/32942). Many of you tell me that the only solution was to uninstall the service pack. So with TaxCut, you may have to decide between suffering through installation of the service pack and choosing a different tax program. Visit find.pcworld.com/33731 for more about this TaxCut problem and other snags. Go to find.pcworld.com/31034 to grab SP-1 for Windows XP.

People who use Quicken 99 through 2002 may run into cryptic error messages when trying to employ the product's online banking features. One error message, for instance, may say that the program was 'unable to complete your request at this time'. But the real trouble is that the program can't establish a secure connection between your PC and the bank. Intuit released a set of patches for the various versions of Quicken, as well as some workarounds. Visit find. pcworld.com/33734 to learn more and to locate the fix for your edition of Quicken.

Have you lost that syncing feeling with Microsoft Money lately? If you use Money 2001 or 2002 and can't synchronize with MSN Money's electronic banking and investment tracking features, you may need to install Microsoft's synchronization update. There are separate updates for the two versions. Hop to find.pcworld. com/33737 for details.

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

IN BRIEF

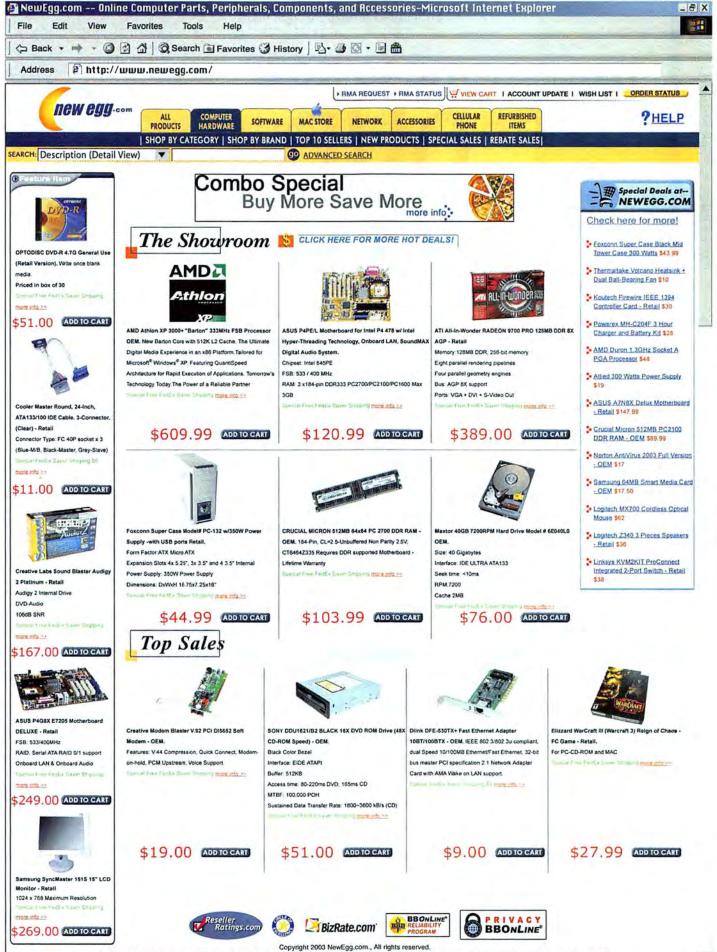
UPS Recall

AMERICAN Power Conversion is recalling 900,000 units of its Back-UPS CS uninterruptible power supplies in the United States, due to a risk of overheating and fire. Nobody has been injured, but three cases of property damage have been reported. Jump to find.pcworld.com/ 33746 to learn whether your unit needs to be returned.

BUGGED?

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





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THE FUTURE IS NOW WITH DVD

>> Just four short years ago, DVD burners cost upwards of \$15,000 and blank media sold for \$50 a disc. Creating a two-hour theater-quality DVD cost \$20,000. And that's if you were obsessive about controlling expenses by handling most of the produc-

tion, editing, encoding, and mastering operations yourself. Sure, if you skimped on titles, previews, and menus you might have saved a few bucks, but you ran the risk of compromising the finished product's market appeal. What's more, if you had to outsource advanced processes such as simple animations, special effects, or encoding/ compression to a professional production studio, they charged as much as \$400 per hour for their services and equipment.

But that was then and this is now. New high-speed DVD players/recorders, media, and feature-rich editing software have helped drive down the cost of production to about \$2,000 per disc one-half of which covers the cost of creating a master. Commercial replicators charge about 50 cents per disc in quantities over 500. For initial runs of less than 100 copies you can virtually eliminate the mastering and replicating costs, allowing you to judiciously sample the potential market's reception of your production. If you have accurately predicted the need and your sales start to climb, you can outsource these tasks later. As a new producer, the realities



CHIP SIMONS

of the market will determine how much you can charge for your DVDs. Depending on the length, complexity, and topic, you can reasonably expect to price them at \$7 to \$15. While that's not a lot of revenue, your primary goal, as with any new business venture, is to build recognition and cover your costs as your small business grows.

Continued on page 3

DVD technology drives down production costs while putting you in the director's chair

Filmmaking Tips

Here are tips gathered from professional production houses for applying advanced filmmaking techniques.

Capture your content in a highquality format, such as mini-DV, DVCAM, Digital 8mm, SVHS, and VHS.

■ Light the subject from three angles. Use two lights at a 45degree angle to each side of the camcorder and a single light (a backlight) behind the subject. Avoid fluorescent lights.

Use lapel microphones when shooting people talking. The camcorder's built-in microphone picks up too much ambient noise.

While a shaking camcorder can set a mood for a horror movie, it will soon give your audience a headache. So when it comes to panning, easy does it.

Avoid complicated transitions such as shutters, blinds, snow, and dissolves. Use standard fades and dissolves.

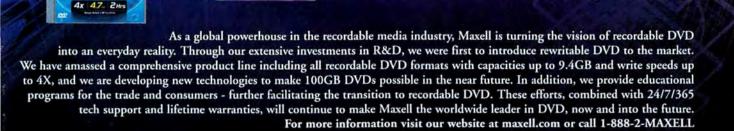
Avoid scrolling text for credits and instead use a series of textbased still images.



OVD: LIGHT IN SHINING ARMOR

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Special Advertising Supplement

Continued from page 1

A key to financial success is to keep your distribution costs low. At one time a major expense, the cost of distribution has shrunk to nearly zero if you advertise on eBay or Amazon.com's zShop. Both sites act as brokers, referring the orders to you; you are responsible for shipping and handling. For a higher level of service, Web-based wholesalers such as CustomFlix will set up an account to accept and process orders for less than \$100.

A less ambitious undertaking, yet one that's capable of producing a respectable revenue stream, is a filmto-disk transfer service. To get started, you need to budget for a DVD recorder plus capture/editing/encoding software (unless it's bundled with the DVD) that will enable you to offer optional services such as titles, menus, and simple graphics.

START WITH THE BEST

Keeping a lid on costs requires highperformance components. Memorex



Memorex's new 4x DVD recorder lets you burn discs at twice the speed of other drives.

is one vendor that continues to stay ahead of technology, delivering highperformance optical storage solutions at affordable prices.

Memorex's upcoming Internal 4x DVD+RW/+R Drive is the latest innovation in high-performance combination drives, enabling users to burn discs at twice the speed currently available.

This complete, easy-to-install kit includes all necessary software and accessories to make installation quick and getting started easy. High-speed DVD recorders require high-performance DVD media. Memorex will soon offer 4x DVD media demonstrating its continued commitment to offer the highest-capacity, highest-speed recordable media. Memorex 4x DVD media will be available in DVD+R, DVD+RW, and DVD-R formats, backward compatible and ready for the next generation of DVD burners.

Remember, earning the right to sit in the director's chair depends on the quality of the content and the quality of your equipment more than any other element.

DVD Alphabet Maze Got You Feeling Disc-connected?

C onfused, maybe turned off, by the brain-addling array of DVD formats? Media maker Maxell is about to take the guesswork out of selecting the right discs for your DVD player. The company's new packaging design uses a color-coded system to denote compatibility by brand, format, capacity, and write speed. For example, purple packaging designates +R, +RW, and RAM, while bright blue designates -R and -RW.

The back of the package contains an icon-based information panel that features descriptions of recording and play-

back compatibility, along with graphs depicting video recording times in various playback modes and hardware compatibility. The design echoes the DVD colorpackaging system. The DVD Camcorder Video packaging features a jewel-toned blue color for the -R format



Maxell takes the guesswork out of selecting the right discs for your DVD player.

and a bright purple tone for RAM, with RAM indicated in striking yellow. Each package's back panel lists Maxell's live toll-free tech support hotline, where you can obtain fast answers to your media questions 24x7x365. You can call the same 800 number to get help selecting the best media for a wide selection of DVD Camcorder Video devices.

One of optical media's outstanding benefits, compared with magnetic media, is a long shelf life. Maxell's optical media will maintain your data's integrity for 30 years, more than

enough time for you to build a library and polish your craft. If, over the course of those three decades, you change your mind about the content, you can erase and record two hours of new MPEG2-quality data onto Maxell's DVD-RW discs up to 1,000 times.





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photos or just transfer data, your DVDs will be compatible with most computers and home DVD players. Finally, Memorex has been one of the most trusted and popular selling brands of digital media for the

> past ten years. So if you're truly serious about digital video, log onto www.memorex.com. Because Memorex recordable DVD is everything you're looking for.



High-performance recording Our internal drive lets you write DVD +RW and DVD+R formats at 2.4x speed, read DVD-ROM at 8x speed and burn CDs at 12x (CD-R) and 10x (CD-RW).



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Ulead's DVD PictureShow 2 slideshow creation software and Photo Explorer 8, the latest version of Ulead's popular digital media management utility.

Ulead's PictureShow 2

This potent duo is ammo a-plenty, giving you the tools you need to capture, organize, enhance, and share images captured by your digital camera and from other sources too. The result is fun-to-watch multimedia slideshows you'll never be bored again.

If you're dreaming of creating professional-looking videos, Ulead's DVD MovieFactory 2 provides the easiest way to turn good times into long-lasting memories. You can capture video from camcorders, VCRs, and TVs to burn them onto DVD or CD discs complete with interactive DVD menus—just like the kind you rent at Blockbuster. Then you'll be ready to watch the result on your home DVD player in the comfort of your living room.



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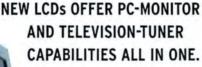
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TV or Not TV-That Is the LCD Question



get will determine which represents your best investment.

most successfully combines resolution and a 16:9 aspect

DVD movies looked excellent on the ViewSonic, appearing sharp and detailed with vivid color. Cable TV looked good, as well (vertical bars along either side of the screen prevent images from stretching horizontally), and the monitor's pair of built-in 10watt stereo speakers produced better-than-average sound (though I recommend buying

separate speakers for use with any of the three test displays).

EDITED BY TOM MAINELLI

Picture-in-picture TV viewing, a common feature on high-end standard televisions, comes into its own on the ViewSonic monitor, allowing you to watch a show or a movie while simultaneously using your desktop computer.

The ViewSonic also offers compatibility with the highest standard of HDTV (1080i).

ViewSonic's tuner is actually a separate box, the VXP25 TV module. It comes with cable, component, and composite video inputs, as well as RCA audio and mini-stereo 3.5mm audio jacks. The module lets you easily hook up DVD players and the like. However, connecting your PC via the display's rear RGB (VGA) and DVI inputs is a bit awkward: You have to reach around, in, and up. The TV module and the display's large AC power adapter make for a cluttered desktop, too.

The ViewSonic's only other shortcomings: The bezel buttons, which the company touts as "touch sensitive," are

H200 Ben()

****** Higher price and iffy monitor capability-a no-no for PC multitaskers. List: \$1995 find.pcworld.com/33845

lifestyle, work needs, and bud-

VIEWSONIC ON TOP

OF MY THREE test models. ViewSonic's \$999 N1700w price, quality, and versatility. It's a 17-inch, 12.4-pound display with a 1280 by 768 native ratio. Plus, the monitor's industrial design-a silver rectangle perched on a black, oval base-looks great.

IF YOUR WORK area and living space are essentially the same (think efficiency apartment or workaholic office), then you're the perfect candidate for a new breed of monitors: LCD TVs. These hybrid products-large-screen displays equipped with TVfriendly features-may soon become must-have items for hard-core multitaskers.

DISPLAYS

BENQ'S H200 (left) and ViewSonic's N1700w are monitors and TVs.

I put shipping models of BenQ's H200 and ViewSonic's N1700w through their paces. For comparison, I also looked at a shipping version of Samsung's SyncMaster 172W monitor, which lacks a television tuner but offers a wide-aspect display that is better suited to DVD viewing than your average desktop LCD. The differences among the three displays are significant; your

2.44

anno

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a bit *too* sensitive for my taste. And the unit's flat remote control fit the hand poorly and had sticky-feeling buttons.

PRICEY FUTURE

THE BENQ H200 LCD TV's whimsical design—all modernistic silver plus round, oversize built-in speakers seems to take itself a little less seriously than the elegant ViewSonic, until you see the humbling \$1995 price tag.

Compared with the View-Sonic, the 4:3-aspect-ratio, 20inch BenQ offers more real estate, which makes it better suited to group viewing. Its dismally low 800 by 600 native resolution can't match the ViewSonic's, however. Cable broadcasts looked fine (the lower resolution might actually help there), but DVD playback wasn't quite as good. The BenQ didn't look too hot as a PC monitor, either, and the 3watt speakers had little kick.

A built-in handle makes the 25-pound BenQ model relatively easy to tote from room to room. In general, it's easier to drive than the ViewSonic,

SyncMaster 172W Samsung

★★★★ Beautiful text, graphics, and movie viewing, but no built-in TV capability. List: \$649 find.pcworld.com/33848

N1700w

ViewSonic

Excellent LCD TV performance and features, along with great monitor capability, make this a winner. List: \$999 find.pcworld.com/33851

Screen size (in inches) List Aspect Remote Warranty Resolution TV tuner MONITOR (years) Ben0 H2000 \$1995 20.1 4:3 800 by 600 Yes Yes One Samsung SyncMaster 172W 17 \$649 16:9 1280 by 768 No No Three ViewSonic N1700w \$999 1280 by 768 17 16:9 Yes Yes One

Three Video-Friendly LCD Monitors

with fewer built-in buttons and a more traditional TVstyle remote that has a good feel. Plus, all of the important connections—cable TV, composite, S-Video, component, and RGB—lie within easy reach and are nicely labeled on the back. Unfortunately, the monitor has no DVI input, and it lacks the picture-in-picture function that I found handy on the ViewSonic. It does offer HDTV compatibility up to 1080i, however.

BenQ says that the H200 is for buyers who feel they're not ready to make the jump to a large plasma TV screen. But given this LCD's unexceptional image quality, I have a hard time recommending it, particularly if you also were to use the unit as your PC monitor.

MONITOR, IMPROVED

IF YOU'RE STRICTLY a DVD viewer, or if you have already invested in a TV-tuner card for your PC, Samsung's 17-inch, wide-aspect, \$649 SyncMaster 172W might be your best bet. This 10.8-pound monitor supports the best DVD and PC viewing of the three, delivering stunning detail at its 1280 by 768 native resolution. It also has MagicBright technology that lets you adjust brightness for different purposes.

DVD movies looked particularly nice on this affordable unit, but the 1.5-watt speakers aren't very good. The LCD has DVI and RGB inputs.

If you spend much of your work and play time in the same place, you'll likely enjoy a display with TV features. If you're a DVD-movie buff (or you have a TV-tuner card) and you also want a quality PC monitor, go with the Samsung 172W. But if you're looking for a product that lets you work and play simultaneously, the ViewSonic N1700w is the clear winner.

—Anne B. McDonald 🔳



SAMSUNG'S SyncMaster 172W provides wide-aspect viewing.

Three Serious Scanners

IMAGING

SCANNERS MAY no longer top most home office PC users' wish lists—digital cameras and multifunction devices have overtaken them—but they're still a must for people who want top-quality digitized photos and paper documents. If that describes you, one of three new scanners from Epson, HP, and Microtek will likely meet your needs.

Buyers seeking a versatile scanner that yields crisp, colorful images with excellent details will find that the new **Epson Perfection 3200 Photo** and Microtek ScanMaker 6800 are impressive choices. For people who are more interested in using a scanner to perform optical character recognition-turning print into editable text-HP's new Scanjet 5550c has an automatic document feeder that rips through stacks of documents with gusto and efficiency.

The Epson and Microtek models are designed to suit photographers, graphic artists, and other users who will not mind paying a premium for the ability to perform highquality photo scans. Each of these two \$399 scanners justifies its hefty price tag by providing outstanding features that you won't find included with less-expensive devices.

GRAPHICS FIRST

WITH AN OPTICAL resolution of 3200 dpi, the Epson Perfection 3200 Photo can produce much more detailed scans and bigger enlargements than the previous, 2400-dpi generation of scanners. At 3200 dpi, for example, a scan of a 35mm slide (or negative) has enough pixels to blow up to 11 by 14 inches at a printer resolution of 300 dpi. That's roughly equivalent to enlarging a postage stamp sufficiently to fill the front of a sweatshirt, with no loss of image quality.

The 2400-dpi Microtek Scan-Maker 6800 is the first flatbed scanner to offer Applied Science Fiction's hardware-based **Digital ICE for Photo Prints** technology, which removes surface defects such as dust and scratches from photo prints. Until now, Digital ICE was available only in dedicated slide scanners that cost upward of twice the Microtek's price. The technology did a terrific job of cleaning up my flawed test prints, removing deep gouges as well as lesser imperfections. However, the



EPSON'S Perfection 3200 Photo (top) and Microtek's ScanMaker 6800.

Microtek takes about twice as long to complete a scan using ICE as it does without ICE. Another drawback: The scanner can apply the ICE technology only to prints, not to film positives or negatives.

DOCUMENT FRIENDLY

H P'S \$299, 2400-dpi Scanjet 5550c is intended for small businesses that need to turn documents into editable text quickly. The ADF can feed the scanner up to 35 pages at a time. In my tests the unit took 3 minutes, 35 seconds to complete the scan of a 15-page text document. Though geared toward documents, the 5550c also handled several test photos well, producing accurate color and good detail.

I tested all three scanners using high-speed USB 2.0; the Epson and Microtek also support FireWire (IEEE 1394), but only Microtek sweetens the deal by adding a FireWire card and cable, as well as a USB cable, to the shipping package.

All three units have excellent drivers that support the TWAIN standard for inputting scanned images. The Epson and Microtek models both include Adobe Photoshop Elements; the HP device comes with Scansoft Paperport document management software, in addition to HP's own imaging and printing suite.

The Microtek's Digital ICE feature and bundled FireWire kit make it a superb value, but users who require big-time enlargements should consider the Epson. For OCR work, meanwhile, the HP unit is definitely the best choice.

-Richard Jantz

Perfection 3200 Photo Epson

★★★★ Ultrahigh resolution for serious image scanning either at home or at the office. Street: \$399 find.pcworld.com/33827

Scanjet 5550c

HP *** Efficient ADF makes this affordable scanner a good pick for OCR work. Street: \$299 find.pcworld.com/33830

ScanMaker 6800 Microtek

★★★★ Powerful photo-repair feature plus bundled FireWire kit add to an attractive package. Street: \$399 find.pcworld.com/33833

(it's not a hard drive)

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Camera Weathers the Elements

DIGITAL CAMERA

MOST DIGITAL cameras are best used on dry sunny days or indoors, protected from the elements. But Olympus's new water-resistant models allow you to keep shooting even when the weather turns foul.

Both the \$399, 3-megapixel Stylus 300 Digital and the \$499, 4-megapixel Stylus 400 Digital use rubber gaskets around the battery compartment, connectors, and buttons to seal out water and dust. O-rings inside the 3X optical zoom lens squeeze out moisture when you turn the camera's power off.

Stylus 300 Digital

Olympus

Preproduction unit, not rated A peppy point-and-shoot camera built for any weather. Street: \$399 find.pcworld.com/33836



Be aware, however, that these cameras are water resistant, not waterproof. According to Olympus, each can handle up to a liter of splattered water over a 5-minute period —in other words, probably more than the amount of rain, snow, or baby drool you're likely to encounter during normal use. Subject it to a carnival dunk tank, however, and all bets on its survival are off.

The preproduction Stylus 300 I tested offers an automatic mode, five scene modes, and a movie mode (without OLYMPUS'S Stylus 300 Digital can handle the rainy season.

sound). It lacks a low-light focusing aid, but I took fully automatic shots with flash in dark settings and still got pretty good images. Well-lit shots looked better, and the camera's zoom lens is fast.

The Stylus 300 competes well with comparable models from other vendors. Its allweather housing makes it even more desirable, especially for outdoorsy types.

-Alan Stafford

Photo Software Is a Stitch

IMAGE EDITING

THE INEXPENSIVE Stitcher E2 by Realviz lets you quickly put together digital images to create an ultrawide JPEG image or a QuickTime VR panorama. The \$59 product works, but it bears little resemblance to the company's advanced, \$500 Stitcher software.

EZ makes the stitching procedure dead simple: You drag in your images, click Process, and choose a format and a compression level. Click Save, and within minutes you get a finished image or panorama.

I was able to create goodlooking 320-by-240-resolution panoramas with my shipping version of the software. Unfortunately, it can't create higherresolution panoramas, and trying to magnify the originals makes them look pixelated. Other drawbacks: You can



STITCHER EZ made this wide shot of San Francisco hills possible.

create only cylindrical panoramas (not cubic ones); and if

the stitching process fails, you'll be out of luck because you can't tweak anything.

Considering EZ's limited capabilities, I'd balk at paying for it—but I'd consider it a nice bonus if it happened to come bundled with a digital camera (as Realviz hopes it will).

—Alan Stafford 🔳

Stitcher EZ

Realviz ★★★☆☆ Stitching software is fast and easy to use, but too limited. Street: \$59 find.pcworld.com/33620

QUICK TAKES

Brainy Power Strip

BITS LIMITED'S \$30 Smart Strip includes a sensor that detects variances in electrical flow: When you turn off your system, it suspends power to all PC peripherals connected to the handful of clearly marked jacks, making shutdown fast and easy. find.pcworld.com/33641

-Michael S. Lasky

Roxio Evolution

ROXIO'S Easy CD & DVD Creator 6, a long-awaited update, aims to address all of your DVD and CD burning needs under one roof. Running the gamut from data discs to MP3 music files to your own movies, the \$100 program can even help you assemble menus for your DVDs. find. pcworld.com/33842

-Melissa Perenson

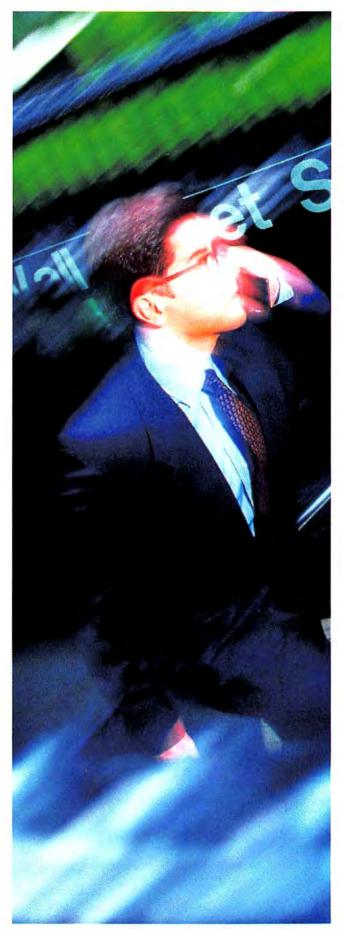
Twice the Wi-Fi

TOSHIBA'S shipping Satellite Pro 6100 Series (prices start at \$1799) is the first notebook to offer not only built-in

> 802.11b wireless connectivity but also its faster cousin, 802.11a. With the 6100 Series lap-

top, you're ready for both common flavors of the increasingly popular Wi-Fithough not for the up-andcoming 802.11g (see "Best Wi-Fi Ever" on page 34). find. pcworld.com/33629

-Tom Mainelli



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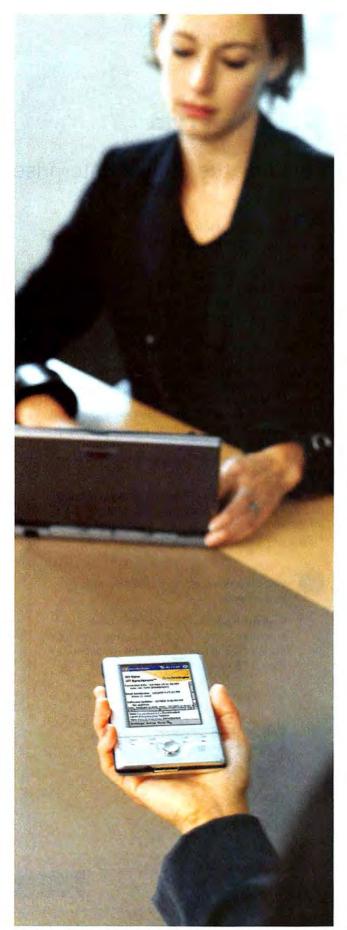
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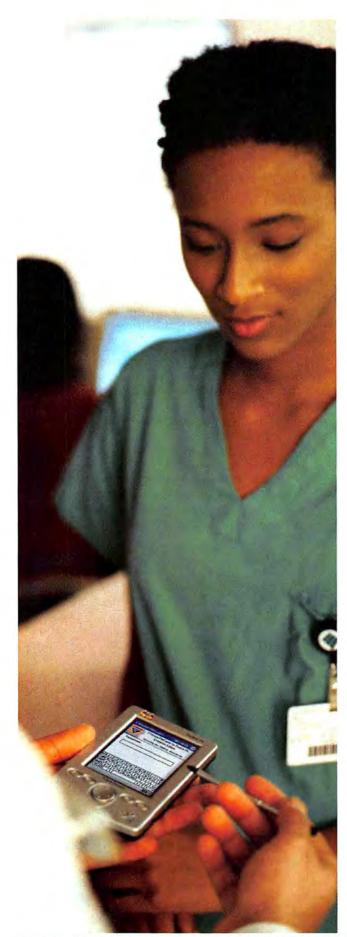
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Great Sound, No Hassle

AUDIO CARD

M-AUDIO'S \$100 Revolution 7.1 is a rarity among PC sound cards—it does its job well and gets out of your way.

Courtesy of an Envy 24HT sound chip, the Revolution can play back eight channels of DVD-Audio-quality sound (24 bits/192 kHz) using the included Intervideo WinDVD software. And

M-AUDIO's Revolution 7.1 offers quality sound. two features in the Revolution's drivers—SRS Labs' Tru-Surround XT and Circle Surround II—help fill a room with sound through just about any speaker arrangement.

The Revolution has no internal analog or S/PDIF connectors, which simplifies setup but also means that your CD or DVD drive must support digital playback (some older drives don't; check your PC first). A simple but effective control panel lets you adjust your speaker setup, including the crossover points and delays.

In my tests of a shipping unit with MP3, CD, and DVD audio, the card produced remarkably crisp and accurate sound (it boasts a 107-decibel signal-to-noise ratio). A coaxial digital-audioout connector lets you connect to either a standard home stereo or powered speakers.

The one drawback: The Revolution package feels a little short on extras. You get Mix-Man Studio, Vjay Lite, and Tony Hawk's Pro Skater 3, but an editing app for .wav files would have been nice, too.

Software shortfalls aside, I found the Revolution to be a top-notch product. Audio-loving PC owners should seriously consider it alongside the better-known Sound Blaster Audigy 2 from Creative Labs. —Eric Dahl

Revolution 7.1

No-nonsense, high-quality PC sound card handles DVD-Audio and 7.1-channel surround, but lacks some software amenities. Street: \$100

find.pcworld.com/33683

Self-Updating Card File

PERSONAL INFO

COREX'S CARDSCAN has always been invaluable software, able to turn piles of business cards into useful data easily accessed via a searchable on-screen card file (or any of several popular con-

CardScan Software Version 6.0.4

Corex Technologies

Upgrade makes useful contact software more valuable with regular updates. List: \$79 new, \$40 upgrade for version 5.0 or earlier owners, free to those with version 6.0 find.pcworld.com/33608 tact managers). With CardScan Version 6.0.4 (\$40 upgrade; \$79 new), Corex addresses business cards' inherent fallibility: They get old.

The application integrates your contact list with Corex's CardScan.net, a free online database that lets you access your information from any Web-connected PC. Better yet, its AccuCard service regularly attempts to update that contact information, so your records are always current.

I loaded the software update (free to owners of version 6.0) and set up the service. Accu-Card sent out e-mail messages to my contacts requesting their latest information. A new column in the program displays the results, showing which entries are current, ready for an update, out of date, or status unknown.

The service sends out these requests every 90 days, and contacts can opt out of the updates at any time. About a third of my long list of business contacts replied; of those, only a few mentioned problems with the service and their PC or firewall.

Still, the improvements in the new version—including some handy new tools for Outlook users—make this already useful program even more so. It's a solid update and well worth the price.

—Tracey Capen 🔳

QUICK TAKES

Five-Headed Monster

DO YOU EVER have the right USB device but the wrong USB connector? You can get around that with JDI Technologies' GoldX 5 in 1 Quick-



Connect USB Cable package. A 6-foot-long cable ships with five interchangeable USB 2.0 heads and sells for \$25. find.pcworld.com/33602

-Anne B. McDonald

Break It Up

TWO MODES make Acronis PartitionExpert 2003 fit for both novices and experts. Newbies get wizards to automate the task; experienced users can manually access more-sophisticated tools. find.pcworld.com/33617

-Tom Mainelli

The Frozen Web

LG ELECTRONICS' \$8000 Internet Refrigerator features an Internet-ready computer and a 15-inch LCD screen. You cannot, however, download more vanilla ice cream. find.pcworld.com/33614

-Andrew Brandt



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NEW PRODUCTS

Tiny Notebook Doubles as Hard Drive

NOTEBOOK

A SLIM BUILD, a modest weight, and an attractive price make Sharp's Actius MM10 notebook a real head turner. But its ability to moonlight as a second hard drive for your desktop PC makes it unique.

At just over a half-inch thick and a scant 2.1 pounds, the \$1499 MM10 is one of the thinnest and lightest notebooks I've tested. My preproduction unit came stocked with modest but acceptable

Actius MM10

Sharp ★★★☆☆☆ Elegant notebook doubles as a desktop hard drive, but it could use a better keyboard. List: \$1499

find.pcworld.com/33626

basics like Transmeta's 1-GHz Crusoe chip, 256MB of RAM, a 15GB hard drive, a 10.4-inch display, and built-in Wi-Fi wireless connectivity.

TINY ISSUES

AND THAT'S ABOUT IT. The problem with a notebook this size is that some of the features you'd find on a larger laptop are missing here. For example, the unit lacks a full complement of ports, offering just two USB connections, a VGA-out (with dongle), an ethernet port, and a single Type II PC Card slot.

Other size-related problems include a cramped keyboard that made touch typing difficult. And poor placement of several keys—for example, the <Page Up> key is where the left <Shift> key normally resides—didn't help matters.

The battery life wasn't stellar, either. The notebook's small-size battery netted a relatively meager 2 hours during my informal tests.

These problems aside, the MM10 is a decent notebook, and its distinctive Hard Disk Dock unit intrigued me. The upright stand acts as the notebook's battery

charger, and it also lets you connect the notebook to your desktop PC as a second drive via USB 2.0. I was wowed by the simplicity of the process: You connect the MM10, your

THE ACTIUS MM10 in its Hard Disk Dock.

desktop sees it, Windows assigns it a letter, and you're done. The Actius MM10

is an attractive ultraportable with a docking feature that makes it the perfect complement to a standard desktop computer. A better keyboard would have helped the unit's rating, but in the

SHARP

meantime the MM10 is an ingenious product for smallhanded persons or for masters of the classic hunt-andpeck method of typing.

tools to shut down wasteful

programs that run in the back-

ground, as well as a network

function to scan multiple PCs.

ward for Ad-aware. Standard

is plenty for most users. Plus

and Pro have handy features

-but don't upgrade to them

solely for the pop-up blocking.

—Tom Spring

Version 6 is a giant leap for-

-Michael S. Lasky

New Ad-aware Goes Pro

AD BLOCKER

LONG A FAVORITE tool of computer users looking to rid their systems of annoying adware and spyware, Lavasoft's Ad-aware has returned in a new, free standard edition that offers an improved interface and more customization options. And two new pay versions, Plus and Pro, profess to offer real-time protection,

Ad-aware 6

Lavasoft ★★★★☆☆ (Standard); ★★★☆☆☆ (Plus and Pro) An excellent program; the free version will suit most users. List: Standard version free, Plus \$27, Pro \$40 find.pcworld.com/34058

much as antivirus software does in blocking virus threats.

All three Ad-aware 6 versions speed the process of scanning your PC for hidden files by letting you choose the size of the files you scan. By excluding larger music and image files, my scans—using a final version of Pro—took half as long as the old version's scans.

Another feature lets you back up adware components before you remove them, in case you accidentally cripple one you want, such as Kazaa.

Prior editions of Ad-aware always removed unwanted adware and spyware only after they landed on your PC. The standard version 6 continues to perform this function well, but the new pay versions also supply more-proactive features. Plus (\$27) and Pro (\$40) have real-time monitoring for blocking pop-up ads (but it didn't work very well); in addition, they prevent home-page switches and prohibit Web site-based Active-X programs from installing on your PC.

The Pro version also offers



AD-AWARE VERSION 6 offers a cleaner, easier-to-use interface.



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Digital Plus Pack: Fun Fluff

MULTIMEDIA

I DIDN'T MUCH like Microsoft's original Plus for Windows XP (see find.pcworld. com/33632), but the new Plus Digital Media Edition—geared toward digital-photo, music, and movie lovers—is an improvement. You may not really need anything in it, but it can be a charming distraction.

Of the eight media applications that make up the \$20 Plus Digital Media Edition

Plus Digital Media Edition for Windows XP

Microsoft ★★★☆☆ Cute-but not mandatory-XP add-on for digital media buffs. Street: \$20 find.pcworld.com/33635



NIKOLE and Marcelo bring the joy of dance to your desktop.

download, Photo Story will no doubt possess the most appeal. By means of a simple drag-and-drop process, you use a series of still images to create a movie, complete with dissolves and zooms that give the impression of motion; you can add audio, as well.

Party Mode for Windows XP Media Player lets guests play music on your PC while preventing access to your files. Other features let you assign digital music to alarm-clock notifications; create digital audio files from analog sources such as vinyl records or cassette tapes; create CD labels; and easily sync digital media content between a Pocket PC and your desktop.

Perhaps my favorite feature of this shipping version is Dancer—it summons any of a dozen lifelike figures (shrunk to about 2 inches or shorter) to twirl, gyrate, or otherwise romp across a bit of your desktop. Though processor and memory intensive, it's much, much cooler than Clippy.

-Yardena Arar

QUICK TAKES

Networking Zen

SIEMENS'S \$130 SpeedStream 2524 Powerline Wireless DSL/ Cable Router offers you the best of two home networking worlds: the reliability and range of a wired network using your



home's electrical wiring (for desktops) and the mobility of a Wi-Fi network (for laptops). Setup is easy, and either way no new wires are required. find.pcworld.com/33668

-Yardena Arar

Extreme Spam Eliminator

DIGIPORTAL'S \$40 ChoiceMail One promises to eliminate junk from your in-box by requiring people to obtain your approval via an online

~	Approve sender(s) (add to whitelist)	Enter
*	Reject sender(s) (add to blacklist)	Ctrl+R
×.	Reject sender (with explanation)	Ctrl+E
¥	Delete sender(s)	Ctrl+D
26	Allow all messages from sender's don	nain
den.	Block all messages from sender's dom	ain
8	Block all messages from sender's dom Contact sender via email Show sender information	space
00	Contact sender via email Show sender information	
	Contact sender via email Show sender information Allow selected message(s) CO	Space

registration form before their e-mail messages can reach your in-box. Once a sender is registered on your e-mail "whitelist," their messages get through, no more questions asked; messages from rejected senders simply disappear into the ether. find.pcworld.com/33611 -Andrew Brandt

NEUROS PHOTOGRAPH: MARC SIMON

Mobile MP3 Radio Station

DIGITAL AUDIO DIGITAL INNOVATIONS' Neuros is an MP3 player with a built-in FM radio. No big whoop there. But this device also packs an FM transmitter that lets you broadcast

NEUROS can play MP3s on any FM radio.

digital audio through any nearby radio, no wires needed.

Though getting my preproduction Neuros to play clearly over my car stereo took a little fiddling, the music ultimately sounded fine (not CD quality, but comparable to FM).

An unexpected capability: When you hear a catchy song on its built-in radio and can't identify it, Neuros probably can. Press a button to record a snippet of the song, and sync with your PC—the software attempts to identify the song title and artist (the company claims 95 percent accuracy).

Neuros is available in two flavors: a \$249 version with 128MB of flash memory (good for about 2 hours of music) and a \$399 one with a 20GB hard drive (5000 songs). Both can record audio and sport versatile, IPod-like controls. However, they connect to PCs via USB 1.1, not the zippier USB 2.0. And both are bulkier, pricier, and a bit uglier than some rivals.

Bottom line: Neither version of the Neuros is the best general-purpose MP3 player on the market (see find.pcworld. com/33644 for some of our picks). But if any of the special features suit you, one of them might be worth a listen.

—Harry McCracken

Neuros

Digital Innovations ★★★

Unique MP3 player broadcasts to your radio and identifies songs, but it's pricey, big, and inelegant. List: \$249 (128MB), \$399 (20GB) find.pcworld.com/33671

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Rob Leon, Technical Manager, China Motion Telecom

Winner of the GCN "Best New Technology Award" at FOSE, and the Windows and .Net Magazine "2002 Reader's Choice Award for Best High Availability Solution", March 2002. (Awarded to PowerStruXure", which is now included under the InfraStruXure" brand.)



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WEB HOSTS Are More Than the Sum of Their Parts

f you're running a small to medium-sized business, you're probably aware that you need to identify reliable suppliers and partners so you can off-load some of the tasks that routinely confront you. Delegating will enable you to concentrate on acquiring new customers while continuing to serve your existing ones.

Outsourcing is delegating. Many of the tasks that you outsource, such as shipping and accounting, are expenses rather than revenue generators. When it comes to Web-site hosting, though, your host is more than just a provider of a service-it's a partner that can help you generate revenue by increasing sales. Think about the value of that. In a small business, your Web site is, or should be, a 24/7 sales and marketing presence. What's more, if yours is a company that does most or all of its business online, your Web site is also an integral part of your image.

When 2 plus 2 equals 22

Three major reasons online shoppers use the Internet are its convenience, ease of cost comparisons, and fast gratification. These three criteria directly depend on the quality, reliability, and performance of the Web site's host. In other words, your Web host is critical. Well, you say, I have sales and collections to think about, and I don't want to spend time analyzing Web hosts. So what do I look for?

Start with these five hallmarks of quality:

AN EXCLUSIVE FOCUS on managed hosting solutions for small and medium-sized businesses.

A COLLECTION of flexible, affordable, and scalable solutions designed to meet your needs today and, as your business grows, tomorrow.

HIGH THROUGHPUT, response, and processing speed from enterpriseclass server technology.

THE AVAILABILITY of shared hosting to reduce your costs while maintaining service levels.

24 X 7 X 365 CUSTOMER support and fully monitored, secure data centers.

Add one more attribute, a nationwide direct-connect Tier 1 fiber optic Internet backbone, and

you've entered the rarefied realm of exceptional Web hosting services-where one name, DellHost (www.dellhost.com), stands above all others.

Services add up

DellHost combines the technical expertise of Sprint with the proven reliability of Dell's highperformance PowerEdge servers and PowerVault storage plus Cisco routers to deliver a combination of hosting, backup, business continuity solutions, and 99.9 percent availability. DellHost leaves nothing to chance when it comes to preserving, protecting, and processing your data. For example, with your 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.

What's more, DellHost can reduce your Web hosting costs through shared hosting with no reduction in performance to worry about. Shared hosting, an especially attractive solution for new businesses, can help get you online fast and without the cost of an IT support staff or the time involved in building your own data center.

As with all things that affect your data, DellHost does security by the numbers too. Their data

> center is outfitted with state-of-the-art security measures, including intrusion and access control via surveillance cameras and card readers. Sprint's expertise and

Dell technology create a technical synergy that adds up to everything that you'd expect from two industry leaders-and more.

DellHost www.dellhost.com DELL HOST Network by Sprint



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If online security is a mammoth business challenge, it may be time to get a host you can count on. DellHost[®] can offer tailored small business hosting solutions that are reliable, secure and scalable. We combine award-winning Dell[®] server technology and the Sprint nationwide Tier 1 digital network so you can get the hosting performance you need without the hassle of developing and supporting an expensive infrastructure. Whether your online business is a nimble player or a thundering giant, DellHost can provide the technology and expertise you need to concentrate on your business, not your hosting solution. Take a giant step forward. Visit www.DellHost.com/pcworld or call (866) 826-6068.



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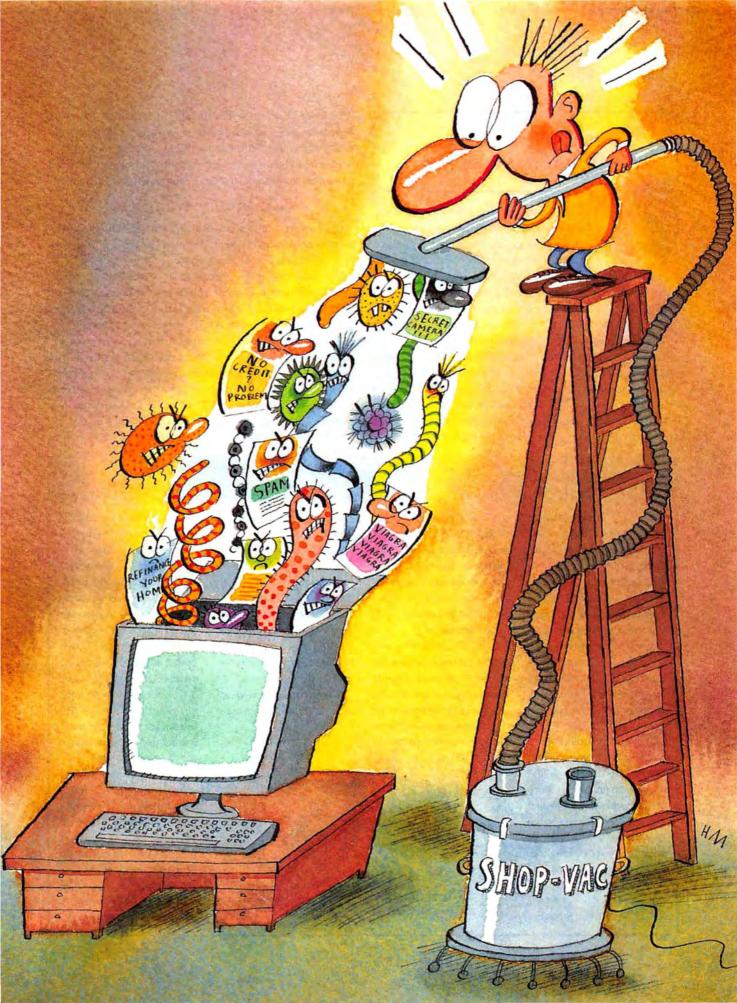
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Sneakier spam, wilier worms, more aggravating ads... no wonder it feels like your PC is under assault. **Fight back** with these simple steps for keeping the latest pests at bay.

BY KIM ZETTER AND DYLAN F. TWENEY

THE LATEST VIRUSES SPREAD THROUGH everything from your instant messaging client to your file sharing program. Annoying new ads hijack your browser without your even clicking them. Spam greeting cards send themselves to everyone in your address book. Next-generation auction swindles exploit what's supposed to be one of the safest ways to do business online. But you can turn the tide against these pernicious pests.

What follows is our field guide to the newest threats to your PC—from hackers to sneaky adware—and the tools you need to send them packing. We'll direct you to the most important fixes for Windows and common applications. We also point out where you need to be careful about otherwise good patches that may introduce more bugs.



worms and viruses: THE NASTIES EVOLVE



THE YEAR 2002 marked a sharp uptick in the volume of new virus discoveries: Researchers and antivirus outfits cataloged more than double the number of new vi-

ruses recorded in 2001. And as 2003 rolls along, the breakneck pace of new virus and worm development shows no signs of abating. Meanwhile, the most persistent and resilient nasties of 2002, such as Klez (see find.pcworld.com/33221), still plague our in-boxes and infuriate our associates over the Internet.

Virus writers continue to find new and ever-more-clever ways to deliver malicious code to our PCs efficiently and with potentially devastating consequences. Tantalizing e-mail attachments are still the most favored vector for attacks, but some worms target any widely used program that lets you download files, such as an instant messaging application or a file sharing tool. Vincent Weafer, senior director at Symantec's Security Response Center, says virus makers are using worms and viruses as a way to plant Trojan horses that in turn allow their creators to exercise full control over your computer, surreptitiously record passwords you type, or steal other information you might value.

SMARTER, QUIETER INTRUDERS

HISTORICALLY, VIRUSES targeted only a single vulnerability—a security hole in your copy of Internet Explorer or in your Outlook Express application, for instance.

The Slammer/Sapphire worm attack is a well-known example. It took advantage of a widely known security hole; a patch had been made available for it months earlier, but many computer operators (including some at Microsoft) had not applied the fix.

"It's no longer enough to install an antivirus program and personal firewall," Weafer says. "Users need to keep current with [operating system] patches, configure browser security settings to high, and turn off application features they don't use." Experts recommend that you turn off Windows file sharing (in the Networking control panel) if you don't need to use it, and that you use your firewall to block file sharing on TCP ports 139 and 445.

SECURITY FIXES

E-MAIL PROGRAMS: Insulate Your In-Box

Microsoft Outlook: Security vulnerabilities in Outlook 2002 are addressed by the service packs for Office XP (turn to "Office Suites" on page 88). Once you've installed Service Pack 2, however, Outlook may start crashing. To fix that problem-and to patch yet another security hole that spammers could use to crash your e-mail application-go to find.pcworld. com/32423 to download the Outlook 2002 Update.

Outlook 2000 users need to get Office 2000 SR-1a and Service Pack 3 (see "Office Suites" on page 88 for details). Once SP3 is installed, you may find that Outlook 2000 fails to behave properly, or that it uses 100 percent of your CPU resources when running in Internet Mail Online mode. The small patch available at find.pcworld.com/ 33563 will cure that problem. If you don't want to install Office 2000 SP3 for some reason, you should at least install the latest version of the Outlook 2000 Security Update (at find.pcworld.com/31973), which will protect you against e-mail viruses and worms.

Microsoft Outlook Express: Outlook Express is bundled with Internet Explorer; so to secure Outlook Express, you need the latest fixes for the browser. Go to find.pcworld.com/33551 to get the cumulative patches for IE 5.5 and 6. Outlook Express 6 and Outlook Express 5.5 Service Pack 2 also have a vulnerability that hackers could exploit to crash or hack into your computer, just by sending you a digitally signed e-mail message. To prevent this theoretical attack, visit find.pcworld.com/33566 to download the Security Update for Outlook Express.

A separate, cumulative update for Outlook Express 6

HA

users (available at find.pcworld. com/33569) patches a number of other security gaps.

Eudora: Eudora versions 5.0 and 5.1 could allow an attacker to run code on your machine by sending you specially formatted multipart e-mail messages. Unlike Microsoft, Qualcomm doesn't do patches. The newest version of the program, Eudora 5.2, takes care of the problem; go to find.pcworld.com/33572 to upgrade. (The upgrade is free for users who purchased and registered Eudora 5.x.)

To protect yourself against "cross-site scripting," which can let HTML-formatted e-mail messages execute code on your machine while posing as Web sites that you trust, go to *Tools• Options• Viewing Mail*, and make sure that 'Allow Executables in HTML Content' is not checked. *-Dylan Tweney* (For more suggestions to lower your risk, see this month's Internet Tips, page 144.)

Newer viruses are getting more sophisticated. While the infamous Klez worm relied on Outlook Express to reproduce, Weafer says, worms with built-in mail engines are the future direction of malicious code. Such variants spread independently of e-mail programs, and they can scout for victims anywhere on your hard drive, looking for addresses even in the Web browser cache.

Stealth is becoming a watchword for virus writers. With the notable exception of Slammer, worms and viruses increasingly do their dastardly deeds quietly. When viruses infect lots of computers in a short time, they are quickly detected and eliminated. The new breed waits patiently to strike at new victims. But don't confuse a low-key approach with a low risk: Your infected machine can still be used to plunder your data, attack other PCs, and wreak havoc on a network of connected computers in a home or office.

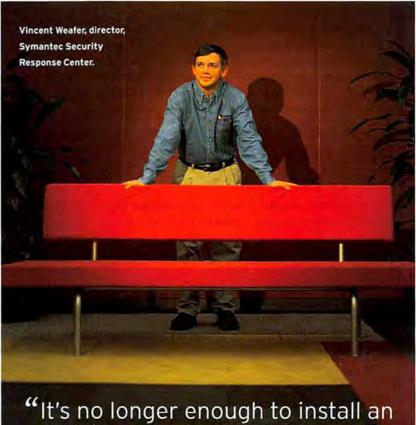
Home users who think the data on their hard drive is too insignificant to merit a hacker's attention may not realize that the

computer itself is often a more attractive target than its contents. Some intruders take control of PCs for use as a "dead drop" for potentially incriminating data, Weafer says. In these instances, the hacker gains access to a number of PCs and uses each victim's computer as a holding tank for illegal material such as child pornography or a company's stolen files or passwords. Operating from a PC free of damaging evidence, the hacker can view the files on the victim's machine at a convenient time and in relative safety. If the victim has a broadband connection and leaves the PC powered on day and night, all the better. Simply shutting off your PC when you're not using it is probably the easiest thing you can do to avoid becoming a victim.

POP STAR VIRUS

VIRUSES AND WORMS that activate themselves are still in the minority. Most worms require you to open a file attachment or preview its e-mail message before they become active and infect your PC. One recent example: The Avril Lavigne worm (named after the 17-year-old Canadian pop sensation) made its way into the less auspicious top 10 virus charts in January. It spreads via e-mail, IRC, instant messaging, and file sharing networks, scanning for a wide range of vulnerabilities on your system.

Opening the Lavigne worm's executable file or previewing its e-mail message in Outlook Express is all it takes to infect your-



antivirus program and firewall."

self. Its core program, a block of code named Lirva, disables antivirus programs, installs the BackOrifice 2000 Trojan horse on your system, and plants itself all over your hard drive, making it more difficult to remove. It then sends itself to everyone in your e-mail address book, to your entire ICQ contact list, to anyone who downloads your files over Kazaa, and to everyone in your IRC chat rooms. Not connected to the Internet? No problem for Lirva: It will dial up your ISP for you (in the middle of the night).

And someone went to all this trouble just to force you to view the pop singer's home page three days a month? Well, less benignly, the worm also steals the dial-up user names and passwords saved on your hard drive, and it e-mails them to the virus author. And since it installs a Trojan horse remote-control program, any hacker who has the same software can take control of your computer later on. If your PC was infected, use the free Lirva Removal tool (find.pcworld.com/34049) to fully restore its health.

The Lavigne worm should serve as a warning to complacent computer users. If Lirva had been programmed to do real harm to the PCs it infects, to spy more closely on the infected user's computer, or to alter data on the hard drive more subtly, the result could have been devastating instead of merely infuriating.

Hackers also take advantage of computers left unattended to send worms through file sharing networks such as Kazaa. A specific vulnerability in Kazaa's pop-up ad program could allow a hacker to execute malicious code directly on your computer. A hacker who manages to pass a malicious ad to Kazaa (or to crack into its ad-serving network) can gain access to your local Windows security zone-and have free rein over your computer. (You can download a workaround at find.pcworld.com/33599.) The interconnectedness of machines on the Net means that due diligence applies equally to home users and to corporate users, says Weafer, who likens securing a home or business computer to wearing seat belts and obeying traffic laws as you drive.

"We're living in a global community," Weafer explains. "[Computer security] is not only about protecting ourselves, but about protecting everybody else who's living around us."

SECURITY FIXES

COVER STORY

OPERATING SYSTEMS: Protect Your Platform

All versions of Windows: Microsoft's Windows Update site (find.pcworld.com/31604) automates the patching process by recommending downloads based on your PC's configuration; it can save you a lot of time. Windows Update also allows you to download everything in one fell swoop.

IS managers should visit the Windows Update Catalog page (find.pcworld.com/33497).

There you can locate updates by operating system and program, and then install them manually.

If you want to stay on top of the latest security updates as they are released, or browse through past updates, head over to Microsoft's Security & Privacy pages (find.pcworld.com/ 32864), where you'll

find the most recent bulletins, as well as the archived ones. You can also sign up at find. pcworld.com/33500 to have Microsoft put you on its e-mail list to receive its security alerts.

If you prefer to obtain your patches à la carte, read on. Windows XP: Whether you have XP Home Edition or XP Professional Edition, you have security problems stemming from Universal Plug and Play, glitches in the way XP handles SSL certificates from secure Web sites, a bug that could prevent you from accessing encrypted files after you change your password, and other issues. The fix: Install Windows XP Service Pack 1 (available at find.pcworld.com/31034).

Windows XP users can avoid visiting the Windows Update site by turning on Automatic



Updates, which will download patches as soon as they become available-and install them for you too, if you want. Right-click My Computer, select Properties, and choose the Automatic Updates tab. Put a check in the box beside Keep my computer up to date, and specify whether you want Auto Update to notify you before it installs the updates or you want it to do its thing automatically. Automatic updating is available for Windows 2000 users, too; it's included in Windows 2000 Service Pack 3 (see find. pcworld.com/33509 for details).

Because patches themselves can cause difficulties (see "When the Cure Is Worse Than the Disease" on page 87), we recommend that you have Windows notify you before it installs any patches. If the notifications

> themselves become annoving, then turn off Auto Updatebut don't forget to check periodically for new patches.

> Windows Me: Windows Me has a number of security holes, including problems in the way Me handles digital certificates and a bug that lets other users on a network view shared

folders on your PC even if they don't have the right password. There's no service pack for Windows Me, however, nor is there a single list of security patches for this operating system. The easiest way to patch your Me system is to go to the Windows Update site (visit find. pcworld.com/31604).

Windows 2000: This version has hundreds of serious security holes and bugs, including multiple flaws relating to password theft, denial-of-service attacks, and more. Service Pack 3 (at find.pcworld.com/ 33509) will help fend them off.

The Windows 2000 High Encryption Pack (at find.pcworld. com/33512) provides 128-bit encryption support for Web sites that run on a Win 2000 server, increasing the security of online transactions.

Windows 98 and Windows 98 Second Edition: The first edition of Windows 98 has a limited number of security problems, including a hole that could allow an intruder to get around log-in and password screens. The Windows 98 Customer Service Pack (at find. pcworld.com/33515) fixes the flaws, along with a few stability issues. Windows 98 SE users don't need this service pack.

Besides the Customer Service Pack, there are a dozen additional security updates for Windows 98 and Windows 98 SE. Among the security gaps corrected are weaknesses that allow hackers to run malicious code on your computer, crash your e-mail program, and retrieve stored passwords. Go to find.pcworld.com/33518 to see the list of Windows 98 security updates and to get links to the patches. -Dylan Tweney

ads and spam: JUNK TAKES COMMAND



A NEW BOLDNESS is gripping online advertisers and spammers. In the shadowy world of spammers and in the Madison Avenue universe of corporate marketing,

clever programmers are inventing new advertising delivery techniques that grab more and more control of your Web browser.

The newest, most insidious type of pop-up ad doesn't even require you to click it to take you to another site; simply moving your pointer over the ad in a certain way will send your browser to an advertiser's Web page. Advertisers call these "kick-through" ads, a more aggressive spin on the term *click-through* (defined as when you deliberately click an ad and visit the advertiser's site).

Over the 2002 holidays, travel Web site Orbitz (a heavy online advertiser) experimented with a kick-through ad on the New York Times Web site. Perplexed news junkies who inadvertently moved their mouse pointer over the ad in the way that triggered it found themselves unceremoniously dumped into the middle of a full-screen, interactive snowball fight with a herd of festive reindeer, instead of reading the day's headlines.

A New York Times spokesperson said the ad violated the site's advertising guidelines, and the company asked Orbitz to alter it.

Orbitz spokesperson Carol Jouzaitis says that the advertisements were designed to try to prevent people from accidentally triggering them. "Did everybody love them? No, but the negative feedback was less than you'd believe," she said, "and they were extremely successful. They sold more tickets."

BEWARE OF FREEWARE

A FEW ADVERTISING COMPANIES now produce software that attempts to download a browser plug-in or program when you visit a page with their ads on it. They can use the plug-in to monitor where you surf and to pop ads in front of the browser window. Other ad companies have been releasing freeware "Internet tools," such as bandwidth speed testers, that appear to load adware onto your PC, change your browser's home page and settings, and closely monitor what you do online. Some purport to be search tools, while others claim to speed up downloads or unbelievably—block pop-up ads.

Faced with increasingly intrusive advertising, PC users are fighting back by adopting ad-blocking software such as AdSubtract (find.pcworld.com/23701) in record numbers.

Your firewall can also deal with many pop-up ads. Start by setting your hardware firewall to block the Internet domains that advertisers use, such as Doubleclick.net and Advertising.com. Over time, as you add new advertiser domains to the firewall's exclusion (or blocked domain) list, you'll see fewer ads, and **>**

SECURITY FIXES

BROWSERS: Beef Up Their Borders

Internet Explorer: If you're using Internet Explorer 6, critical security issues include a vulnerability that maliciously programmed Web sites could exploit to gain access to files on your PC, and a bug that permits sites to

read and change the contents of cookies that other sites have stored on your PC. To mitigate these risks, go to find. pcworld.com/31358 to download Internet Explorer Service Pack 1. (Note: IE SP1 is included in SP1 for Windows XP.)

The High Encryption Pack adds 128-bit encryption to IE, beefing up security for online transactions. It's available at find.pcworld.com/33548 for IE versions 4 to 5.01. Versions 5.5 and 6 already include 128bit encryption.

Once you have installed the IE service packs, you should check regularly for the most recent updates. Visit find. pcworld.com/17165 for Microsoft's bulletins (under Security Updates), or jump to find. pcworld.com/33551 for links to all cumulative patches.

If you're using IE 5.01, 5.5, or 6 on any platform except Windows XP, your PC has a critical security gap in the Microsoft Data Access Components. By attacking this weakness, a hacker could run devious code on your PC. The patch (at find.pcworld.com/ 32420) is not included in IE's

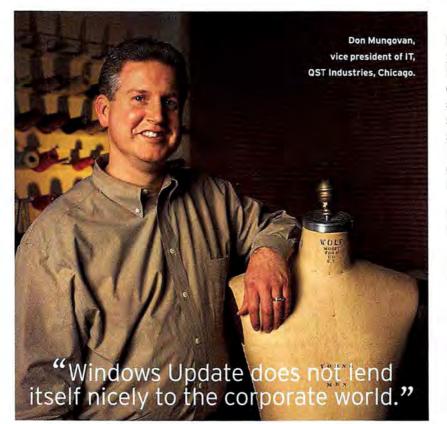


cumulative updates. Windows XP users don't need this fix.

If you're using IE 5.5, you need to fix some minor security vulnerabilities. Go to find. pcworld.com/33554 to get Service Pack 2. IE 5.01 users need to plug various minor security holes, too, by installing their Service Pack 2 (at find.pcworld.com/33557).

Netscape: The latest version of Netscape's browser, Netscape 7.01 (at find.pcworld. com/32885), includes every security update that the company has provided to date. One flaw could let a nasty Java applet access your PC. If you use Netscape 6.2.2 or 7.0, you don't need to upgrade to fix this flaw, but all earlier versions are affected.

Netscape versions 6.1 to 6.2.2 (inclusive) have a problem with the component used to download XML files. This bug could allow hackers to read files on your PC. Versions 6.0 through 6.2 have a hole that could permit Web sites to view cookies from other sites on your system. Both flaws are fixed in Netscape 7.01. *-Dylan Tweney*



those ads won't be able to spawn new windows with ads or popups. Ad-blocking software like AdSubtract can halt pop-up ads. The Google Toolbar (toolbar.google.com) also has an option that blocks one common technique advertisers use to spawn more pop-up ads when you close a Web page.

In the latest ploy, which combines some aspects of spam with pop-up ads, marketers push ads to your PC through the Windows Messenger service—an administrative feature in Windows 2000 and XP systems that spawns a pop-up similar in appearance to a dialog box, whether your browser is open or not. The ads can pop up anytime you're connected to the Internet, even when you're merely composing a Word document. Most of the ads we've seen tout forgeries of university diplomas, so we're not talking about the most upstanding citizens here. You can block the ads by turning off the Messenger service (to learn how, head to find.pcworld.com/33854) or by installing a firewall.

Last December, many computer users received a Friend Greetings electronic card in their e-mail in-boxes. But before they could see the card, the recipients were directed to FriendGreetings.com, where they were instructed to install a program. Most people did not read the fine print of the program's license, however: By installing the application, they gave the company permission to take all the addresses from their Outlook address book—as many worms and viruses have done for years—and to send everyone listed there a Friend Greetings card in their name.

Pornographers, long on the cutting edge of spam technology, have taken to employing increasingly brazen techniques to sell their product. In previous generations of porn spam, the recipient had to click links in the message to get to the pornographer's Web page. Now spammers send images embedded in the body of e-mail messages so that simply opening the message assaults you with explicit photographs. More frequently, spam contains HTML code and a JavaScript applet that together load a pornographic Web page.

While these methods don't break any laws, they aren't exactly the hallmark of legitimate companies who want to run a respectable business. So if the people behind these ads don't care if you complain, how can you cope with them?

Antispam tools—such as Spamkiller (\$40, from McAfee.com)—that promise to filter nearly all of the unwanted commercial e-mail from your in-box are here already. Some ISPs tout the spam filtering on their e-mail systems. And services like ChoicemailOne (\$30, available from www.digiportal.com) let you set lists of people who are allowed—or forbidden—

to send you e-mail, so you can block spammers forever. (Look for a comprehensive review of antispam tools in our May issue.)

internet theft and scams:



OF ALL THE ACTIVITIES people love to do on the Net, shopping ranks among the highest. Of all the activities some *other* people love to do on the Net, scamming online

shoppers ranks among the highest. A new online con that targets people who use Internet auctions threatens to separate you from your hard-earned cash by exploiting escrow services, a payment method that was previously considered safe.

Some 77 million adult Americans shop online, according to analyst firm GartnerG2. Fraudsters follow the money, and Internet fraud is on a proportionately steep rise. The National Consumers League reports that Web shoppers lost over \$7 million to Internet fraud in the first six months of 2002. That's up from \$6 million in all of 2001 and \$3 million in 2000. And those are just the consumer victims. Of 500 businesses that responded to an FBI survey, more than 80 percent reported that they were victims of cybercrime. The 223 companies that gave financial details claimed, in 2002 alone, an average of \$2 million in losses.

Online auction fraud outpaces other forms of cyberfraud against individuals by a huge margin. In November 2002, serial scammer Teresa Smith admitted to selling nonexistent computers to 300 customers on EBay and Auction Works for a total sum of \$800,000. The big auction sites claim they aggressively fight abuse like this, in part by promoting the use of escrow services. EBay spokesperson Kevin Pursglove says that allegations of fraud arise in fewer than 1 in 10,000 auctions.

Escrow services are supposed to act as honest middlemen in an online transaction: They hold a buyer's money until goods arrive, and then they transfer the funds to the seller. In some cases, they transfer the product from the seller to the buyer. But fake escrow sites cheat auction buyers and sellers (though not in the same transaction), and make off with both money and goods.

The scam starts with stolen credit card numbers: Con artists use them to buy Web hosting services that can't be traced back to themselves. Then they upload professional-looking Web pages to their freshly minted escrow sites, which are designed to convince a visitor that the escrow company is legitimate.

Next, the cons list items for sale at auction sites like EBay only they don't actually have the items they purport to be sell-

SECURITY FIXES

WHEN THE CURE IS WORSE Than the Disease

THE TROUBLE with software patches is that they are themselves software. As a result, like the programs that they're intended to fix, the patches sometimes have glitches or security holes of their own.

Case in point: Office XP Service Pack 2. Shortly after Microsoft released this update in August 2002, people who installed it found that Outlook crashed after downloading certain e-mail messages. Microsoft didn't release a patch until December, so some people had to deal with an unstable e-mail client for a few months.

Security-conscious users, then, are caught on the horns of a dilemma: install patches as soon as they come out (and before any bugs are discovered), or wait and leave your system open to a known vulnerability?

Even the security experts punt on this question. Richard M. Smith, an independent Internet security and privacy consultant in Cambridge, Massachusetts, says that he regularly updates his Windows system-but tries to avoid using Windows XP's Automatic Updates. "There's a risk here that



an update may get rushed out and not be fully debugged," Smith explains. "[The update] might actually make things worse rather than better."

System administrators don't have much use for Automatic Updates-or, for that matter, the Windows Update site. "Windows Update does not lend itself nicely to the corporate world," says Don Mungovan, vice president of IT for OST Industries, a textile supplier in Chicago. "An administrator still needs to be logged on to [each] machine, and I do not have the luxury to have someone touch every machine in a timely fashion." Instead, Mungovan relies on Ecora Patch Manager (www. ecora.com) to partially automate software patching.

What's a Windows user to do? It depends on how much you trust Microsoft-and how much footwork you're willing to do on your own. For the easiest updates, Windows XP Home Edition users should put Automatic Updates to work (see "Operating Systems" on page 84 for details). When configuring the feature, limit your selection to "critical updates," which will ensure that you're fixing the most serious holes.

If you don't trust Automatic Updates-or can't use it because you have an older version of Windows-consider using the semiautomated Windows Update site (find.pcworld.com/ 31604) instead; Smith says he follows that strategy.

Anyone who worries about potential problems with a new patch or service pack shouldn't install patches as soon as they come out. Wait a week or two. Check Microsoft's site (www. microsoft.com/security) to find out about any emerging caveats. For problems with non-Microsoft patches, you'll need to monitor the vendors' sites for updates. Remember to read our monthly Bugs and Fixes column (at find.pcworld.com/ 31580) for advice about dealing with troublesome patches from Microsoft and others. You can also search discussions on Google (groups.google.com).

If a patch causes problems, you may or may not be able to remove it. "The reality is that sometimes patches simply are not uninstallable," says lain Mulholland, security program manager in Microsoft's Security Response Center. So check the download notes (if any) for details about whether you can back out. -Dylan Tweney ing. When a buyer takes the bait and wins the auction, the seller instructs the buyer to register with and use the fake escrow service to complete the purchase. Once the buyer wires the money to the fake service, the site disappears, along with the buyer's money and credit card information.

The same scam works just as well in reverse: A fraudulent buyer requests that the seller use a particular escrow service; then the phony service notifies the seller by e-mail that the money has arrived. When the seller ships the goods to the escrow service (most often to an overseas address), the merchandise disappears.

More than a hundred scam escrow sites have popped up in the last year, many of them chronicled at www.sos4auctions.com; The site offers clues for spotting the fakes and tips on how to get the most out of a good, established service. One service that we can recommend is www.escrow.com, which was the first online escrow business certified under California's escrow laws, the nation's most stringent. Those laws require all escrow company employees to be bonded and to have criminal background checks.

EBay recommends using an escrow service on any auction with a value of more than \$500, but it makes sense to use one whenever what's at risk is worth more than you can stand to lose.

In addition to relying on a legitimate escrow service, you might try a service like Transrow (www.transrow.com), which helps sellers (mostly for high-end transactions) verify bidders by requiring them to deposit funds or submit a driver's license and credit reference. It always pays to check the background of an escrow site you're not familiar with at Sos4auctions.com or the Better Business Bureau (www.bbbonline.org) before you com-

SECURITY FIXES

OFFICE SUITES: Safeguard Your Apps

Office XP: Because of a flaw in the way that Word, Excel, and PowerPoint detect macros within files, you could open up a document from a malicious user and trigger its macros to run without your noticing anything. Office XP Service Pack 1 takes care of the security problem and enhances overall performance as well. Hop to find. pcworld.com/22501 to get SP1.

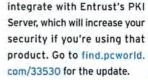
After that service pack was released, new security threats were discovered relating to Word and Excel macro options and to Web-browsing components. Office XP Service Pack 2 seals those holes and includes a number of other bug fixes and performance enhancements. Visit find.pcworld.com/30872 to get it. SP2 does not include the fixes offered in SP1; install SP1 before grabbing SP2.

Note: If you use Outlook 2002 and it crashes after you install SP2, you need another patch. See "E-Mail Programs" on page 82 for more details. Office 2000: In Microsoft Office 2000, the macro features in Excel are particularly vulnerable to outside attackers. On top of that, Outlook and Outlook Express have a flaw that leaves your machine open to the Worm.Explore.Zip (Pack) virus. Head to find. pcworld.com/33521

to get the Service Release 1a Update.

Following Microsoft's posting of SRla, additional security holes appeared on the scene, such as a problem in the way that Outlook handles e-mail attachments, and potential security problems with Excel, Word, PowerPoint, and RTF files. Office 2000 Service Pack 3 (at find.pcworld.com/32432) includes all the security patches released after SR-la.

Whether you're using Office XP or Office 2000, you may need to get the latest version of Microsoft Office Web Components. These tools come as part of Office XP, Office 2000, Money 2002, Money 2003, and other apps, and they are also available as a freestanding download from Microsoft's site. Early versions have security holes that could give a Web site unauthorized access to files on



If you use WordPerfect Office

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your PC. Go to find.pcworld. com/30875 for a link to the patch. If you've installed Office XP SP2, you don't need this fix. Corel WordPerfect: According to Corel, there aren't any significant security fixes in the company's recent updates, Hot Patch 4 and Service Pack 3 for WordPerfect. The earlier Service Pack 2, however, permits WordPerfect Office 2002 to 2000, you might encounter a system error if you should attempt to open a password-protected file on a document management system. Installing the Office 2000 Hot Patch (available at find.pcworld.com/ 33533) will restore your ability to use password-protected situation

files in this situation.

Finally, WordPerfect Office 2000 Service Pack 4 enables WordPerfect to run in a safer, "restricted users" mode on Windows 2000 or Windows Terminal Server. The service pack is not available as a download; you need to request it from Corel customer service. Go to find.pcworld.com/33545 for details. -Dylan Tweney 1. MICROSOFT NET SERVER 2003 SUPPORT 2. SUPPORT FOR MICROSOFT AUTOMATED SERVER RECOVERY 3. SUPPORTS TARGETING BACKUPS TO ISM TIVOLI STORAGE MANAGER SERVER 4. HOT SWAPPABLE DEVICE WIZARD ELIMINATES REPORTS 5. FASTEST, SIMPLEST INSTALLATION FOR WINDOWS DATA PROTECTION - FROM SHELF TO MCKUP IN 19 MINUTES 6. SOL "GUIDE ME" WIZARD 7. Fastest Exchange Server Backup & Restore 8. WINDOWS BUSINESS APPLICATION BACKUP WITHOUT INTERRUPTION 9. FIRST ANYWHERE INTERNET INTERFACE 10. SERVEREREE OPTION 11. ENHANCED MANAGEMENT OF REMOTE SERVERS WITH ADMIN PLUS PACK OPTION 12. HIGH-PERFORMANCE REMOTE SERVER BACKUP WITH INTELLIGENT IMAGE OPTION 13. SELECTION OF SNAPSEDT DECHNOLOGY THROUGH ADVANCED OPEN FILE OPTION 14. -C15 HIGHLY INTUITIVE REDESIGNED 32-31T GRAPHICAL USER IN WEB-BASED INTERFACE FOR WINDOWS NET AND MAS ING SAX 16. IMPROVED ALERTING & NOTIFICATION SETUP 17, ADDED SUPPORT FOR LOTUS DOMINO 3.3, 3.10 & 6 APPI

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> FACT: Fastest exchange server backup and restore. There's a reason why VERITAS owns 56% of the Windows data protection market. For 98 more, visit veritas.com/backupexec9.



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mit to any purchase. If the escrow service lists a mailing address and telephone number, ask the BBB to consult its records to see whether anyone has filed complaints against the company.

NO SIGNS FRAUD IS ABATING

WIDELY TOUTED as the safest way to pay online, credit cards are becoming the target of organized wire-fraud rings. In the latest scams, savvy cyberthieves convince people to update their personal information on a fake Web page that sends the information to the scammer. (For more on this scam, see last month's *Consumer Watch* column at find.pcworld.com/34037.)

Even Western Union, the venerable money-by-wire service, is being abused by shady auction scammers, who convince gullible buyers to divulge the wire transfer control number—a secret code that, once given at a Western Union office, authorizes disbursement of funds—before the buyer has the product.

The cons convince buyers to send them the control number before they receive the product, assuring victims that the con artist can't get the money until the victim provides an additional piece of information, such as a secret password or name. This is a lie. With the control number, they can walk down to the nearest branch and collect the dough anytime.

Don't use a wire transfer to complete any auction, especially if the other person is overseas, advises Rosalinda Baldwin, who runs Theauctionguild.com, an auction scam information site. Baldwin writes that Western Union informed her that "none of the [auction] buyers are receiving their merchandise when the item was paid for using a wire transfer."

SHOP DEFENSIVELY ONLINE

ALWAYS DO YOUR HOMEWORK before you click that Buy button, says Susan Grant, director of Internet Fraud Watch. She suggests a number of tips for shoppers on IFW's Web site (find.pcworld.com/33857). "The fact that the Internet offers this wonderful convenience doesn't obviate the need to know who you're dealing with," she says. And if the other party is trying to rush you into completing the transaction before you can finish your research, that should raise a red flag.

If you think that you (or someone you know) may already have fallen victim to an online fraud, the FBI's Internet Fraud Complaint Center (www.ifccfbi.gov) serves as a first point of contact with law enforcement agencies that specialize in investigating these kinds of cases. You can file a report right on their Web site.

If an auction or an online purchase doesn't feel right, don't pull the trigger—no matter what the effect might be on your rating as a buyer or seller. That's what victims of online auction fraud tell us most frequently. And that is perhaps the best advice for anyone who is considering making an online purchase: If the deal worries you, trust your gut.

Kim Zetter is a contributing editor for PC World. Dylan F. Tweney is a writer and editor in San Mateo, California.

SECURITY FIXES

OTHER NET TOOLS: Media and Instant Messaging

Media players: Three security defects affect RealOne Player, and they potentially allow a hacker to run arbitrary programs on your computer. The company recommends that ered in AOL Instant Messenger that would have allowed attackers to run code on your computer or to control it remotely. AOL says that it has fixed the problem on its own

anyone using Real-Player 8 or earlier editions upgrade, as well. The latest (secured) version is RealOne Player version 2. Jump to find.pcworld.com/ 32426 to get further details.

Microsoft Windows Media Player versions 6.4 and 7.1 and Windows Media Player for Windows XP all contain three separate security flaws. One of these problems is critical, since it could let an attacker take charge of your PC. You need the cumulative patch. Head to find.pcworld.com/ 30323 for a link to the fix.

Macromedia Flash: Macromedia's Flash player has a weakness that could allow a specially written Macromedia Flash file to take control of your PC. An earlier vulnerability allowed a Flash-powered site to download information from files that are stored on your PC. To fix both problems, the company advises you to install the latest version of the Macromedia Flash player (version 6,0,65,0 or later). Visit find.pcworld.com/32978 to download the player.

Instant Messaging software: Last year, two buffer-overflow vulnerabilities were discovservers, so AIM users don't have to make any changes themselves. But you might want to get the most recent version (5.1.3036) just to be safe; go to www.aim.com for a link to the download.

If you're using MSN Messenger 4.5 or 4.6, or the MSN Chat Control (an ActiveX control that lets you create online chat rooms), there's a vulnerability that could allow an attacker to run code on your computer. Point your browser to find.pcworld.com/29965 for Microsoft's patch.

Older versions of Yahoo Messenger may contain security flaws that could allow hackers to run code on your computer or to modify information in your Friend List. Yahoo recommends that you upgrade to the latest version of Yahoo Messenger (version 5.5) to fix the problem. Pay a visit to find.pcworld.com/ 29964 to start the installation process. –Dylan Tweney

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- 256MB DDR SDRAM 40GB high speed hard drive
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Combo IV Ultrabay 2000 Drive	(#22P6991)	\$299
	72W AC Adapter IBM USB Serial Parallel Adapter ThinkPad Fremiere Leather Carrying Case" 256MB US3 Memory Key Lexmark Z65 Color Jetprinter Targus DEFCON Authenticator PC Card Fingerprint Reader ThinkPad Port Replicator II UltraBase" X3 media slice (expansion/device bay for ThinkPad X30)	72W AC Adapter (#02K6699) IBM USB Serial Parallel Adapter (#22P5298) ThinkPad Premiere Leather Carrying Case ¹¹ (#10K0209) 256MB US3 Memory Key (#22P9025) Lexmark Z65 Color Jetprinter (#315070) Targus DEFCON Authenticator PC Card Fingerprint Reader (#31P6763) ThinkPad Port Replicator II (#74P6733) UltraBase ¹¹⁰ X30 (#46P7912) ThinkPad CD-RW/DVD (#46P7912)

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- Intel Extreme Graphics
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Insider Secrets for PC Buyers

52 smart tips for getting exactly the right machine at a price you'll like.

BY LAURIANNE MCLAUGHLIN

BEFORE YOU BUY A CAR, you probably talk to your trusted mechanic about which models are really reliable. If you're planning to invest, it's great to have a friend working in the stock market who will help you find some winners. At *PC World*, we may not be able to help you choose an SUV or a blue-chip stock, but if there's one thing we do have the inside scoop on, it's computers.

In this guide we give you the latest information, as well as the top tips you need to make your next PC purchase perfect. We tell you which specs to seek out and which to ignore. We give you advice on how to save money without getting a chintzy PC. And we help you avoid problems with shopping, warranties, and returns.

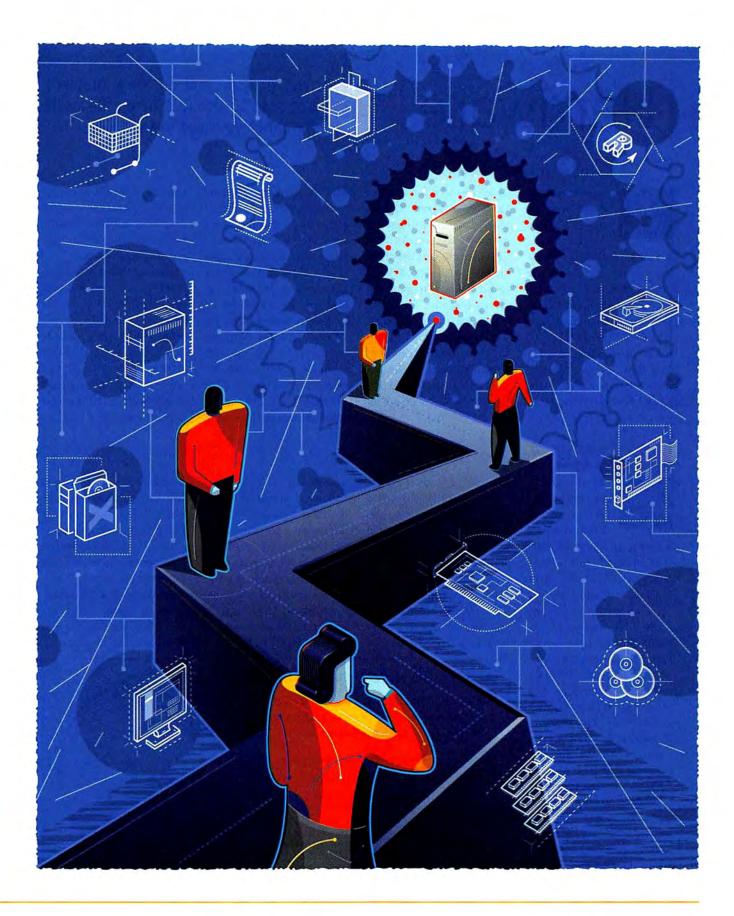
HARDWARE GUIDE

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SHOPPING GUIDE

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ILLUSTRATIONS BY STEVEN LYONS



[Hardware]

CPUs & RAM MEMORY MATTERS



Hyperthreading Hype: Sales reps may pitch you on the multi-

tasking virtues of hyperthreading, a technology found in the newest Pentium 4 chips. But *PC World* tests indicate that you won't see significant benefits from hyperthreading in many current applications. It may even slow down performance in some instances. Intel says, however, that you may see more of hyperthreading's advantages with future apps. **Count Your Cache:** Get as much Level 2 cache on the processor as possible; the CPU uses it to store bits of frequently used data. A large cache helps you gain the fastest response from programs. AMD's top Athlon XP CPU and Intel's top Pentium 4 chips have 512KB. (For more information on AMD's newest chip, code-named Barton, see "New Athlon a Winner" on page 26.) From processors and storage to graphics cards and LCD monitors, here's the inside information you need to know.

MHz vs. Memory: Systems equipped with the top Intel and AMD processors produce similar performance scores on tests using common PC applications, but the type of memory makes a big difference. For top power from a Pentium 4 system, be sure to look for PC1066 RDRAM (Rambus memory). In systems with high-end AMD Athlon XP chips, choose 333-MHz DDR SDRAM. Fast memory is worth the money if you want every bit of speed you can get in everyday applications, or if your work involves demanding tasks such as image editing or video playback.

Coordinate Speed: Make sure that the motherboard in your system supports the main memory's top speed. For example, older motherboards may not support 333-MHz DDR SDRAM. This isn't an issue if you go with a top PC maker; but if you buy a budget or generic system, it may be.

HARD DRIVE FOCUS ON RPM AND CACHE



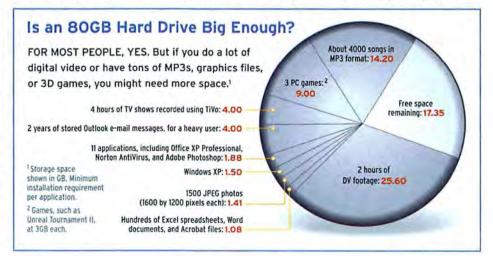
Speed Check: For top performance, pick a hard drive with

a rotational speed of 7200 rpm, instead of one rated at 5400 rpm. Visit the drive maker's Web site if the PC vendor's list of components doesn't specify the speed.

Cache In: The hard drive's buffer size deserves scrutiny. Because the data you'll want next usually follows the data you just asked for, hard drives gather more data than requested and store the extra amount in a buffer. This prepares the data for transfer to RAM without the PC's having to read the disk if data in the buffer is indeed requested next. An 8MB buffer will improve performance over a standard 2MB buffer.

Ignore Both Serial ATA and ATA/133: If you're a typical

user buying a power system that contains one hard drive, a Serial ATA hard drive is no big deal: It's just easier to fit in some PC cases because it uses smaller cables. Likewise, you won't perceive a difference between an ATA drive with a 133-MHz interface (ATA/133) and one with a 100-MHz interface (ATA/100), because a single hard drive isn't fast enough to take advantage of the extra bandwidth. For more on this topic, see "The Whole Drive Guide" on page 109. **Double Up:** For optimum harddrive speed, consider a power system with RAID-configured hard drives. Using a technique called *striping*—a RAID "Level 0" hard drive setup that includes a controller card and two drives—can supercharge system performance on tasks like file copying and image editing. Vendors like Falcon Northwest and Alienware now pop these into gaming PCs. **Money Saver:** Pick the secondor third-biggest hard drive. You'll land the sweetest deal by avoiding the top choice.



TYPE & DESIGN PC CHOICES



Possible Notebook Pitfall: Several computer makers—partic-

ularly those that sell in retail stores—put desktop CPUs into notebooks. These chips run fast, but they're also hot and noisy, burning more power and requiring bulkier cases than do mobile CPUs. Notebooks with desktop chips work fine if you stick mostly to your desk. Otherwise, wait for cooler notebooks with thinner cases; they should arrive soon, incorporating Intel Centrino technology (formerly codenamed Banias). Centrino includes Intel's Pentium M processor, its 855 chip sets, and its Pro/Wireless Network Connection.

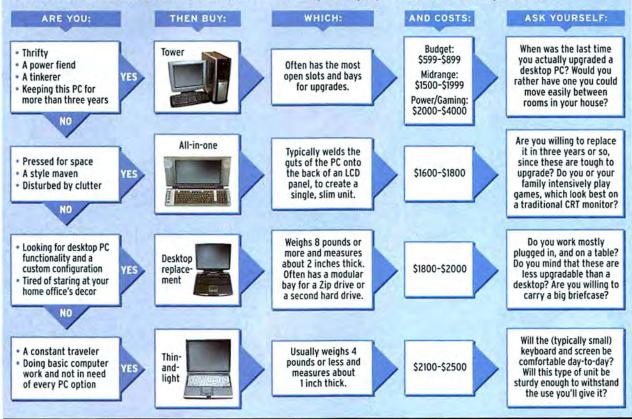
Quieter PCs: If you're in the market for a desktop PC, why should you choose a big-name vendor? Because you can hear the difference. Companies like Dell and Gateway put a lot of engineering into their tower cases—including quiet cooling systems and plastic and rubber drive rails that prevent components from vibrating. (For details, see *Tech Trend* on page 132.) Smaller PC companies don't focus on maintaining quiet like this. All-in-One-PC Warning: Systems such as Sony's VAIO W series pack the hardware onto the back of a 15.3-inch LCD, so they look sleek and save desk space. But what you see is what you get for graphics power: Almost all such models use integrated graphics on the motherboard, forgoing the AGP slot necessary for upgrading to a swankier card. If you do opt for integrated graphics, consider purchasing a PC that has dedicated graphics memory; PCs that rely on

main memory run graphics slower and also have sluggish overall system performance. Cosmetic Surgery: Unusual tower cases (often for gaming systems) have funky colors or Plexiglas panels that show off the desktop PC's innards. Such features usually appear in top-of-the-line systems that carry a \$100 to \$400 premium for their fashion-forward design. For an alternative, check out upgrade kits from online shops like PC Case Gear (www.pccasegear.com) that let you enhance the look of a bargain desktop PC.

BUYING DECISIONS

What Type of PC Is Right for You?

WITH SEVERAL FORM FACTORS to choose from, remember to take your usage, space constraints, and budget into account.

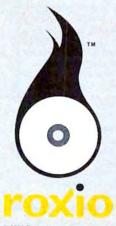




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MONITOR CRT FOR GRAPHICS



Specs to Ignore: Vendors measure dot pitch in one way for

CRTs and in other ways for various types of LCDs, so you often can't make useful comparisons. Specifications for luminance, stripe pitch, and contrast ratio don't match up for precise evaluation, either. Reality Check: Even the best 19-inch LCDs can't match the color richness and spectrum of the best CRTs. Graphics pros should stick with CRTs. If you're a text person, you'll like the sharpness of LCDs.

Wider Is Better: You want as wide an LCD viewing angle as possible. For example, NEC's 17-inch LCDs with XtraView Technology offer a viewing angle of 160 degrees; a perfectly flat viewing angle would be 180 degrees. This matters if you gather people around the LCD. But because there's no industry standard, vendors measure LCD viewing angle differently. So use this spec to compare models within a company's line, not products from multiple vendors.

Digital-to-Digital Connections:

Most LCDs provide both analog and digital (DVI) interfaces, because some graphics boards still don't include DVI ports. For best LCD quality, get a graphics card with DVIout talking to a digital LCD. That way, you won't lose image nuances that can disappear in analog conversion.

Rapid Response: Check the LCD's rated response time: Faster is better for video and motion. (If the PC configuration does not list this spec for the LCD, consult the display maker's Web site.) A rating of 25 milliseconds or less is best. LCDs with 16-ms response rates, new to the market, are not worth the extra money, because you probably won't perceive the small improvement when watching movies or playing games. A traditional CRT monitor beats any LCD for smooth, fast game action-which is one reason gamers shy away from LCDs.



GRAPHICS

Top Guns: If you want the best graphics, look for a card that

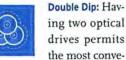
offers hardware (instead of software) support for DirectX 9-Microsoft's latest application programming interface. Hardware support helps the card achieve the best speed, lighting effects, and textures. Match Game: To see the truly smokin' side of a graphics card, you'll want the speed

and large cache of a top PC CPU. Don't combine a highend graphics card, such as ATI's Radeon 9700 Pro, with a sub-1.8-GHz processor.

DIRECTX 9 DELIVERS

DDR Memory Scores: If you play PC games or watch video clips over the Web, look for a card with DDR memory; it has a fast pipeline that allows it to communicate with the computer quickly. Some lowend graphics cards still use SDR SDRAM.

OPTICAL STORAGE BETTER BUY TWO



ing two optical drives permits the most conve-

nient copying, because you avoid copying large chunks of data to the hard drive. So get both a CD-RW drive and a rewritable DVD drive when you buy a PC. Plus, it's cheaper overall to buy these drives in a system than afterward: You'll save as much as \$200.

depending on the models.

Avoid Driver Hell: Need another reason to buy optical drives up front? The PC maker is responsible for ensuring that all the software drivers work. It's certainly no small undertaking to install these drives after the fact, download the driver updates, and make sure everything works together.

The Software Angle: Ultimately, your machine's video editing speed with a DVD-RW drive may depend more on the software you use than on the speed of the drive. That's because not all video-editing programs use the same compression technique. Look for a top-notch application like Adobe's Premiere (\$500) if you need real speed.

REWRITABLE DRIVES

DVD Demystified

WHICH DVD BURNER MEETS your needs? Here's the straight dope on the various standards.

DVD DRIVE	Writes to	Pro	Con	Manufacturers	PCs that have it
DVD-RW	DVD-R, DVD-RW	Ideal for burning video because of -R's compatibility with DVD movie players; affordable media.	Typically slower than DVD+RW drives; -RW media rated for only 1000 rewrites.	LaCie, Lite-On, Pioneer, Toshiba	ABS, Polywell
DVD+RW	DVD+R, DVD+RW	+R media has good compatibility with today's DVD players; for- mats faster than DVD-RW drives.	Media costs more and is harder to find than -R/-RW; +RW media is rated for only 1000 rewrites.	HP, Lite-On, Memorex, Pacific Digital, Philips	Compaq, Dell, HP
Dual Format or Dual RW	DVD-R, DVD-RW, DVD+R, DVD+RW	Extinction protection; no matter which camp wins the standards war, you're covered.	You may have to pay a little extra for both standards.	Sony, TDK	Polywell, Sony
DVD Multi Drive	DVD-RAM, DVD-R, DVD-RW	Speedy, capacious, and good for archiving. DVD-RAM media is rated for 100,000 rewrites.	DVD-RAM media costs a steep \$15 a pop.	LG Electronics, Panasonic, Samsung	Gateway, IBM

PC makers may change their minds at any time about favored components. At press time, this is how the offerings stacked up.

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C

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SOUND SYSTEM LOOK BEYOND WATTS



DVD Support: If you want to play DVD-Audio discs (whose fi-

delity exceeds the quality of standard CDs), you need a sound card that supports two channels of 24-bit/192-kHz audio or six channels in 24 bits/96 kHz. If the PC configuration list doesn't identify this spec of the sound card, check the card maker's Web site. Some older cards, such as early models in Creative Labs' Sound Blaster Audigy line, have only partial support.

Ignore Cumulative Wattage Ratings: The specs for some speaker bundles add the combined wattage of each speaker and the subwoofer, but you can't accurately compare these ratings among vendors. On top of that, the ratings don't say much about the quality of the audio you'll hear. Do confirm that the subwoofer has 100 to 150 watts by itself.

Cheap Is Cheap: The basic speakers bundled with most

PCs sound lousy. Either upgrade for an extra cost of \$70 to \$90 or shop around online for better speakers.

Surround Sound Decoded: Get a sound card and speaker setup that supports 5.1 or 6.1 surround sound. (The 5.1 spec refers to the number of speakers plus the subwoofer; 6.1 adds a rear-channel effect that you'll notice during movies.) Don't buy more than you need. If you don't have the space to position rear-channel speakers behind you, don't waste money on a high-end, 7.1 multispeaker setup.

Reality Check: Serious audiophiles and gamers will want to see and hear speakers and subwoofers in person in order to judge their quality and heft. If possible, test them by playing music you know.

Wire Hazard: Stringing thin speaker wires all over a room to maximize surround sound can look ugly or tempt pets. Headphones fix the problem.

BUNDLED SOFTWARE SUITE PRICES



To Office or Not to Office: Is it cheaper to purchase Microsoft

Office with the PC or to buy it separately? Buying it with the PC usually saves money. Office XP Professional runs \$300 to \$380 with either Dell Dimension or Gateway 700X desktops, for example, but alone costs \$500 from Computers4Sure.com.

Money Saver: If you use only Word and Excel, and don't need the fancy features of these applications, check out Microsoft Works Suite 2003,

bundled in many budget PCs and available for \$70 to \$100 by itself. (Works' Word and spreadsheet programs are compatible with their Office counterparts, though you must be careful to choose the .doc and .xls formats, and you won't have access to some advanced functions.) Or consider Office XP Small Business Edition (usually \$129 to \$199), which is sold only with new PCs and lacks Power-Point. Alternatively, some vendors bundle a basic version of Corel's WordPerfect suite with budget PCs.

Do It Yourself: For other applications you may be eyeing for your new PC-say, the latest version of Adobe Photoshop-a preinstalled app from the PC vendor usually won't be the least-expensive option. You'll find better deals by comparison shopping online. Update Pronto: Be on the lookout for updates to your bundled software as soon as you get your PC. The discs from which the programs were loaded may be months old. Visit the software company's site and download patches to avoid bugs and security holes.

The lowdown on retail and Web shopping: Get the most out of a warranty and know what to do when something goes wrong.

[Shopping]

WHERE TO BUY





Retail vs. Online: Retail shopping has its advantages: the com-

fort of being able to drive the PC back to the store and deal with a human in case of trouble; the chance to touch and feel the machine before buying; and walking out the door with a PC right away. But you won't find rock-bottom prices at retail chains. Computer customization options are also more limited at retail stores.

Best of Both Worlds: If you like the comfort of a physical store but prefer to compare systems on the Internet, a hybrid shopping approach may be perfect for you. This method lets you order a system online and then pick it up at the store (Circuit City offers this option, for example). You avoid shipping costs this way, but you still pay applicable sales tax. Or choose a seller like Best Buy, which lets you purchase the system online and receive it by mail, but return or exchange the PC in the store. **Before You Buy:** Read *all* the fine print on the retailer's site before hybrid-shopping. Store policies vary. At CompUSA. com, you can't return any clearance item to the retail store. Also, you have only 14 days during which to return or exchange; and you can get hit with a 15 percent restocking fee on any opened item, unless it's defective. Parts Pitfall: Confirming exactly what's inside a PC can be tricky or impossible at a retail store or bargain-basement online store. Always take the list of the PC's specs and carefully research the parts online. Be especially cautious with

parts like graphics cards: A midrange card and a bottomof-the-line version can have very similar names. Check the component maker's Web site to make sure you don't get stuck with a less powerful or older version.

GENERIC PC DEALS GALORE



Think Cheaply, Shop Locally: A local store is the smartest place

to buy a white-box computer-a no-name, built-to-order system. Buying a PC from independent retailers also gives you access to store owners, many of whom have earned a reputation for being responsive to users' questions or complaints. Web shopsincluding some listed through Amazon, EBay, and Yahoosell generic PCs, too, but many of them mix new and refurbished items, and use enough bad grammar to make anyone nervous.

Check the Power Supply: Beware of cheap power supplies: A bad power supply can wreak havoc on your PC. Local stores may be more inclined than others to skimp on this component. Get one that generates 350 or 400 watts of power; anything less than that could cause problems. For more on this topic, see *Hardware Tips* on page 152.

Beware of Switcheroos: If you're at all suspicious, ask the store to open the PC and prove it contains the parts you ordered before you take the machine home. A store might try to substitute one brand of hard drive for another.

Choose Name Brands: Brandname motherboards (like models from Intel, Asus, or Abit) and memory modules (such as ones from Crucial or Kingston) last longer and have fewer problems than their noname counterparts.

WARRANTY EASY TO VOID



How to Kill Your Warranty: If you reformat your PC's hard drive

or bring the computer to a local store for repairs, you can void your system's warranty. Read the details in the warranty agreement before you buy the system.

No Transfers: Many computer warranties don't transfer from one PC owner (who originally registered the machine with the manufacturer) to another. This is a good reason to purchase a new system instead of a second-hand one. However, some PC companies, including Dell, will allow you to transfer the warranty over to a new owner if you pass the machine on to another user. The company will also let the new owner buy an extended warranty if the standard warranty is still valid but is about to run out.

QUIZ

Should I Buy a Generic PC?

- 1. When it comes to buying, I get:
 - a) exactly what I pay for-nothing else.
 - b) a good deal, with or without frills.
 - c) brand names.
- 2.1 am comfortable researching PC components on the Web:
 - a) regularly. I speak fluent geek.
 - (b) some of the time. I'm good at asking the right questions.
 - c) by no means. This is Greek to me.

3. When my PC has a problem, I am most likely to:

- a) troubleshoot it myself.
- b) groan, and then consult a magazine or Web site.
- c) call tech support.

4. I have taken spart a desktop PC case:

- a) ten times or more.
- b) enough times not to be surprised at the dust inside.
 - c) only in my nightmares.

5. Free programs that come bundled with PCs are:

- a) worthless pieces of junk.
- b) okay-I like some of the games.
-] great.

6. The appearance of my PC:

- I doesn't have to be pretty.
- (b) just can't be so ugly that my spouse complains.
- should match my office furniture.

To compile your score: Give yourself 10 points for each *a* answer, 5 points for each *b* answer, and 1 point for each *c* answer and add up the total.

50-60 points: You're an excellent candidate for buying a white box. You know how to research components and solve many PC problems. You like to obtain the most computing power for your dollar, and you don't like or need frills.

30-49 points: You might find a better deal in a white-box PC than you'd expect, though you won't get free software or the sleekest case. You have the technology background to shop for and enjoy using a white box. You're not a supergeek, but that's not a bad thing.

Fewer than 30 points: Forget white boxes. You're not a bad person just because you need a typical system that big PC makers know works for most people. Also, you need aroundthe-clock tech support. **Extended Warranties:** These are being pushed harder than ever. Heck, you'll even be offered a \$70 extended warranty from Kemper Insurance if you buy a PC through a Yahoo Shopping site. (The fine print on that one will make you dizzy.) Only in a few special cases (for example, with delicately built portable devices like notebooks) do extended warranties make sense. Of course, if the PC maker offers a promotional deal on extended warranties. the peace of mind may be worth the money.

Disappearing Acts: Be especially skeptical of extended warranties from small PC companies. Many of them went out of business in 2002, and more will in 2003. If a company goes belly-up, you'll be stuck with a useless extended warranty and no hope of getting a refund—or worse, no service.

SUPPORT POLICIES

Waning Warranties

A ONE-YEAR warranty is standard these days, but on-site service and tech-support hours vary.

PC	Parts/labor warranty (years)	On-site service	Standard hardware support	Extended-warranty cost
ABS	Three/lifetime ²	No	Toll-free, 8:30 a.m. to 5:30 p.m. (PST), Monday-Friday, for lifetime of PC	n/a
Dell Dimension	One/one	Yes	Toll-free, 24/7, for lifetime of PC	\$119-\$229 for two to four years ³
EMachines	One/one	No	Seven-day, 6 a.m. to 10 p.m. (PST), with some toll-call charges, for one year	\$89 for three years
Gateway 300, 500, and 700 series	One/one	Yes	Toll-free, 24/7, for one year	\$89-\$239 for two to four years ³
HP Pavilion	One/one	No	Toll-free, 24/7, for lifetime of PC	\$85 for two years, \$100 for three years
IBM NetVista	Three */three *	Yes	Toll-free, 24/7, for three years ⁴	\$159 for three years, \$250 fo four years
MPC (formerly MicronPC)	One/one	Yes	Toll-free, 24/7, for one year	\$99 for three years, \$349 for five years
Sony VAIO	One/one	No	Toll-free, 24/7, for one year	n/a
Systemax	One/one	Yes	Toll-free, 24/7, for one year	\$79-\$99 for two years

n/a = Not applicable. ¹Most vendors provide standard software support for 30 days. ² Unless otherwise specified for special items. ³ Costs vary depending on model purchased. ⁴ Some models come with a one-year warranty.

RETURNS MONEY BACK OR BUST



The "Defective Clause": Many companies will do almost any-

thing to avoid returns for refunds. The safest thing to do is to find a vendor that offers a money-back guarantee and no restocking fee. Make sure you understand the return policy's "defective clause"—what happens if you want money back because the product doesn't work as promised. For example, certain stores will only exchange the defective unit for a replacement.

Refurbs as Replacements: Most PC companies provide refurbished parts as replacements. That means you can buy a new PC and be given a refurbished part in place of a defective component. The other option? Buy a PC from a mom-and-pop store that may provide new parts, but ask before you buy.

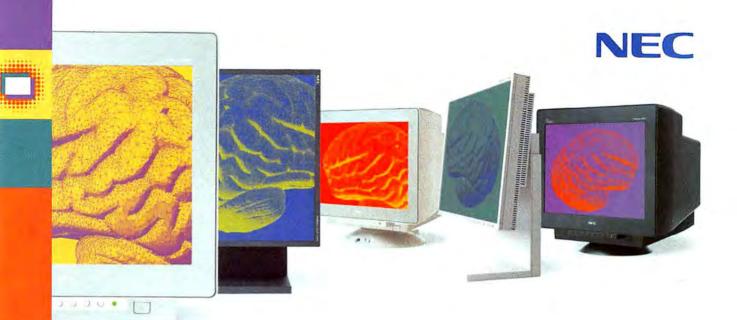
Compare Deadlines: Return time frames vary more than you might guess. Suppose, for example, that you order a cheap PC from a warehouse club's Web site. Costco.com lets you return computers for up to six months, while Samsclub.com requires you to return PCs within 15 days.

Check the Exceptions: Web sites that sell many computer brands have varying return policies for different vendors. For example, CDW states that due to manufacturer policies, returned Apple, Compaq, HP, and IBM PCs are accepted for repair only—you can't get a credit or an exchange.

Not-So-Special Delivery: If you order a system and the box arrives looking damaged or roughly handled, refuse the delivery. (The shipper will have to return the package to the PC maker, and the PC maker will have to send you a new one.) Then follow up with the PC vendor to ensure that it knows you refused delivery. Don't just accept the box and figure you'll return it if something goes wrong. You'll likely get stuck with refurbished

parts under most warranties. Set Up Smart: Most of us set up our new computers rapidly, ripping open a plethora of unlabeled little bags and boxes. If you lose any pieces (such as cables, manuals, or discs), you must pay a higher restocking fee or put up with a hassle if you return the machine. Consider labeling the bags with sticky notes as you open them. If you're left with an empty bag at return time, you'll know what to search for in your office.

Laurianne McLaughlin is a freelance writer in Massachusetts. For additional buying guides, go to find.pcworld.com/33674.



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Advice for the gigabyteaddicted:

How to upgrade to today's best and biggest-or keep your current hard disks running smoothly. ►

BIG 'UNS: Hitachi's Deskstar 180GXP (left) and Western Digital²s Caviar Special HARD DRIVES /

WITH HARD DRIVE MAKERS selling the space equivalent of an executive office suite for what seems like the price of a post-office box, why not get yourself some breathing room? A big new drive can help your PC become a well-stocked music jukebox or a digital video recorder, and it can also boost performance. However, if you decide to wait—say, for even bigger drives coming down the pike—you can get more out of the model you have now, and keep your important data safer, by giving it a little TLC. In this guide we tell you how the latest crop of big drives did in our tests, so you can buy the right one if your current model is running into trouble or running out of space. We also offer advice for keeping any hard drive humming happily.

Top New Hard Drives

IF YOU ARE RUNNING out of room for your music, graphics, or monster database files, it's time to upgrade your hard drive. But beware: Your system and its software may require some modifications before they can work with a drive larger than 137.4GB (see "Big Problems With Big Drives," page 115, for details).

We evaluated 14 drives from IBM, Maxtor, Seagate, and Western Digital. During our testing, Hitachi acquired IBM's harddrive division; Hitachi Global Storage

FEATURES COMPARISON

GREAT, BIG DRIVES

Parallel ATA models still dominate, but Serial ATA units are emerging.

	HARD DRIVE	Specs	Comments
1	Western Digital Caviar Special Edition WD800.JB *****/ (Sept 02) find.pcworld.com/29796	• \$135 • 80GB • 7200 rpm • 8MB buffer • ATA/100 interface	While its capacity may seem a bit small compared with that of competing hard drives, the low-priced WD800JB provides enough storage for most people, plus a nice upgrade kit. It ranked in the upper half of all drives in ou performance tests.
2	Maxtor 7200 RPM Ultra Series Hard Drive Kit *****: (Nov 02) find.pcworld.com/30980	• \$350 • 200GB • 7200 rpm • 8MB buffer • ATA/133 interface	This huge, speedy drive achieved top scores in all of our performance tests. Unfortunately, while the cost per gigabyte is reasonable, the price of admission is high. The product comes in an end-user kit.
3	Hitachi Global Storage Technologies Deskstar 180GXP ★★★1:% find.pcworld.com/33692	• \$270 • 180GB • 7200 rpm • BMB buffer • ATA/100 interface	Part of the line originally sold under the IBM name, this drive is a hair faster than the Caviar WDI200JB. Like all drives over 137.4GB, it may require you to upgrade your BIOS or drivers, or to install an adapter card. It comes in an upgrade kit, but the instructions and software are woefully outdated and not very helpful.
4	Western Digital Caviar Special Edition WD1200JB ★★★★ fr (Sept 02) find.pcworld.com/29795	• \$200 • 120GB • 7200 rpm • 8MB buffer • ATA/100 interface	This drive offers solid performance suitable for most users, along with generous storage, for a fair price. Western Digital makes it available in a retail kit with handy setup and diagnostic tools.
5	Seagate Barracuda SATA V ****i7 find.pcworld.com/33698	• \$188 • 120GB • 7200 rpm • 8MB buffer • Serial ATA interface	The first Serial ATA drive on our chart, this Seagate took third place overall in our performance testing. Though our review unit came as a bare drive, Seagate plans to offer a retail upgrade kit in April.

Street prices are reported as of 1/30/03. Visit find.pcworld.com/33920 for more rankings.

Technologies will continue to sell the Deskstar 180GXP drive we evaluated, as well as the other drives in the Deskstar line. To rank the drives, we weighed performance, capacity, price, warranty policies, and technical support offerings.

We judged Western Digital's 80GB Caviar Special Edition WD800JB to be the best overall value at just \$135. At number two, Maxtor's 200GB 7200 RPM Ultra Series Hard Drive Kit offers great performance and vast capacity, for \$350. In third, Hitachi's 180GB Deskstar 180GXP performed well, and its cost-per-gigabyte was the lowest of any drive evaluated. Western Digital's fourth-place, 120GB Caviar Special Edition WD1200JB offers a sweet combination of performance and capacity at a reasonable price of \$200. The number five Seagate Barracuda ATA V is one of the first drives with the new Serial ATA interface; it finished third (out of 14 drives) in our performance tests.

Maxtor and Seagate retail drives have only one-year warranties. Hitachi and Western Digital offer one year on most drives but three years on their premium models (those with 8MB buffers).

You can save money by buying a bare drive—one without mounting screws, cables, or setup software—but springing for a kit that includes those pieces makes setup easier, especially for novices. (For installation tips, see "Install a Bigger, Faster Hard Drive" at find.pcworld.com/33911.)

The Test Drive

PC WORLD Test Center results fell into some expected patterns. The 7200-rpm drives we tested were usually faster than the 5400-rpm models, and using a twodrive setup with a RAID card that split data between them was faster than using a single drive of the same type for most tasks (though seek time took a minor hit). Also, an 8MB buffer (memory on the hard drive) yielded better performance than the standard 2MB buffer for disk-intensive tasks such as those in our Photoshop test.

Maxtor aced the speed tests. Its 7200rpm Ultra Series Hard Drive Kit was the fastest parallel ATA model, and its 300GB MaXLine II—optimized for enterprise storage—was the fastest 5400-rpm drive. The company's Serial ATA–equipped MaXLine Plus II, also intended for servers, was the fastest overall. (Before we went to press, Maxtor discontinued the 200GB MaXLine Plus II drive we tested, but it will offer a similar model in the Diamond Max Plus 9 line of retail desktop kits.)

ETA on Serial ATA? Now!

WE TESTED a pair of Seagate drives, identical except for their interfaces: One uses parallel ATA; the other, Serial ATA. In our tests, the Serial ATA model was quicker but only the Seagate and Maxtor Serial ATA models were available for this roundup, so we can't yet say what part the interface plays in drive performance.

Regardless, Serial ATA offers several advantages over parallel ATA: Its narrow, seven-wire cables attach more easily, allow longer runs (up to 1 meter), and interfere less with airflow—thereby making smaller, more-compact PCs possible.

They permit faster data transfers, too. Parallel ATA's top rate of 133 MBps is about the maximum that the technology allows. At higher frequencies, the signals carried by one wire can interfere with those on other wires in the ribbon cable a phenomenon called *crosstalk*. Serial ATA does not have such restrictions. It supports transfers of 150 MBps already; the rate will jump first to 300 MBps and then to 600 MBps over the next decade. That's far more bandwidth than current desktop drives can take advantage of, but it makes room for future growth.

Aside from raw throughput, Serial ATA has other performance enhancements, such as the ability to queue and then execute commands while the CPU performs separate tasks. Such features may have contributed to the two Serial ATA drives' fast performance in our evaluations.

RAID Means Cheap Speed

FOR THE BIGGEST speed boost from your hard drive upgrade, link two drives using a RAID card, such as Promise's TX2000 (for parallel ATA drives) or S150 TX4 (for Serial ATA drives). In a process known as *striping*, the card treats the two drives as one, thereby doubling both the number of cables available to carry data and the number of read/write heads that can be used to retrieve or record it. And striping indeed produced a handsome performance boost in our recent tests. (See the chart on page 114 and our *News & Trends* story "Hardware Boost for Hard Drives," at find.pcworld.com/33899.) RAID provides a major advantage when you're working with large image, audio, or video files. On the other hand, if all you do is open or close small files, you will not benefit from RAID striping.

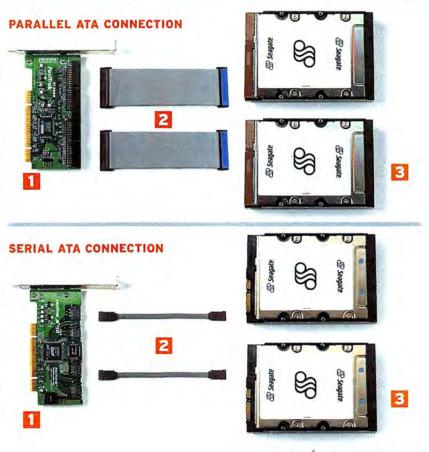
RAID cards cost extra (the Promise cards we used cost \$100, though some cards are as little as \$20). In addition, you have to purchase two drives, though

THROUGHPUT

SERIAL ATA, PARALLEL ATA, RAID

DRIVE PERFORMANCE depends not only on how quickly data can be read from or written to the drive platters, but also on how quickly it can be funneled to the rest of the system. Here are three funnel factors that affect data throughput.

Controller: The chip that sends commands to the drive to store and retrieve data. A RAID controller can pull data from two or more drives simultaneously, allowing greater throughput.
 Interface: Protocols and hardware that serve as the data pipeline. Ribbon-cabled parallel ATA (below, top) can carry data at up to 133 MBps. Serial ATA (bottom) will eventually hit 600 MBps.
 Buffer: Memory that holds data the CPU is likely to request next. The larger the buffer, the greater the amount of prefetched data it can maintain on hand.



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- Belkin* SurgeMaster* Gold Series Surge Protector, \$39
- Kodak Easyshare" LS443 Digital Camera, \$449
- Canon[®] ZR65MC Digital Video Camcorder, \$599

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*America Online: New members only. Must register for AOL within 30 days of invoice. To avoid paying monthly membership fees, cancel during the 6-month promotional period. Even during promo period, telephone access charges on your phone bill (call your phone co. for details) and surcharges for premium services and 800# access may apply, including in AK. Availability may be limited, especially during peak times. For new, 18+ U.S. members with major credit card or checking account only. Limited time offer,

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 56K* PCI Telephony Modern Integrated Intel[®] PRO 10/100 Ethernet Microsoft[®] Windows[®] XP Home Edition · WordPerfect* Productivity Pack with Quicken* New User Edition you can often buy a pair of smaller drives for about the same price as a single monster drive of comparable total capacity.

Another cost of RAID is a slightly slower seek time, due to the controller's having to track data stored on two drives. But that performance hit occurs only during tasks like file searches, and you probably won't notice it even then.

GET YOUR DRIVE IN SHAPE

WHETHER YOUR SYSTEM COST \$400 or \$4000, its most valuable component is the data contained on your hard drive, be it your critical business or financial files, a lifetime of scanned photographs, or even that future best-selling book. These tips explain how to maintain a healthy drive and spot trouble before it's too late.

Divide Your Disk

EVERY PHYSICAL hard drive must be set up initially with one or more partitions. Each partition contains a table that defines how much and which part of the disk it encompasses, and which file system it uses. You can assign all the drive space to a single partition (drive C:) or

TEST REPORT

SERIAL ATA LOOKS PROMISING

ONE OF THE FIRST hard drives to use a Serial ATA interface outperformed a nearly identical parallel ATA drive in some of our tests. The higher throughput of the Serial ATA interface shouldn't produce a performance advantage, since even parallel ATA has plenty of bandwidth for a single drive; but vendors say that Serial ATA may handle data more efficiently. Whichever interface you have, RAID does wonders for file transfers but mildly slows seek times.

DRIVE	Interface	Copy 1.3GB of files and folders	Copy single 1.3GB file	Find text string within 7.36GB	Manipulate image in Photoshop 6.0.1
Songata Parraguda V ST2120020AC	Serial ATA	98	79	237	126
Seagate Barracuda V ST3120029AS	Serial ATA RAID	84	67	249	113
Seconda V CT01000044	Parallel ATA	119	106	237	124
Seagate Barracuda V ST3120024A	Parallel ATA RAID	81	78	249	113

HOW WE TEST: We attached the single parallel ATA drive to the motherboard IDE controller on our test system, a Dell Dimension 8200 with a 2-GHz Pentium 4 CPU running Windows XP Professional. We attached the single Serial ATA drive to a Promise SATAI50 TX4 expansion card. For the RAID setups, we connected the parallel ATA and Seri-TEST al AIA drive to Promise Stanbox of expension and for the rank people. The connected we people in the set of al AIA drives to Promise TX2000 and STSO TX4 controller cards, respectively. All times in seconds; bold numbers indi-cate best performance. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. 'Time required to open a 105MB file in Adobe Photoshop 6.0.1, apply filters, and rotate it multiple times. glitch in PartitionMagic 8.0 rendered our test system unbootable in a recent review. (See find.pcworld.com/33893 for details.)

Work the (File) System

divide it into multiple partitions (C:, D:, E:, and so on) to organize your files better

or to run multiple operating systems,

such as Windows and Linux, with each

tucked safely in a separate partition. Keep-

ing your OS in its own partition-apart

from programs and data-also allows you

to reformat the partition easily and to re-

install the OS (the only fix for some virus

infections or software problems) without

destroying other data. Finally, you can

prevent fragmentation of the swap or pag-

ing file by placing it in its own partition,

using Windows' Virtual Memory settings.

hard drive kits allows you to set up parti-

tions on a new, blank disk. Alternatively,

you can use the DOS program FDisk or

utilities included in Windows. To make

changes to a disk that already contains

data, use a program like PowerQuest's

Partition Magic or V Communications'

Partition Commander, both of which let

you create, resize, and move partitions

without harming the contents of your

disk. To be safe, however, you should al-

ways back up your data before performing

partitioning tasks; any software or system

anomaly during an operation can render

your data inaccessible. Case in point: A

Most installation software that comes in

DEPENDING on your version of Windows, each partition uses one of three file systems-FAT16, FAT32, or NTFS-to determine how files on the partition are stored, named, and organized. The oldest of the three, FAT16, limits files and partitions to 2GB: FAT32 limits individual files to 4GB, although partitions can be as large as 2 terabytes. NTFS is the most flexible of the systems, as it allows files up to a gargantuan 16 billion gigabytes (16 exabytes) in size. Only Windows XP, 2000, and NT recognize NTFS.

One tweak you can make to both NTFS and FAT systems is to set the size of a cluster-the basic unit of file storage on a disk-from 1KB to 64KB in NTFS and FAT32, and from 512 bytes to 64KB for FAT16. Smaller clusters typically waste less space, because every file (even if it's only 1 byte long) uses at least one cluster and almost always leaves its last cluster only partly filled. However, PCs can read larger clusters more quickly, thus boosting disk performance. Our advice? Use clusters of 32KB or 64KB, unless you're seriously short of disk space. The partitioning utilities mentioned above allow you to set the file system and cluster size when creating or modifying partitions. Tools in Windows XP and 2000 also let you set the cluster size on a new partition.

Keep Files Together

A FRAGMENTED FILE is one whose clusters do not directly follow one after the other-an inevitable fate as files are read. modified, and rewritten to the disk. A defragging utility shuffles the disk's data to make each file's clusters contiguous. As a result, the disk can read data faster-less of a benefit with today's fast drives-and you can recover deleted files more easily. Some defraggers may also reorganize and relocate often-used files to the faster, outer portion of the hard drive platters so that they load into memory more quickly.

Center

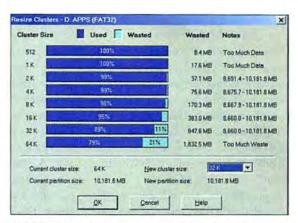
In our past tests of a few utilities, though, we've found no definitive evidence that doing so enhances performance.

Windows 2000 and XP automatically track NTFS file transactions and replace bad clusters; they also include defragging utilities for manual cleanup. If you use Windows Me, 98, or 95, however, a thirdparty defragger such as Speed Disk in Symantec's Norton SystemWorks or Jet-Defrag in V Communications' Fix-It Utilities works faster than the defraggers bundled with the older operating systems.

Fix Your Files

THE LATEST VERSIONS of Windows (especially when set up with NTFS) have moreadvanced features for repairing damage to your PC's file system, but all Windows versions carry disk-checking tools that you can run periodically to find and fix problems. They may launch at boot upon sensing that you shut down the PC improperly or that the system may have disk errors. You should never bypass these operations, though Windows offers you that option. Doing so may result in lost or corrupted files.

In Windows 98 and 95, you should run the disk checker about once a week. Right-click the drive in My Computer, select *Properties*•*Tools*, and under 'Error-checking' click *Check Now*. A third-party disk checker such as the Disk Doctor application included in Symantec's Norton SystemWorks or the Disk-



PARTITION MAGIC lets you customize your drive's cluster size.

Fixer in V Communications' Fix-It Utilities is a bit quicker but no more effective.

Hard-Drive Intensive Care

HARD DRIVES are mechanical devices, and as such they are subject to failure. Even if you don't make regular backups, you may still be able to save your data when your drive goes south. If you see signs of trouble such as a 'DISK BOOT FAILURE' error message or nonsensical characters where a list of files should be, it's time to take action. You may be able to recover from disk problems with tools you already have at hand (but only if the drive isn't suffering a physical problem). These tips address some common symptoms.

Grinding noises: If your drive is making scratching, grinding, or ratcheting noises you haven't heard before, it may have suffered a head crash (in which the read/ write head scrapes a platter) or anoth-

LAB NOTES

BIG DRIVES MAY BEGET BIG PROBLEMS



SENIOR PERFORMANCE Analyst Elliott Kirschling tests hard drives.

INITIALLY, Hitachi's 180GB Deskstar 180GXP drive would not run on our Windows XP Pro-equipped Dell Dimension 8200 test system, although the same PC had no difficulty with Maxtor drives up to 300GB. The problem, we learned, stemmed from differences in how companies implement the new 48-bit addressing standard for recognizing drives over 137.4GB; we solved it by updating Intel's Application Accelerator driver to a version that libed with Hitachi's implementation. Depending on your setup, drives over 137.4GB may work flawlessly or they may require you to update drivers, the BIOS, the operating system, or all three. And you may still have problems with older motherboard chip sets.

Microsoft provides a starting point with fixes for Windows XP (find.pcworld.com/33992) and 2000 (find.pcworld.com/33989). And fixes for other versions of Windows may be possible with updates to the system BIOS and the driver for the ATA controller.

You can also get around the problem by installing an expansion card (with its own drivers), such as the Promise Technology Ultra100 TX2 ATA/100 PCI IDE card, which sells for about \$30 and comes bundled with Western Digital retail kits for drives over 137.4GB. With such a card, you need not upgrade your BIOS or your operating system.

-Sean Captain and Elliott Kirschling



er mechanical problem that will destroy more data as the disk continues to spin.

The safest way to proceed when vital data is in danger is to turn your system off and call a recovery service such as Drive-Savers (www.drivesavers.com) or Ontrack (www.ontrack.com). These services will, if necessary, disassemble your drive in a clean room to recover data. According to DriveSavers, recovering an 80GB drive typically costs about \$750.

If your data isn't that valuable, and you can still access files, you may take your chances by keeping the drive on and trying to copy the most important files to other media before the drive dies.

Data corruption: If your drive runs normally but files and directories are missing or appear as gibberish, you probably have file table or directory corruption. A virus may be at work, or the disk may be developing bad sectors (portions of clusters that no longer holds data reliably, rendering the affected clusters unusable). Bad sectors often indicate imminent drive failure. Try using recovery software that runs from a CD-ROM or floppy disk, such as R-Tools' R-Studio Agent Emergency (part of the \$180 R-Studio network package). It recovers data by reading the information embedded within the files themselves. rather than in directories or file tables. Always recover to another hard drive or to backup media; then run an antivirus program and a disk checker to find errors or bad sectors. If you find any bad sectors, rescan every few days-if more appear, it's time for you to get a new drive.

Bad cables: If your system won't boot and its hard drive has stopped, you may have a bad cable or cable connection. First check that all connections are secure, with no bent or broken pins. Then try different cables (you can swap those from your IDE optical drive). In rare cases, the problem may result from bad connections inside the power supply. To check, put the drive in another system if you have one handy. But don't try a new drive in your malfunctioning system until you're sure the PC didn't kill the original drive.

San Francisco-based freelance writer Jon L. Jacobi is a regular contributor to PC World; Seán Captain is a senior associate editor. Senior Performance Analyst Elliott Kirschling conducted all lab tests.

NOTEBOOK GIGS

BEEF UP YOUR NOTEBOOK STORAGE



ON MANY LAPTOPS, replacing the 2.5-inch drive involves nothing more than unscrewing a panel, sliding the old drive out, and popping the new one in. Of course, you also need to transfer the data from your old drive-and that can be a challenge because most notebooks have space for only a single hard drive.

Vendors such as Apricorn, CMS, and SimpleTech offer upgrade kits for a multitude of notebooks. In addition to containing a drive, the kits may come with mounting hardware, and in some cases they may carry both data transfer software and hardware for temporarily attaching a second drive. Apricorn (www.apricorn.com), for example, provides a drive cable that connects to your notebook via a PC Card, plus an external caddy that holds the new drive while your files are copied to it. The company will also offer a USB kit soon. After the upgrade, you can use the caddy kit with your old drive for additional storage. Using a \$369, 60GB, 4200rpm Apricorn kit, we were able to upgrade a Toshiba Satellite Pro 6000 notebook quickly and easily.

DO IT YOURSELF

YOU CAN SAVE a tidy sum by assembling your own kit. At the time of this writing, some retailers listed a bare 60GB, 4200rpm Toshiba MK602IGAS drive for about \$200. Instead of using a kit's custom file-copy software, you can create an image of the old drive with a program like PowerQuest's Drive Image, Acronis's TrueImage (read about both of them at find.pcworld.com/33902), or Symantec's Norton Ghost (find.pcworld.com/33905). Depending on the size of the image file, you can store it on various media, including CDs, DVDs, or an external hard drive like Maxtor's Personal Stor-

age 5000DV (find.pcworld.com/33908). Or in place of the Apricorn caddy, you can build one using a FireWire or USB 2.0 drive enclosure such as ADS Technologies' Pyro 2.5 Drive Kit.

OTHER OPTIONS

IF YOU NEED ONLY a few extra gigabytes, you can slip in a PC Card drive such as Toshiba's 5GB MK5002MPL, which sells for about \$250 as a bare drive from Toshiba or for \$290 in a kit from SimpleTech (www.simpletech.com). Apricorn and SimpleTech also sell drives that slip into the multipurpose bays of many popular notebooks. We found a \$549, 60GB SimpleTech model for our Dell Latitude C640.

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Bight Lights Big Pictures

Affordable, portable projectors are coming on strong, in the conference room and beyond. Our tests reveal your best bets.

BY RICHARD JANTZ



PORTABLE DIGITAL projectors have come of age: Thanks to falling prices and wider availability, the demand for projectors continues to grow steadily. Some units can be had for as little as \$1500, and the average price of a business projector is about twice that.

As well as being more prevalent, projectors are becoming useful for specific home theater and wireless networking purposes. But most models remain suitable for multiple environments, and they have become standard equipment in offices of all sizes. You can find projectors appropriate for every setting—from on-the-road sales calls to DVD viewing at home.

We looked at 16 projectors—and the range of products we saw reflects the current trend toward **>**



NEC LT240



THE TOP-RATED LT240 displayed sharp, legible text; attractive color graph-

ics; and smooth moving images from both computer and video sources. Among its ample input options (at an additional cost) is a PC Card slot that can be used with an 802.11b wireless network adapter, a wired ethernet adapter, or a flash media card adapter. Image adjustment options include preset modes for presentations, graphics, and video, as well as custom settings. The easy-tomanage remote includes a laser pointer. **Upshot:** The versatile, \$3025 LT240 can handle pretty much anything you throw at it, always delivering a brilliant picture.



DELL 3200MP



THE 3200MP OFFERS a compelling combination of price, performance, and

features, and it comes bundled with more cables (including a component video cable) than most projectors. Priced at \$2199, the 3200MP scored higher for displaying sharp, bright text images than for its handling of graphics and moving images, which had less shadow and highlight detail than the best models. Simple controls and a streamlined on-screen menu make changing settings easy. The remote includes a laser pointer.

Upshot: The 3200MP is well equipped for displaying presentations or movies, right out of the box. all-purpose models that are lighter, brighter, and less expensive than their predecessors. To help us determine our top ten, we conducted image tests in the PC World Test Center, evaluating the quality of text, graphics, animation, and video each projector produced. We also considered such factors as the

projector's overall ease of use, its features, and its accessories. For further details on how we tested these projectors, see "Lab Notes: Resolution Solution," page 125.

VERSATILE PROJECTIONS

THE NEC LT240 EMERGED as the best overall performer, winning our first-place Best Buy. It earned top scores for displaying graphics and video, and it tied for third on text. The Dell 3200MP captures the second-place Best Buy, thanks to its excellent handling of text. Plus, it comes with more accessories than competing models.

Finishing close behind our top two picks is the Sony VPL-CX5, which came in third on our text and graphics tests.

Other top text performers included two ultraportable models: The Boxlight XD-15c came in first with its crisp letters, while the InFocus LP70 tied the NEC's text-rendering performance.

The InFocus LP70 finished close behind the top-ranked NEC LT240 at displaying still graphic images. Both of these projectors delivered exceptionally vivid and trueto-life colors, and they showed the best contrast and details of the bunch. Several other projectors performed well on graphics overall but showed less detail in light and shadowed areas; these include the Epson PowerLite 730c, the Mitsubishi XD300U ColorView, the NEC VT660, the Philips BSure XG1, the Sharp Notevision PG-M25X, and the Toshiba TLP-T501U.

At our test resolution of 1024 by 768 (XGA), the units that displayed the leastlegible text were the four projectors that had a native resolution of 800 by 600 (SVGA): the Epson PowerLite 53c, the HP Sb21, the InFocus X1, and the ViewSonic



REMOTE EASE: NEC's comfy LT240 remote (left) is a joy; Boxlight's superthin one is not.



PJ-501. The text that these units produced tended to be fuzzier and less legible

than what we saw from the native XGA models we tested, though large, bold fonts (such as those found in presentations) were passable. Mediocre text performance

kept all four SVGA models off our chart.

Narrowly missing our top ten was Epson's 730c, the brightest ultraportable in this roundup. An average performer, the Epson finished in the middle of the pack on our motion and graphics tests. NEC's inexpensive VT660, which excelled on our graphics tests, also missed the chart.

FEATURES COMPARISON

Projectors Pep Up

TOPPING OUR PROJECTOR CHART, the NEC

	PROJECTOR	Street price (1/15/03)
1	Best NEC LT240 **** find.pcworld.com/33776	\$3025
2	Best Dell 3200MP **** find.pcworld.com/33782	\$2199
3	Sony VPL-CX5 ***/ find.pcworld.com/33788	\$3399
4	Toshiba TLP-T501U *** find.pcworld.com/33806	\$4049
5	Boxlight XD-15c *** find.pcworld.com/33785	\$2399
6	InFocus LP70 ***1 find.pcworld.com/33779	\$3099
7	Optoma EzPro 737 ***ich find.pcworld.com/33797	\$2495
8	Mitsubishi XD300U ColorView **** find.pcworld.com/33791	\$4495
9	Sharp Notevision PG-M25X **** find.pcworld.com/33794	\$5295
10	Philips BSure XG1 ***1 find.pcworld.com/33803	\$2195

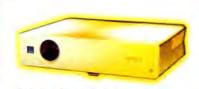
Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on PC World's Star Ratings.

THE INSIDE STORY

TWO DISPLAY TECHNOLOGIES rule the portable projector market: Texas Instruments' DLP (Digital Light Processing), and LCD (liquid crystal display). According to ISuppli/Stanford Resources, LCD models still account for most projector sales. Of the projectors sold in 2002, 73 percent contained LCD transmissive mechanisms, while 26 percent contained DLP reflective mechanisms. Nevertheless, 9 of the 16 projectors we reviewed use DLP to display images, and 7 of those use the latest DLP chips available.

Though DLP and LCD projectors generate images somewhat differently, in hands-on testing we saw fewer differences between the two technologies than we have in the past. The rule of thumb used to be that LCD projectors tended to deliver sharper, more vibrant, and bettersaturated colors than did DLP-based units, while DLP models tended to be brighter. You won't have to make the same tradeoffs today, however. Current-generation DLP chips have features that vendors claim help sharpen images and boost image contrast so that blacks appear blacker and whites whiter. As such, models powered by the newer DLP chips (such as those in this roundup) are better able to compete with LCD-based units.

Ultraportable (sub-5-pound) projectors rely most heavily on DLP: Its mechanism is smaller than LCD's, and there's no longer a price premium associated with the miniaturization of DLP-based



SONY VPL-CX5

THE VPL-CX5 has a sleek design and unique features like a powered lens cover and an automatic, one-touch tilt adjuster. This \$3399 projector's menu and navigation buttons nestle on the side of the projector, and the remote is easy to work. Though vibrant colors helped it earn high marks on our graphics tests, the Sony's scores for text display were just average. Upshot: The powerful, bright VPL-CX5 is appropriate for use in spacious rooms.

Presentations With Big-Screen Images

LT240 outpaced the competition, thanks to strong performance on our imaging tests.

Overall rating	Quality of text/ graphics/ motion	Projector-only weight/traveling weight (pounds) '	Display type/ ANSI lumens/ native resolution	Computer connections	Video, audio connections	Support policies
92	Very good/ Outstanding/ Outstanding	7.4/8.6	DLP/1600/XGA	Analog RGB and USB inputs; VGA output; optional 10/100 ethernet and Wi-Fi	Component, ² composite, S-Video, audio in, audio out	Three-year warranty; toll-free tech support 11 hours weekdays
86	Very good/ Good/ Good	3.6/5.0	DLP/1300/XGA	Analog/digital/component and PS/2 inputs; VGA output for external monitor ³	Component, composite, S-Video, audio in	Three-year warranty; toll-free tech support 12.5 hours daily
81	Good/ Very good/ Good	6.1/7.2	LCD/2000/XGA	Analog RGB and USB inputs	Component, ² composite, S-Video, audio in	Two-year warranty; toll-free tech sup port 11.5 hours daily
81	Good/ Very good/ Outstanding	9.1/10.2	LCD/1600/XGA	Analog RGB, RS-232C, and USB inputs; VGA output; document camera; integrated Wi-Fi	Component, ² composite, S-Video, audio in	Two-year warranty; toll-free tech sup port 24 hours daily
78	Outstanding/ Good/ Very good	3.9/5.0	DLP/1100/XGA	Analog RGB input	Component, composite, S-Video, audio in	Two-year warranty; toll-free tech sup port 10.5 hours weekdays
77	Very good/ Outstanding/ Good	2.5/3.5	DLP/1100/XGA	Analog/digital and PS/2 inputs ³	Composite, S-Video, audio in	Two-year warranty; toll-free tech suj port 12 hours weekdays
76	Very good/ Good/ Fair	4.0/5.1	DLP/1500/XGA	Analog/digital/component, PS/2, and RS-232C inputs; VGA output ³	Component,² composite, S-Video, audio in	Three-year warranty; toll-free tech support 9 hours weekdays
75	Good/ Good/ Very good	6.9/8.4	DLP/2100/XGA	Analog RGB and RS-232C inputs; VGA output; optional 10/100 ethernet	Component, ² composite (two ports), S-Video (two ports), ² audio in, audio out	Three-year warranty; toll-free tech support 9 hours weekdays
73	Good/ Very good/ Very good	5.9/6.9	DLP/1900/XGA	Analog/digital/component and USB inputs; integrated Wi-Fi ³	Component, ² composite, S-Video, audio in	Three-year warranty; toll-free tech support 12 hours weekdays
73	Good/ Good/ Fair	8.1/8.9	LCD/1500/XGA	Analog RGB, PS/2, and USB inputs; VGA output ³	Component, ² composite, S-Video, audio in	Three-year warranty; toll-free tech support 9 hours weekdays

¹ As determined by the PC World Test Center. Traveling weight includes projector, required cables, and remote control. ² Cables not included. ³ Some connections via multipurpose M1-DA cable.

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TOSHIBA TLP-T501U

THE EXPENSIVE (\$4049), hefty TLP-T501U is the only projector we tested that has an integrated document camera so you can use the projector like an oldfashioned overhead. The camera swings out from the rear of the projector to display three-dimensional objects or printed documents. A built-in PC Card slot can accommodate a flash media card or a Wi-Fi card for handling PC-less or wireless presentations; a single 802.11b PC Card is included for use with the projector. Navigating the unattractive onscreen menus is a bit cumbersome. The TLP-T501U scored higher for graphics and motion, but its FCC Class A rating means it's designed for business use only. Upshot: This versatile unit is a good

choice for people who need to display hard copies as well as data. projectors. And now that the cost of DLP technology has come down to earth, you'll find DLP in a sizable number of portable (sub-10-pound) projectors as well.

PROJECTOR PARTICULARS

A PROJECTOR'S DISPLAY technology that is, whether it contains an LCD or a DLP mechanism—won't affect your viewing experience as much as its resolution, brightness, and weight will. When choosing a projector, you should also consider how convenient its controls and accessories are to use, and whether it has the PC and video connections you need.

Resolution: Projectors perform best when operated at their native pixel resolution. For most portable projectors, that's XGA, which is also the most common default resolution for today's notebook PCs. SVGA projectors (which are generally cheaper than XGA units) use interpolation to display higher-resolution images. In our tests, however, no SVGA projector could match the crisp, smooth text and the fine color graphics rendered by XGA models. (For more on the differences in image quality between XGA and SVGA projectors, see "Lab Notes: Resolution Solution." page 125.) Our test results suggest that the sharper, more legible images of XGA projectors justify the extra cost.

Brightness: Projector brightness is rated in ANSI lumens, an industry-standard measure of light output. Other things being equal, the higher the rating, the brighter the projected image. This is especially evident with projectors used in large conference rooms or in rooms with high ambient light levels, thanks to the brighter models' stronger illumination.

Most portables today are rated at between 1000 and 2000 ANSI lumens. The 16 projectors tested in this roundup have ratings ranging from 800 to 2500. A projector rated at 1000 to 1500 lumens—like the ones we tested from Boxlight, Dell, and InFocus—is fine for use in a small conference room with typical office or home ambient lighting. Brighter models, such as those we tested from Epson, Mitsubishi, and NEC, are well suited for larger rooms with ambient lighting.

Weight: All of the projectors that we tested are considered portables, but some are more portable than others. The HP

Movie Theater Experience Comes Home

WATCHING A MOVIE with a digital projector is a real event. Seeing a DVD projected to 7 feet wide feels similar to visiting your neighborhood monsterplex, except that this one has comfy chairs and no annoying, plot-spoiling trailers. Simply plug in your video source (a DVD player, video camera, or VCR), and you're set.

Home-theater-oriented projectors have several advantages over large TVs, starting with price: A good home theater projector with DLP technology-such as the NEC HT1000 or the Optoma H56-can easily display a movie 84 inches wide and is typically priced at under \$5000. And the Philips LC6231, an LCD projector with a 16:9 wide-screen aspect ratio (ideal for home use), costs less than \$2000. Those prices represent a sizable investment in home entertainment, but a flat-screen TV can't match the resulting cost-to-image-size ratios-and the quality of projectors is just as good, if not better. (*PC World* did not formally evaluate the models noted above.) Plus, projectors in this class are relatively compact-about the size of a hardcover dictionary-so you can stash it away when the movie's over. The big downside: The pricey (\$300 to \$500 each) projector bulbs last for between



1500 and 6000 hours before they dim too much to be usable.

If you show movies at home from a business projector, your audience's first reaction will still be "wow!" But those models are not the best choice. Though you can manually adjust the image on most business projectors, you won't achieve the same, balanced color range you'd get from a dedicated home theater model, which typically includes high-end video deinterlacers that enhance image quality and smoothness. *—Ramon G. McLeod*

LAB NOTES

Resolution Solution

TEST THE PC WORLD TEST CENTER tested the 16 projectors in this roundup at Center. 1024 by 768 (XGA) resolution, because that's the native resolution of most current notebook PC screens. Our research shows that it's rare for users to change their notebooks' display resolution before delivering a presentation.

We looked at screens displaying text-filled documents, color photographs, PowerPoint slides, and graphical Web pages. To evaluate each projector's ability to display motion and video delivered via PC, we watched part of the movie Star Wars: Episode II-Attack of the Clones from DVD and parts of the game Return to Castle Wolfenstein.

The four native-SVGA (800-by-600 resolution) models that we reviewed-Epson's PowerLite 53c, Hewlett-Packard's Sb21, InFocus's X1, and ViewSonic's PJ-501-had to

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which which	which which

Best: Boxlight

facts of interpolation: Blotchy, too-dark letters were especially noticeable during our evaluation; an example in 10.5-point text from Microsoft Word is shown at left.

rely on interpolation to display the higher

resolution. We found various telltale arti-

Sb21 weighs just 2.2 pounds, while the InFocus LP70 weighs 2.5 pounds and the Dell weighs 3.6 pounds; all three are small enough that you can stash any of them in your bag without giving its weight a second thought. By contrast, more than half of the projectors covered in this roundup weigh 5 to 9.1 pounds, about two to four

times more than the lightweights. Any projector under 10 pounds qualifies as a portable, but heftier models like those from Toshiba and Philips (9.1 and 8.1 pounds, respectively) are less convenient for on-the-go presenters.

Image controls: We tested the projectors at their default settings, but all 16 let you make image adjustments. For example, the Sony VPL-CX5 offers a preset option that improves images with lots of text by increasing the

contrast. Several models-including the Epson 730c, the InFocus X1, the Mitsubishi XD300U, and the NEC LT240-provide preset modes for computer and video sources. The Epson 730c, both InFocus models, and both NEC models can automatically switch internal color temperature settings, too, depending on whether you use a data or a video source. And the InFocus X1 can automatically reduce its light output to improve its color saturation in video mode, for more-vivid colors.

The models from Epson, NEC, Sony, and Toshiba automatically fix keystoned (trape-

> zoidal) screens. The Sony goes further by providing a powered tilt that raises the projector to the height you want, and then

> > automatically adjusts the image to match.

Navigation controls:

Each of the 16 projectors reviewed carries an on-unit menu for navigating through image options, as well as a remote control. The usability of the projectors' control menus varies; we found the more graphical menu sys-

tems easier to use. Two examples are shown above. Most of the remotes can control cursor movement. The exceptions-the remotes for the Boxlight and ViewSonic units-lack any built-in navigation controls, so you'll have to use 🕨



BOXLIGHT XD-15C

THE LIGHTWEIGHT XD-15c's sharp text rendering, combined with its aboveaverage scores for graphics and motion, helped it grab third place in overall performance. Its compact design makes the projector easy to transport, and its brightness will suffice for small-group presentations. Easily managed on-unit controls include a Picture in Picture function for displaying video in a small window while delivering a PC presentation; however, the card-thin remote lacks cursor control or a laser pointer. The \$2399 Boxlight comes bundled with more cables (including component video) than most competing projectors.

Upshot: The ultracompact XD-15c is easy to lug to small-group presentations-or home for movie night.



INFOCUS LP70

IN OUR TESTS, the LP70's crisp, legible text and attractive graphics earned it the second-best score overall for its image quality. Its rated brightness level of 1100 ANSI lumens is a good match for presentations to small groups, but not to large audiences. Though projector controls are straightforward, the remote uses a trackball for cursor control, and it may take time to master. This \$3099 business projector is FCC Class A-rated, which means that it's not intended for home use, justifying its lack of support for high-quality component video.

Upshot: The diminutive LP70 is a good choice for traveling presenters who want a projector that's easy to carry, simple to use, and impressive to watch.



MENUS AHOY: Mitsubishi's well-designed menu (top) makes navigation a snap; Toshiba's grayer menu is more cumbersome.



OPTOMA EZPRO 737

THE EZPRO 737 scored considerably higher for its sharp text than for its mediocre graphics and motion capabilities. It comes with a well-designed remote that has an easy-to-use navigation pad and laser pointer. Though you can adjust the color balance and white segment settings, this projector lacks the extensive imaging options found on some other models; for example, you can't tweak individual colors. The \$2495 unit's 2-watt integrated mono speaker sounds better than the 1-watt speakers found on most of the models we tested.

Upshot: A fine lightweight choice for mobile professionals, the EzPro 737 packs enough power to handle medium-size group presentations.



MITSUBISHI XD300U COLORVIEW

THE BRIGHTEST projector to make our chart (at 2100 ANSI lumens), the \$4495 XD300U ColorView excelled at displaying motion and video, showing details in shadows and darker scenes of a DVD movie and a PC game. The unit also offers more color adjustment controls than most, though the presets for presentations, theater, and games generally do a splendid job. The remote includes a laser pointer, a nimble trackpad, programmable buttons, and Picture in Picture.

Upshot: The powerful Mitsubishi XD-300U is an excellent choice for use in an office or a home, and is especially good at projecting colorful video input. your computer to move through your presentation slides. The Dell, HP, NEC, and Optoma remotes include buttons for advancing PowerPoint slides, a multidirectional selector pad for cursor control, and a built-in laser pointer. The card-thin remotes that come with both Epson models and the Boxlight, however, make directly controlling the cursor more difficult.

Connections: Though all of these units are designed to connect to the VGA port of a PC, some provide other ports worth considering. For example, the NEC LT240, Sharp PG-M25X, and Toshiba TLP-T501U support 802.11b, for wireless connections between the projector and a computer. The Sharp and Toshiba models come bundled with an 802.11b PC Card already configured for peer-to-peer networking: though the NEC supports most Wi-Fi cards, you'll have to spend about \$50 to buy one.

The advantages of being untethered are clear when multiple presenters will use the same projector. Otherwise, using wireless has some limitations. For example, you can display only static images via a wireless connection. If you don't mind motionless presentations, you can leave your laptop behind when you use the NEC LT240, the Sony, and the Toshiba all of which support flash media cards (via a PC Card slot on the NEC and Toshiba, and a Memory Stick slot on the Sony).

Some projectors we reviewed are better equipped than others to receive video from different input sources, such as a DVD player or a VCR. As a rule, the best video input is via a component video connection, rather than via S-Video or composite video. Our hands-on video-input tests (via a Philips DVD player) confirmed that rule, though S-Video also did well.

Our comparison produced a couple of clear winners in the NEC LT240 and the Dell 3200MP—either of which will serve you ably. We recommend looking for an XGA model whose price, weight, and features match your projection needs.

Richard Jantz is a freelance writer in the San Francisco Bay Area. Ramon McLeod is an executive editor at PC World.



SHARP NOTEVISION PG-M25X

THE PRICEY PG-M25X costs \$5295. It scored high in our motion tests, delivering a fluid PowerPoint presentation without any distracting artifacts. This model comes with two 802.11b wireless network adapters-one for the projector's PC Card slot, and one for your notebook's PC Card slot-so you can deliver wireless presentations right out of the box. The Sharp remote is the only one we've encountered that has a gyroscope; it lets you move a pointer across the screen by moving your wrist in the air.

Upshot: The bright PG-M25X is a good choice for standard or wireless presentations, but its FCC Class A rating makes it inappropriate for home theater.



PHILIPS BSURE XG1

THE BSURE XG1 earned only average scores for its display of text, graphics, and motion. Small fonts, in particular, looked a little bit indistinct, and color graphics appeared tepid. But in our video tests, its image quality was quite pleasing, even when we used its composite video connection. The \$2195 unit is uncomplicated and easy to operate, too, with a convenient (in view of the projector's bulk) built-in handle. One drawback: The remote lacks a laser pointer.

Upshot: For small-group presentations or home use, the BSure XG1 is a worthy alternative to brighter, more costly units.

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Lab-tested rankings of the best in PCs, peripherals, and upgrade components

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INSIDE

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Top 15 Desktops

The MPC Millennia 910A is the last beige box the company formerly known as MicronPC will make (the vendor is in the process of changing its name, too). Future Millennias will favor gray.

130

Bonkers About Beige? Better Act Quickly

The MPC Millennia 910A, second on the power section of our *Top 15 Desktop PCs* chart, is the last of its kind. Millennias will soon be clad in charcoal-gray cases instead of basic beige. (Most major desktop vendors have changed their color schemes to black or charcoal; and many components, such as optical drives, now match those cases.)

On our *Top 15 Notebook PCs* chart, Compaq's Presario 3005US has a freakishly large 16-inch screen, though it still manages to stay under 10 pounds. Sotec's 3120X pares both weight and price: With a 12.1-inch screen and built-in DVD, it weighs 5 pounds and costs just \$949.

Freelance writers Dan Littman, Mick Lockey, and Carla Thornton, and PC World reviews editors Richard Baguley, Tracey Capen, Rebecca Freed, Alexandra Krasne, Kalpana Narayanamurthi, 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

Sony's 17-inch CPD-E240 monitor costs \$250, which seems inexpensive, but it's the priciest model on the chart. Other monitors that earn spots cost as little as \$122.

134

Top 15 Notebook PCs

New models from Sotec (left) and Compaq offer different interpretations of the word "mobile."





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 for additional details on how we compile charts for the *Top 100*.



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TOP 100

Cente

TOP 15 DESKTOP PCs

	POWER SYSTEM	Overall rating	Street price (1/17/03)	PC WorldBench 4 performance score '	Comments
1	Bost Dell Dimension 8250 BUY find.pcworld.com/32546	89	Very expensive \$3158	Windows XP Good Home 123	Dell system remains a Best Buy, but its 3-GHz CPU boosts it only minimally over previous winners. ($\bigstar \bigstar \bigstar $
2	MPC Millennia 910a ⁴ find.pcworld.com/33536	89	Inexpensive \$2254	Windows XP Very good Home 127	Model delivers stellar gaming performance. Pinnacle Studio and DVD rewritable drive make this a good PC for video editing. ($\star \star \star \star$)
3	Micro Express MicroFlex 27A find.pcworld.com/32897	87	Inexpensive \$2199	Windows XP Outstanding Professional 130	Chart's second-fastest unit running business apps is a quick gaming PC. Few extra features, but a 19-inch LCD adds value. (\star \star \star \star \approx Mar 03)
4	ABS Awesome 3330 find.pcworld.com/32549	85	Inexpensive \$2039	Windows XP Good Home 124	Ouick system performed especially well in our gaming graphics tests; includes two hard drives in a RAID array. (★★★★☆ Feb 03)
5	Polywell Poly 880NF2-2700 find.pcworld.com/32900	84	Inexpensive \$2289	Windows XP Outstanding Home 128	Athlon-based PC earned high marks on graphics tests, but text on our review unit's monitor could have looked better. (オオオバン Mar 03)
6	Sys Technology Performance 2800 find.pcworld.com/30758	83	Average \$2565	Windows XP Outstanding Professional 129	Computer comes with a CompactFlash and SmartMedia card reader and a sharp-looking LCD monitor. (★★★★☆ Nov 02)
7	Gateway 700XL find.pcworld.com/32552	83	Very expensive \$3499	Windows XP Fair Home 119	Completely loaded configuration includes a huge LCD, two 200GB hard disks, and a cordless keyboard and mouse. (★★★★/: Feb 03)
	Percent of over	all rating >	10 percent	25 percent	
	VALUE SYSTEM	Overall rating	Street price (1/17/02)	PC WorldBench 4 performance score 1	Comments
1	Best ABS Bravado 2240 BUY find.pcworld.com/32555	84	Inexpensive \$1109	Windows XP Very good Home 121	Unit's high-end graphics card and 17-inch CRT gave great graphics at resolutions up to 1280 by 1024; text was so-so. (* * * * * Feb 03)
2	Emachines T2200 SE find.pcworld.com/32888	83	Inexpensive \$1250	Windows XP Good Home 116	A Radeon 9700 Pro card helps provide fast gaming performance, but the minitower case leaves little room for upgrades. (オオオバデ Mar 03)
3	Dell Dimension 4550 find.pcworld.com/33593	83	Average \$1473	Windows XP Good Home 118	Dell's newest 4550 allows tool-less upgrades, and the bundled 17-inch LCD produced sharp text and vivid colors in our tests. ($\star \star \star \star$)
4	Micro Express MicroFlex 24A find.pcworld.com/32891	81	Very inexpensive \$999	Windows XP Outstanding Home 131	The speediest model on the chart costs less than \$1000 and still beats out even the priciest power systems. (\star \star \star \star \star \star \star \star \star (Mar 03)
5	CyberPower XP800 Dream Special Ind.pcworld.com/33539	80	Very inexpensive \$999	Windows XP Fair Home 110	System offers room for expansion; well suited for basic tasks, but lacks power for high-end gaming or multimedia. ($\star\star\star\star$
5	Gateway 500X find.pcworld.com/33542	80	Expensive \$1699	Windows XP Good Home 115	The attractive 18-inch LCD monitor delivered rich colors in tests; however, the system provides minimal room for upgrades. ($\star\star\star\star$
7	FreewayTech Innovation A4800M find.pcworld.com/32894	78	Inexpensive \$1280	Windows XP Good Home 116	Model comes with an excellent audio system and offers all-around solid performance. ($\star \star \star \star$ /. Mar 03)
-	Polywell Poly 884RF-2600	78	Average	Windows XP Very good Professional 124	Strong performer with an adequate 15-inch LCD monitor; the system's interior could be easier to navigate. (★★★★☆☆ Jan 03)
B	find.pcworld.com/31982		\$1599	TTOTO STOTIST	interior could be easier to havigate. (A A A A A A A Sail os)

Go to find.pcworld.com/10860 for details on PC World's Star Ratings.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. For more details, see "Your Guide to the Top 100" on page 129. ² Total capacity in gigabytes (may represent multiple drives).

TEST FIERCELY COMPETING for the number one power spot, the Millennia 910a from MPC (formerly MicronPC) falls short of a Best Buy distinction by a fraction of a point—the long-standing chart topper, Dell's Dimension 8250, retains its lead position with a beefier configuration, a better chassis design, and a higher reliability score. Just missing the chart is the other new MPC we reviewed, the 910i Xtreme. The system comes loaded with a 3.06-GHz Pentium 4 CPU and 1GB of 333-MHz DDR SDRAM, but it finishes out of the Top 15 because of its high \$3323 price.

The 910i is also the first system we've

	BASI	E CO	NFIGUI	RATION					Vendor'
CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type	Extra features	Graphics quality	Setup and ease of use	reliabilit
3.06-GHz Pentium 4	512/ PC1066 RDRAM	200	18-inch LCD	128MB ATI Radeon 9700 Pro	Midsize tower	Very good: 16X DVD-ROM drive, DVD+RW/+R drive, V.92 modem, network adapter, Microsoft Office XP Small Business Edition	Very good	Very good	Good/F
2.25-GHz Athion XP 2800+	512/ DDR333 SDRAM	120	19-inch CRT	128MB GeForce4 Ti 4200	Midsize tower	Outstanding: DVD-RW/-R drive, 48X/12X/48X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works Suite 2002, Pinnacle Studio 8	Outstanding	Good	Fair/Fa
2.17-GHz Athion XP 2700+	512/ DDR400 SDRAM	120	19-inch LCD	64MB Gainward GeForce4 Ti 4200	Midsize tower	Good: DVD-RW/-R drive, 40X/12X/40X CD-RW drive, network adapter	Very good	Good	4,
2.25-GHz Athion XP 2800+	1024/ DDR400 SDRAM	160	19-inch CRT	128MB ATI Radeon 9700	Tower	Fair: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, network adapter	Outstanding	Good	Fair/Go
2.17-GHz Athion XP 2700+	512/ DDR333 SDRAM	160	19-inch CRT	128MB Leadtek WinFast A250 Ultra	Midsize tower	Very good: DVD-RW/-R drive, 48X/24X/48X CD-RW drive, V.92 modem, net- work adapter	Outstanding	Good	3/3
2.8-GHz Pentium 4	512/ PC1066 RDRAM	80	18-inch LCD	64MB Leadtek WinFast A170 DDR T	Midsize tower	Very good: 16X DVD-ROM drive, 40X/12X/48X CD-RW drive, V.92 modem, net- work adapter, memory card reader, Corel WordPerfect Office 2002	Good	Good	·/·
3.06-GHz Pentium 4	512/ PC1066 RDRAM	400	19-inch LCD	128MB ATI Radeon 9700	Tower	Outstanding: DVD-RAM/-R drive, 48X/24X/48X CD-RW drive, V.92 modem, net- work adapter, Microsoft Office XP Small Business Edition, Pinnacle Express	Outstanding	Very good	Fair/F
		St all	10 percent			10 percent	15 percent	5 percent	25 perc
	and the second	Sauth	- NO -		20 I		-	the story as	
		5-0		RATION			Crashier	Cature and	Vendo
CPU	BASE RAM (MB/type)	5-0		R A T I O N Graphics	Case type 3	Extra features	Graphics quality	Setup and ease of use	Vendo reliabil servio
CPU 2-GHz Athlon XP 2400+	RAM	C O I Hard	NFIGUI			Extra features Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network adapter			servi
2-GHz Athlon	RAM (MB/type) 512/ DDR400	E CO Hard drive ²	N F I G U I Monitor 17-inch	Graphics	type ³ Midsize	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network	quality	ease of use	Fair/Ge
2-GHz Athlon XP 2400+	RAM (MB/type) 512/ DDR400 SDRAM 512/ DDR266	E COI Hard drive ² 60	N FIGUT Monitor 17-inch CRT 17-inch	Graphics 128MB GeForce4 Ti 4200 128MB ATI Radeon	type ² Midsize tower	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network adapter Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, net-	quality Very good	ease of use Fair	Fair/Go Good/I
2-GHz Athlon XP 2400+ I.8-GHz Athlon XP 2200+ 2.67-GHz	RAM (MB/type) 512/ DDR400 SDRAM 512/ DDR266 SDRAM 256/ DDR333	E COR Hard drive ² 60 100	N FIGUR Monitor 17-inch CRT 17-inch CRT 17-inch	Graphics 128MB GeForce4 Ti 4200 128MB ATI Radeon 9700 Pro	type ³ Midsize tower Minitower Midsize	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, Y.92 modem, network adapter Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works 7, Money 2003 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, network adapter,	quality Very good Very good	ease of use Fair Very good	Servin Fair/Go Good/H Good/H
2-GHz Athlon XP 2400+ I.8-GHz Athlon XP 2200+ 2.67-GHz Pentium 4 2-GHz Athlon	RAM (MB/type) 512/ DDR400 SDRAM 512/ DDR266 SDRAM 256/ DDR333 SDRAM 512/ DDR400	E COI Hard drive ¹ 60 100	N FIGU Monitor 17-inch CRT 17-inch LCD 17-inch	Graphics 128MB GeForce4 Ti 4200 128MB ATI Radeon 9700 Pro 64MB MSI MS-8878 64MB Leadtek	type ³ Midsize tower Minitower Midsize tower Midsize	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network adapter Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works 7, Money 2003 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, network adapter, Microsoft Works Suite 2002, Image Expert 2000, Paint Shop Pro Good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.90 modem, network	quality Very good Very good Fair	ease of use Fair Very good Very good	Fair/Go Good/I Good/I
2-GHz Athlon XP 2400+ I.8-GHz Athlon XP 2200+ 2.67-GHz Pentium 4 2-GHz Athlon XP 2400+ 2.4-GHz	RAM (MB/type) 512/ DDR400 50RAM 512/ DDR260 SDRAM 256/ DDR333 SDRAM 512/ DDR400 SDRAM 512/ DDR400 SDRAM	E C O I Hard drive I 60 100 60 80	N FIGU Monitor 17-inch CRT 17-inch CRT 17-inch CRT 17-inch CRT 17-inch	Graphics 128MB GeForce4 Ti 4200 128MB ATI Radeon 9700 Pro 64MB MSI MS-8878 64MB Leadtek GeForce2 Uitra 128MB ATI Radeon	type ³ Midsize tower Minitower Midsize tower Midsize	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, Y.92 modem, network adapter Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works 7, Money 2003 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, network adapter, Microsoft Works Suite 2002, Image Expert 2000, Paint Shop Pro Good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.90 modem, network adapter, Ulead VideoStudio 6 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, net-	Quality Very good Very good Fair Fair	ease of use Fair Very good Very good Fair	Fair/Go Good/f Good/f 5/ 3 3/ 3
2-GHz Athlon XP 2400+ I.8-GHz Athlon XP 2200+ 2-67-GHz Pentium 4 2-GHz Athlon XP 2400+ 2.4-GHz Pentium 4 2.53-GHz	RAM (MB/type) 512/ DDR400 SDRAM 512/ DDR266 SDRAM 512/ DDR333 SDRAM 512/ DDR400 SDRAM 512/ DDR400 SDRAM 512/ DDR333	E C O S Hard drive 2 60 100 60 80 80 80	N FIGUS Monitor 17-inch CRT 17-inch LCD 17-inch CRT 17-inch CRT 18-inch	Graphics 128MB GeForce4 Ti 4200 128MB ATI Radeon 9700 Pro 64MB MSI MS-8678 64MB Leadtek GeForce2 Ultra 128MB ATI Radeon 9000 Pro 128MB Microstar	type ² Midsize tower Minitower Midsize tower Midsize tower Midsize	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network adapter Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works 7, Money 2003 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, network adapter, Microsoft Works Suite 2002, Image Expert 2000, Paint Shop Pro Good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.90 modem, network adapter, Ulead VideoStudio 6 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, net- work adapter, Corel WordPerfect Office 2002 Very good: 16X DVD-ROM drive, 48X/16X/48X CD-RW drive, V.92 modem, net-	quality Very good Very good Fair Fair Fair	ease of use Fair Very good Very good Fair Fair	Fair/Go Good/I S/3 3/3 Fair/F
2-GHz Athlon XP 2400+ I.8-GHz Athlon XP 2200+ 2.67-GHz Pentium 4 2-GHz Athlon XP 2400+ 2.4-GHz Pentium 4 2.53-GHz Pentium 4	RAM (MB/type) 512/ DDR400 SDRAM 512/ DDR333 SDRAM 512/ DDR333 SDRAM 512/ DDR333 SDRAM 256/ DDR333 SDRAM	E C O D Hard drive ¹ 60 100 60 80 80 80	N FIGU Monitor 17-inch CRT 17-inch CRT 17-inch CRT 17-inch CRT 17-inch CRT 18-inch LCD 18-inch	Graphics 128MB GeForce4 Ti 4200 128MB ATI Radeon 9700 Pro 64MB MSI MS-8878 64MB Leadtek GeForce2 Ultra 128MB ATI Radeon 9000 Pro 128MB Microstar 8860 128MB ATI Radeon	type ² Midsize tower Minitower Midsize tower Midsize tower Midsize tower Midsize	Good: 16X DVD-ROM drive, 48X/12X/48X CD-RW drive, V.92 modem, network adapter Very good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works 7, Money 2003 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, network adapter, Microsoft Works Suite 2002, Image Expert 2000, Paint Shop Pro Good: 16X DVD-ROM drive, 40X/12X/40X CD-RW drive, V.90 modem, network adapter, Ulead VideoStudio 6 Very good: 16X DVD-ROM drive, 48X/24X/48X CD-RW drive, V.92 modem, net- work adapter, Corel WordPerfect Office 2002 Very good: 16X DVD-ROM drive, 48X/16X/48X CD-RW drive, V.92 modem, net- work adapter, Microsoft Works 2003	quàlity Very good Very good Fair Fair Fair Fair	ease of use Fair Very good Very good Fair Fair Good	Vendo reliabili servio Good/F Good/F 5/3 3/3 Fair/Fa 3/3

Visit find.pcworld.com/34004 for reviews of all products tested this month and ranked in this chart.

³ Vertical cases are towers (over 20 inches), midsize towers (15.5 to 20 inches), or minitowers (under 15.5 inches). Horizontal cases are desktops (5 inches or taller) or compacts (under 5 inches). ⁴ MPC was formerly MicronPC. ³ Insufficient data to give a rating.

tested for the *Top 15 Desktop PCs* chart to contain a hard drive using Serial ATA, a technology with several advantages over the parallel ATA interface, which has been standard for years. SATA drives use less voltage (cutting power consumption); and they have thin, round cables instead of wide, flat ribbon cables, making SATA cables easier to connect and less likely to restrict ventilation inside your PC. The bad news: At this point, SATA drives can't reach their full performance potential because today's motherboards do not have the chip sets to support SATA's



CYBERPOWER'S stylish XP800 Dream Special offers plenty of room for expansion. higher transfer rates. With that in mind, there is currently no compelling need to buy a system just for SATA. For more information on SATA hard drives, see "The Whole Drive Guide" on page 109.

An updated Dell Dimension 4550 earns a spot on our value systems list. It has components and performance similar to those of the previous version we reviewed, but it comes with a 17-inch LCD rather than a 19-inch CRT monitor.

Another value newcomer is the goodlooking, black-and-silver CyberPower XP 800 Dream Special, which carries a respectable set of components—including an ATI Radeon 9000 Pro graphics board at a sub-\$1000 price. But its PC World-Bench 4 score of 110 is relatively sluggish—about 8 points below the average mark of PCs with similar configurations. Bundled with a roomy 18-inch LCD monitor—not a display you'll find typically accompanying a value system—Gateway's 500X turned in excellent scores on our monitor tests. The system offers little room to add components, however, and its GeForce4 MX 420–based graphics card contributed to low frame rates in our gaming graphics evaluation.

ABS's new Excellant 4450 just misses the power roster. Loaded with a 3.06-GHz Pentium 4 CPU, 512MB of 1.066-GHz RDRAM, and an ATI Radeon 9700 Pro graphics card, it earned a PC WorldBench 4 score of 124—identical to that of the older ABS Awesome 3330 power system at number four—but it costs \$500 more.

Failing to rank, Polywell's Poly 845 PE2400 had mediocre performance in our benchmark tests, and it provides no office

	TOP 5 ENTERTAINMENT PCs
	find.pcworld.com/33029
1	Best Gateway Media Center PC 500 find.pcworld.com/32990
2	Falcon Northwest Mach V 2800+ DV find.pcworld.com/32987
3	HP Media Center 883n PC find.pcworld.com/32984
4	Alienware Area-51 find.pcworld.com/30956
5	Voodoo Computers Egad Obsidian Black find.pcworld.com/30776
5	From the March 2003 issue

suite or business software. In addition, we were unimpressed with the sound quality that its bundled Cambridge SoundWorks SW320 speaker set produced.

TECH TREND

Your PC Has the Right to Remain Silent

IF THE PC AT YOUR desk sounds less like a distant breeze and more like a jet fighter rocketing off a carrier deck, your hard drive, case, and cooling fans are likely to blame.

If you're sensitive to PC noise, you may have to compromise on power and expandability when looking for a new system. For instance, the Compaq Evo D510 Ultra-slim Desktop has a 50-watt power supply and one fan, but no PCI slots. "It generates just 24 decibels," says Kent Biggs, a senior member of HP's Personal System Group technical staff, "the equivalent of a whisper." Opting for a system with integrated graphics can help, too, because graphics cards-especially high-end gaming boardsusually have noisy cooling fans.

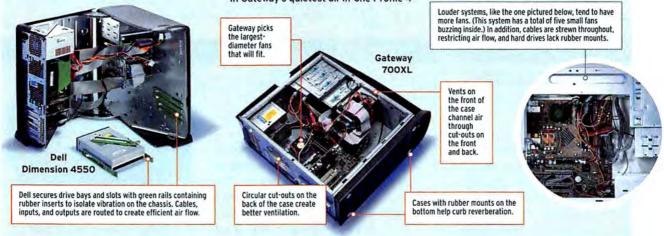
Noise reduction can also mean moreexpensive components. Dell, like other vendors that focus on carefully engineering quieter PCs, installs ball-bearing fans; they're far less noisy, and stay much quieter over time than do less-expensive sleeve fans. Using larger fans cuts down on noise as well because they don't have to spin as fast to provide the needed airflow for cooling.

In Gateway's quietest all-in-one Profile 4

systems, the company installs hard drives in "abatement enclosures" to keep the clatter down. (The drawback is that these systems offer no room for upgrading or adding components.) The power supplies have variable fan speeds that speed up only when the system needs extra cooling.

These adjustments may sound minor, but the Dell and Gateway systems we saw were considerably quieter than the others buzzing around in the PC World Test Center.

Visit find.pcworld.com/33719 for information on hushing your own system.





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Your music jukebox for the digital age. Experience fast and easy access to your PC's music library. Browse Windows Media. MP3, and other audio files by scrolling through album cover at (if metadata information exists), or list views organized by genre or artist. An easy search function quickly locates albums, artists, songs, or playlists. Play or shuttle your entire library by album, artist, or genre. On-screen displays show track, song, album, and artist information. It's the coolest way to play digital music!

Digital Video

The easiest way to access your video collection. Browse thumbnail views of My Video or Shared Video folders. See video information by Title, Description, Duration, and Modified Date(if available). Use the full transport controls on the remote to play back and enjoy.

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A rich DVD playback experience. The feature-packed DVD player uses full transport controls on the remote to access chapters, synopses, multiple camera angles, and more. Parental controls(MPAA ratings) help you ensure that children watch safely.

ZT MEDIA CENTER 1

Intels Pentiums 4 processor 2.40GHz Silver Aluminum Chassis with 200-Watt PS Four USB 2.0 Ports and Three IEEE 1394 Ports 10/100 Integrated Ethernet Controller CPU Temp. Autoguardian 512MB PC2700 DDR (333MHz) SDRAM Memory

Seagate® 80GB 7200RPM Hard Drive 64MB NVIDIA Geforce 4 MX440 w/TV-Out Video Card 5.1 Surround Sound with Optical Digital Output 48X24X48X16 CD-RW & DVD Combo Drive

6-IN-One Media Reader Logitech Wireless Keyboard and Mouse combo TV Tuner PCI and MCE Remote Control Microsofte Windowse XP Media Center Edition

Free PC Treasure Work Suite Bundle 10 (Ability Office 2003/Quicken 2003,

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Intele Pentiume 4 processor 2.53GHz

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CPU Temp. Autoguardian

6-IN-One Media Reader

Silver Aluminum Chassis with 200-Watt PS

Four USB 2.0 Ports and Three IEEE 1394 Ports

512MB PC2700 DDR (333MHz) SDRAM Memory

5.1 Surround Sound with Optical Digital Output

Logitech Wireless Keyboard and Mouse combo

Microsofte Windowse XP Media Center Edition

48X24X48X16 CD-RW & DVD Combo Drive

TV Tuner PCI and MCE Remote Control

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128MB NVIDIA Geforce 4 MX440 w/TV-Out Vedio Card

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TOP 100

ente

TOP 15 NOTEBOOK PCs

	POWER NOTEBOOK	Overall rating	Street price (1/17/03)	PC WorldBench 4 performance score	Comments
1	Best Gateway 600X Find.pcworld.com/31847	86	Inexpensive \$2099	Windows XP Very good Home 103	Huge desktop replacement features a jumbo screen and keyboard. It can hold two optical drives or three batteries. Sheds \$320. (\star \star \star \star \star Jan 03)
2	Toshiba Satellite 5205-S703 find.pcworld.com/32819	86	Average \$2499	Windows XP Very good Home 104	Good-looking, great-sounding, beefy laptop delivers top-notch speed and lets you record DVDs. Price drops by \$200. ($\star\star\star\star$ Mar 03)
3	Compaq Evo N610c find.pcworld.com/32228	86	Very inexpensive \$1924	Windows XP Good Professional 101	Funky silver Wi-Fi (802.11b) module and dual pointing devices enhance this square black laptop. Drops \$235 this month. (\star \star \star \star \star \star \star black laptop.
4	IBM ThinkPad T30 find.pcworld.com/29898	85	Average \$2499	Windows XP Good Professional 95	Two-spindle machine has dual pointing devices and integrates Bluetooth and Wi-Fi (802.11b) networking. (★★★オポン Sept 02)
5	Dell Inspiron 8200 find.pcworld.com/31832	85	Inexpensive \$2105	Windows XP Good Home 95	Desktop replacement has a FireWire (IEEE 1394) port and a high-resolution screen; could have better audio-shortcut button design. (★★★☆☆ Jan 03)
6	MPC TransPort T1000 find.pcworld.com/32822	84	Inexpensive \$2185	Windows XP Good Professional 99	A silver case and a light-blue keyboard make this a flashy-looking machine; it's relatively light and includes a fingerprint reader. (\star \star \star \star \star mar 03)
7	Toshiba Satellite 1955-S803 find.pcworld.com/33755	84	Average \$2399	Windows XP Outstanding Home 112	A detachable keyboard lets you work well back from the 16-inch notebook screen; a wireless mouse is also included. ($\star\star\star\pm$
	Percent of overa	II rating Þ	15 percent	20 percent	
	VALUE NOTEBOOK	Overall rating	Street price (1/17/03)	PC WorldBench 4 performance score ' Faster	Comments
1	Best IBM ThinkPad R32		Average		
	BUY find.pcworld.com/31145	79	\$1649	Windows XP Geod Professional 94	This lightweight model has a modular bay, as well as a spacious screen and a comfortable keyboard. (★★★카라 Dec 02)
2	Toshiba Satellite 1415-S173 find.pcworld.com/32828	79 79		Windows XP Good Professional 94 Windows XP Good Home 98	This light weight model has a modular bay, as well as a spacious screen and a comfortable keyboard. ($\star \star \star \star$ in Dec 02) Thickset but not excessively heavy, this well-equipped wireless-ready laptop is great for budget watchers. ($\star \star \star \star$ in Mar 03)
2	Toshiba Satellite 1415-S173		\$1649 Inexpensive		comfortable keyboard. (* * * * 702 Dec 02) Thickset but not excessively heavy, this well-equipped wireless-ready laptop
2 3 4	Toshiba Satellite 1415-S173 find.pcworld.com/32828 Compag Evo N1015v	79	\$1649 Inexpensive \$1429 Very inexpensive	Windows XP Good Home 98	comfortable keyboard. (★★★☆☆ Dec O2) Thickset but not excessively heavy, this well-equipped wireless-ready laptop is great for budget watchers. (★★★☆☆ Mar O3) This relatively thin and light notebook has a big screen for its size. A stylish
2 3 4 5	Toshiba Satellite 1415-S173 find.pcworld.com/32828 Compaq Evo N1015v find.pcworld.com/32834 Dell Inspiron 4150	79 79	\$1649 Inexpensive \$1429 Very inexpensive \$849 Expensive	Windows XP Good Home 98 Windows XP Average Home 90	comfortable keyboard. (****/ Dec 02) Thickset but not excessively heavy, this well-equipped wireless-ready laptop is great for budget watchers. (**** Mar 03) This relatively thin and light notebook has a big screen for its size. A stylish Wi-Fi (802.11b) module sits on the lid. (****/*** Mar 03) For an extra \$20, this average performer ships with a tiny 16MB USB flash-
2 3 4 5 6	Toshiba Satellite 1415-S173 find.pcworld.com/32828 Compag Evo N1015v find.pcworld.com/32834 Dell Inspiron 4150 find.pcworld.com/31142 Fujitsu LifeBook S Series	79 79 78	S1649 Inexpensive S1429 Very inexpensive S849 Expensive S1866 Average	Windows XP Good Home 98 Windows XP Average Home 90 Windows XP Good Home 98	comfortable keyboard. (* * * * *** Dec 02) Thickset but not excessively heavy, this well-equipped wireless-ready laptop is great for budget watchers. (* * * **** Mar 03) This relatively thin and light notebook has a big screen for its size. A stylish Wi-Fi (802.11b) module sits on the lid. (* * * ***** Mar 03) For an extra \$20, this average performer ships with a tiny 16MB USB flash-media device, in lieu of a floppy drive. (* * ***** Dec 02) Wireless-ready 4-pound notebook has a DVD-ROM/CD-RW combination drive
4	Toshiba Satellite 1415-S173 find.pcworld.com/32828 Compaq Evo N1015v find.pcworld.com/32834 Dell Inspiron 4150 find.pcworld.com/31142 Fujitsu LifeBook S Series find.pcworld.com/33758 Sotec 3120X	79 79 78 78	\$1649 Inexpensive \$1429 Very inexpensive \$849 Expensive \$1866 Average \$1599 Very inexpensive	Windows XP Good 98 Windows XP Average 90 Windows XP Good 98 Windows XP Good 98 Windows XP 99	comfortable keyboard. (****/ Dec 02) Thickset but not excessively heavy, this well-equipped wireless-ready laptop is great for budget watchers. (****/ Mar 03) This relatively thin and light notebook has a big screen for its size. A stylish Wi-Fi (802.11b) module sits on the lid. (****/ Mar 03) For an extra \$20, this average performer ships with a tiny 16MB USB flash-media device, in lieu of a floppy drive. (***/ The C 02) Wireless-ready 4-pound notebook has a DVD-ROM/CD-RW combination drive and a great keyboard. (****?) Metallic-gray ultraportable offers a built-in DVD-ROM/CD-RW drive and three
4	Toshiba Satellite 1415-S173 find.pcworld.com/32828 Compaq Evo N1015v find.pcworld.com/32834 Dell Inspiron 4150 find.pcworld.com/31142 Fujitsu LifeBook S Series find.pcworld.com/33758 Sotec 3120X find.pcworld.com/33761 Micro Express NP1020A	79 79 78 78 78 77	\$1649 Inexpensive \$1429 Very inexpensive \$849 Expensive \$1866 Average \$1599 Very inexpensive \$949 Average \$949 Average	Windows XP Good 98 Windows XP Average 90 Windows XP Good 98 Windows XP Good 98 Windows XP Good 95 Windows XP 95 Windows XP 95	comfortable keyboard. (****/* Dec 02) Thickset but not excessively heavy, this well-equipped wireless-ready laptop is great for budget watchers. (* * * *** Mar 03) This relatively thin and light notebook has a big screen for its size. A stylish Wi-Fi (802.11b) module sits on the lid. (* * * **** Mar 03) For an extra \$20, this average performer ships with a tiny 16MB USB flash-media device, in lieu of a floppy drive. (* * **** Dec 02) Wireless-ready 4-pound notebook has a DVD-ROM/CD-RW combination drive and a great keyboard. (* * ****) Metallic-gray ultraportable offers a built-in DVD-ROM/CD-RW drive and three USB 1.1 ports. (* * ****) A cool bluish-silver lid, dedicated audio controls, and a SmartMedia slot high-

Go to find.pcworld.com/10860 for details on PC World's Star Ratings.

¹Performance 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.

⁸ Except where noted, all Intel CPUs are SpeedStep chips, which run at a slower speed on battery power.
⁹ In gigabytes.

TEST NOTEBOOKS AT OPPOSITE ENDS of the weight spectrum vied for spots on this month's list. In one corner, the bantamweights: the Sotec 3120X and Fujitsu's latest LifeBook S Series. The heavyweights in the other corner: the Fujitsu LifeBook C Series, the Toshiba Satellite 1955-S803, and the Compaq Presario 3005US.

Only Fujitsu's LifeBook C Series suffered a knockout, failing to place on the chart because of its average performance.

Part of what makes the Satellite 1955-S803 so hefty is its big, beautiful 16-inch screen. It's an eye-catcher, too, with a glossy blue lid. And its wireless, detach-

	BASE	: COI	FIGUR	ATION	1.20		Quantil	Pattom Ute	Average	Vendor's
CPU 2	Screen (inches)	RAM (MB)	Hard drive	Pointing device	Multi- purpose bays	Extra features *	Overall design	Battery life (hours:min) ^s	Average weight (pounds) *	Vendor's reliability service
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/Fai
2-GHz Pentium 4-M	15	512	60	Touchpad	I	Very good: DVD-RW/-R drive, built-in modem and network adapter, Secure Digital slot	Outstanding	Good/ 3:05	Heavy/ 8.9	Good/Fa
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/Po
1.8-GHz Pentium 4-M	14.1	256	40	Touchpad, eraserhead	1	Very good: 8X DVD-ROM and 8X/8X/24X CD-RW combo drive, built-in modem and network adapter, Lotus SmartSuite	Outstanding	Fair/ 2:30	Light/ 6.7	Good/Go
2-GHz Pentium 4-M	15	256	40	Touchpad, eraserhead	1	Good: 8X DVD-ROM and 24X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002	Outstanding	Fair/ 2:23	Heavy/ 9.3	Fair/Fai
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	ų,
2.5-GHz Pentium 4*	16	512	60	Touchpad	0	Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter	Fair	Fair/ 2:54	Very heavy/ 11.2	Good/Fa
				1.00	the second second		State of the second second	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	1	and the second
		5	percent			10 percent	10 percent	5 percent	10 percent	25 perce
	BASE		i percent	ATION		10 percent	-			1
CPU ?	B A S E Screen (inches)		-	A T I O N Pointing device	Multi- purpose bays	10 percent Extra features *	10 percent Overall design	5 percent Battery life (hours:min) ⁵	Average weight (pounds) *	25 perce Vendor reliabilit service
CPU ² 1.8-GHz Pentium 4-M	Screen	CON	N F I G U R Hard	Pointing			-	Battery life		Vendor reliabili service
1.8-GHz Pentium	Screen (inches)	CON RAM (MB)	N F I G U R Hard drive '	Pointing device	purpose bays	Extra features * Good: 8X DVD-ROM drive, built-in modem and network	Overall design	Battery life (hours:min) ^s Fair/	Average weight (pounds) • Light/	Vendor reliabili
1.8-GHz Pentium 4-M 1.8-GHz Mobile	Screen (inches) 14.1	C O N RAM (MB) 256	NFIGUR Hard drive ³ 30	Pointing device Eraserhead	purpose bays	Extra features * Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive,	Overall design Outstanding	Battery life (hours:min) * Fair/ 2:58 Fair/	Average weight (pounds) * Light/ 6.7 Heavy/	Vendor reliabilit service Good/Go
1.8-GHz Pentium 4-M 1.8-GHz Mobile Celeron [®] 1.2-GHz Mobile Athlon 4 XP	Screen (inches) 14.1 15	CON RAM (MB) 256 256	Hard Hard drive ³ 30 30	Pointing device Eraserhead Touchpad	purpose bays 1 0	Extra features * Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Limited: 16X-24X CD-ROM drive, built-in modem and network	Overall design Outstanding Fair	Battery life (hours:min) * Fair/ 2:58 Fair/ 2:15 Very good/	Average weight (pounds) Light/ 6.7 Heavy/ 8.5 Average/	Vendor reliabili servic Good/Go Good/Fi
1.8-GHz Pentium 4-M 1.8-GHz Mobile Celeron ¹ 1.2-GHz Mobile Athion 4 XP 1400+ 1.8-GHz Pentium	Screen (inches) 14.1 15 13.3	CON RAM (MB) 256 256 128	Hard drive 3 30 30 20	Pointing device Eraserhead Touchpad Touchpad Touchpad,	purpose bays 1 0 0 0	Extra features* Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Good: 8X DVD-ROM and 16X/I0X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Limited: 16X-24X CD-ROM drive, built-in modem and network adapter Good: 8X DVD-ROM and 20X/I0X/24X CD-RW combo drive,	Overall design Outstanding Fair Fair	Battery life (hours:min)'s Fair/ 2:58 Fair/ 2:15 Very good/ 3:51 Fair/	Average weight (pounds) • Light/ 6.7 Heavy/ 8.5 Average/ 8.0 Average/	Vendor reliabili servic Good/Go Good/Fi Fair/Po
1.8-GHz Pentium 4-M 1.8-GHz Mobile Celeron* 1.2-GHz Mobile Athlon 4 XP 1400+ 1.8-GHz Pentium 4-M 1.2-GHz Pentium	Screen (inches) 14.1 15 13.3 14.1	CON RAM (MB) 256 256 128 256	HFIGUR Hard drive ³ 30 30 20 30	Pointing device Eraserhead Touchpad Touchpad Touchpad, eraserhead	purpose bays 1 0 0 1 1 1 0 0 1 1 1 0 1 1 0 0 1 1 0	Extra features* Good: BX DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Good: BX DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Limited: 16X-24X CD-ROM drive, built-in modem and network adapter Good: BX DVD-ROM and 20X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Good: BX DVD-ROM and 16X/10X/24X CD-RW combo drive,	Overail design Outstanding Fair Fair Outstanding	Battery life (hourstmin)* Z:58 Fair/ 2:15 Very good/ 3:51 Fair/ 2:57 Fair/ Fair/	Average weight (pounds) • Light/ 6.7 Heavy/ 8.5 Average/ 8.0 Average/ 7.2 Very light/	Vendor reliabili servic Good/G Good/F Fair/Po Fair/Fa
1.8-GHz Pentium 4-M 1.8-GHz Mobile Celeron [*] 1.2-GHz Mobile Athion 4 XP 1400+ 18-GHz Pentium 4-M 1.2-GHz Pentium III-M 1.2-GHz Mobile	Screen (inches) 14.1 15 13.3 14.1 13.3	сок RAM (МВ) 256 256 128 256 256 256	VFIGUR Hard drive ³ 30 30 20 30 40	Pointing device Eraserhead Touchpad Touchpad Touchpad, eraserhead Touchpad	purpose bays 1 0 0 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	Extra features* Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Limited: 16X-24X CD-ROM drive, built-in modem and network adapter Good: 8X DVD-ROM and 20X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in	Overall design Outstanding Fair Fair Outstanding Fair	Battery life (hours:min)* Fair/ 2:58 Fair/ 2:15 Very good/ 3:51 Fair/ 2:57 Fair/ 2:39 Fair/	Average weight (pounds) • Light/ 6.7 Heavy/ 8.5 Average/ 8.0 Average/ 7.2 Very light/ 5.6 Very light/	Vendor reliabili servic Good/Gd Good/F Fair/Po Fair/Fa 7/1
1.8-GHz Pentium 4-M 1.8-GHz Mobile Celeron* 1.2-GHz Mobile 1.8-GHz Pentium 1.8-GHz Pentium 4-M 1.2-GHz Pentium 1.2-GHz Mobile Celeron* 2-GHz Pentium 1.2-GHz Mobile Celeron*	Screen (inches) 4.1 15 13.3 14.1 13.3 12.1	COR RAM RAM (MB) 256 256 128 256 256 256 256 256	HFIGUR Hard drive; 30 30 20 30 40 20	Pointing device Eraserhead Touchpad Touchpad Touchpad, eraserhead Touchpad	purpose bays 1 0 0 1 1 1 0 0 0 0 0 0 0 0 0 0 0 0 0	Extra features* Good: 8X DVD-ROM drive, built-in modem and network adapter, Lotus SmartSuite Millennium Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Limited: 16X-24X CD-ROM drive, built-in modem and network adapter Good: 8X DVD-ROM and 20X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-in modem and network adapter, Microsoft Works 2002 Fair: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built- in modem and network adapter, Microsoft Works 2002 Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built- in modem and network adapter, Microsoft Works 2002 Good: 8X DVD-ROM and 16X/10X/24X CD-RW combo drive, built-	Overail design Outstanding Fair Outstanding Fair Fair	Battery life (hourstmin) Fair/ 2:58 Fair/ 2:15 Very good/ 3:51 Fair/ 2:57 Fair/ 2:39 Fair/ 2:29 Fair/	Average weight (pounds) v Light/ 6.7 Heavy/ 8.5 Average/ 8.0 Average/ 7.2 Very light/ 5.6 Very light/ 5.0 Average/	Vendor reliabili servic Good/Go Good/Fi Fair/Po Fair/Fa 1/1 '/'

⁴ Word score reflects both listed and unlisted features. ⁵ Unless otherwise noted, all notebooks come with a lithium ion battery.

Includes computer, AC adapter, power cord, floppy drive, and optical drive. Insufficient data to give a rating. Single-speed desktop CPU.

'Non-SpeedStep CPU.

COMPUTER SCREEN GRAPHICS: JOHN GODDARD

able keyboard makes it the perfect desktop replacement. It snagged seventh place on our power list. The Presario 3005US, number eight on the value side, offers a generous 16-inch screen, too, but it isn't as flashy as the Satellite 1955-S803.

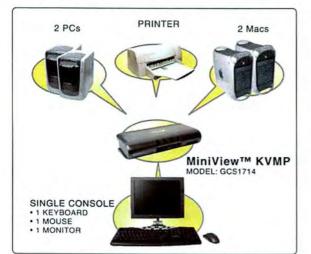
Though the Fujitsu LifeBook S Series

and the Sotec 3120X land in adjacent spots on the value list, they're really not in the same class. The S Series has a bigger screen-and a modular drive bay, in contrast to the fixed drives in the 3120X. But at \$949, the Sotec model is more affordable than the \$1599 Fujitsu.

A NICE keyboard enhances Fujitsu's LifeBook S Series.

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Fy's ELECTRONICS

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TOP 10 PRINTERS



Visit find.pcworld.com/33971 for reviews of all products tested this month and ranked in this chart.

THE OKI DATA OKI C7300n, at the top of this month's chart, prints nearly any type of document quickly—so quickly that you may decide just to print everything in color. But even the least-expensive color laser here, the Minolta-QMS Magicolor 2300 DeskLaser, prints monochrome text at better than 10 pages per minute. A cool \$1200 less than the next-cheapest model on the chart, the DeskLaser does a fine job with text and graphics, and it produces passable color photos. Note: We revised our tests for this month's chart and retested several older models, leading to changes in our performance results.

	COLOR LASER PRINTER	Street price (1/27/03)	Overall rating	Speed for plain text/full-page graphics (ppm)	Print quality for text/ graphics	Comments
1	Best Oki Data Oki C7300n BUY find.pcworld.com/33929	\$2179	86	16.9/5.5	Outstanding/ Fair	FEATURES: Rated 24 ppm monochrome/20 ppm color. Standard 64MB of RAM, 1200-by-600-dpi maximum resolution, 630 sheets input, 500 output. SUMMARY: The C7300n did a stellar job when printing monochrome text or line art, and it's very fast for the price, especially in color. (★★★★::)
2	Bost Brother HL-4000CN BUY find.pcworld.com/29201	\$2349	83	11.3/5.3	Outstanding/ Fair	FEATURES: Rated 16 ppm monochrome/16 ppm color. Standard 64MI 6 RAM, 1200-by-1200-dpi maximum resolution, 600 sheets input, 250 output. SUMMARY: The HL-4000CN printed clean text, and its color images-though slightly garish-showed good detail. The unit comes with a duplexer. Retested this month. (★★★★☆)
3	Lexmark C750n find.pcworld.com/33956	\$2199	83	11.6/2.7	Very good/ Very good	FEATURES: Rated 20 ppm monochrome/20 ppm color. Standard 64MB of RAM, 2400-by-2400-dpi maximum resolution, 600 sheets input, 350 output. SUMMARY: The C720n produced sharp text and, for a color laser, attractive color photos. Ample capacity makes it a good choice for busy offices. Retested this month. (****)
4	Minolta-OMS Magicolor 3100 DN find.pcworld.com/29202	\$1999	83	10.8/2.6	Outstanding/ Fair	FEATURES: Rated 16 ppm monochrome/16 ppm color. Standard 256MB of RAM, 1200-by-1200-dpi maximum resolution, 600 sheets input, 250 output. SUMMARY: Based on the same engine that the Brother HL-4000CN uses, this printer delivered comparable output. I includes an internal duplexer. Retested this month. (★★★☆☆)
5	Ricoh Aficio CL5000 find.pcworld.com/33947	\$2999	81	21.3/2.6	Outstanding/ Good	FEATURES: Rated 36 ppm monochrome/10 ppm color. Standard 64MI of RAM, 1800-by-600-dpi maximum resolution, 350 sheets input, 400 output. SUMMARY: The CL5000 printed razor-sharp text at twice the clip of the slowest printer on the chart, and it can handle 12-by- 18-inch paper. It's slow at printing in color, however. (★★★★)
6	Minolta-OMS Magicolor 2300 DeskLaser find.pcworld.com/33926	\$799	81	11.3/2.7	Very good/ Good	FEATURES: Rated 16 ppm monochrome/4 ppm color. Standard 32MB of RAM, 600-by-2400-dpi maximum resolution, 200 sheets input and output. SUMMARY: This surprisingly capable small-office printer has a great price. It produced sharp text, though not quite up to the standard set by pricier units. (大大大穴)
7	Oki Data Oki C9500dxn find.pcworld.com/33932	\$5149	80	19.5/5.1	Outstanding/ Fair	FEATURES: Rated 37 ppm monochrome/30 ppm color. Standard 320MB of RAM, 1200-by-1200-dpi maximum resolution, 650 sheets input, 500 output. SUMMARY: The C9500dxn comes with a long list of features, including a duplexer, and was consistently fast in our tests. It generated extremely good-looking text. (★★★☆)
8	Xerox Phaser 6200n find.pcworld.com/33959	\$2399	79	10.5/4.3	Outstanding/ Fair	FEATURES: Rated 16 ppm monochrome/16 ppm color. Standard 128MB of RAM, 2400-by-600-dpi maximum resolution, 600 sheets input, 250 output. SUMMARY: The Phaser 6200 produced crisp text and perfectly straight narrow lines. Color graphics looked somewhat dark and fuzzy, however. Retested this month. (★★★☆☆)
9	HP Color Laser Jet 5500n find.pcworld.com/33941	\$3599	78	12.5/5	Outstanding/ Good	FEATURES: Rated 21 ppm monochrome/21 ppm color. Standard 96MI of RAM, 600-by-600-dpi maximum resolution, 600 sheets input, 250 output. SUMMARY: The 5500 turned out great text and line art, but it produced dark, muddy gray-scale images. Though it printed color photos quickly, its other times were average. (★★★1000)
10	Lexmark C910n find.pcworld.com/20822	\$4999	76	11.8/2.6	Very good/ Very good	FEATURES: Rated 28 ppm monochrome/28 ppm color. Standard 64MB of RAM, 2400-by-2400-dpi maximum resolution, 1200 sheets input, 650 output. SUMMARY: The C910n generated consistently great output, but newer models are faster. Can print on tabloid-size paper. Retested this month. (* * * * **)

HOW WE TEST: The overall rating for color laser printers is based on print quality (25 percent), price (25 percent), features (15 percent), ease of use (15 percent), speed (10 percent), and service and support (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find.pcworld.com/10860 for details on *PC World's* Star Ratings. ¹All street prices include a network card.



TOP 10 MONITORS

Visit find.pcworld.com/34022 for more details about all products tested this month and ranked in this chart.

AN ULTRALOW PRICE, attractive image quality, and the company's solid technical support terms earn the CTX VL700 our top spot this month, though you won't find lots of extra features on this \$122 model. Need a monitor for viewing movies and photos or for playing games? Consider the third-place Sony CPD-E240; our judges awarded it high scores for rich colors on test photos. Meanwhile, the number five Iiyama Vision Master Pro 413 offers two VGA inputs for sharing the monitor between two PCs—a handy feature for developers who run multiple systems but need to conserve desk space.

	17-INCH MONITOR		Street price (1/25/03)	Overall rating	Quality of text/ graphics	Comments
1	Best CTX VL700 find.pcworld.com/33725	NEW	\$122	88	Very good/ Very good	FEATURES: .27mm' shadow mask tube, up to 85-Hz refresh rate, ² up to 1152 by 870 resolu- tion at 70 Hz, MPRII compliant, three-year warranty, 24-hour daily toll-free support. SUM- MARY: Bland-looking beige model carries a bargain price. Fonts and letters appeared dark and crisp, and colors were sharp. Easy-to-use on-screen controls include some advanced adjustments, though none to lock settings in place. (★★★☆☆)
2	Best NEC MultiSync FE791SB EUM lind.pcworld.com/30290		\$200	88	Very good/ Very good	FEATURES: .25mm ¹ SuperBright Diamondtron flat aperture grille tube, ² up to 85-Hz refresh rate, ² up to 1600 by 1200 resolution at 70 Hz, three-year warranty, 24-hour daily toll-free support. SUMMARY: This all-black, flat-screen CRT displayed colors better than text. Con- trols for on-screen adjustments are extensive, but they require extra button presses. Soft- ware helps make adjustments via a mouse and keyboard. Retested this month. (* * * * */r)
3	Sony CPD-E240 find.pcworld.com/33647	NEW	\$250	84	Very good/ Very good	FEATURES: .24mm ¹ FD Trinitron aperture grille tube, ¹ up to 85-Hz refresh rate, ⁴ up to 1280 by 1024 resolution at 70 Hz, three-year warranty, 24-hour daily toll-free support. SUMMARY: High-style Sony model displayed crisp, even text and bold colors. Joystick-style knob makes controls easy to navigate. A good choice for viewing images, but a bit pricier than others with similar image quality. (* * * * +
4	Samsung SyncMaster 700NF find.pcworld.com/10571		\$239	83	Good/ Good	FEATURES: .25mm ¹ Diamondtron NF flat aperture grille tube, ¹ up to 119-Hz refresh rate, ¹ up to 1600 by 1200 resolution at 70 Hz, three-year warranty, 24-hour daily toll-free support. SUMMARY: Skin tones in test photo screens looked unnaturally yellow, and text on Web pages and business documents could have been sharper. A nifty retracting panel on the front bezel holds easy-to-use on-screen controls. Released this month. (*****)
5	liyama Vision Master Pro 413 find.pcworld.com/13260		\$248	83	Good/ Good	FEATURES: .25mm ¹ Diamondtron M2 flat aperture grille tube, ¹ up to 85-Hz refresh rate, ² up to 1600 by 1200 resolution at 70 Hz, three-year warranty, 12-hour weekday toll-free sup- port. SUMMARY: Displayed graphics a hair better than it did text. Extras include dual stan- dard inputs for sharing the monitor between two PCs. On-screen menu is a bit small, and controls could be easier to use. Retested this month. (****:)
6	Compaq S7500 find.pcworld.com/30239		\$161	81	Good/ Good	FEATURES: .28mm ¹ shadow mask tube, up to 85-Hz refresh rate, ² up to 1024 by 768 resolu- tion at 70 Hz, TCO'95 compliant, three-year warranty, 24-hour daily toll-free support. SUM- MARY: Web pages and photos looked washed out, and all-white screens looked overly gray on this low-priced monitor. The three-button on-screen controls make adjustments simple. Retested this month. (★★★☆☆)
7	NEC MultiSync FE771SB find.pcworld.com/33659	NEW	\$170	81	Fair/ Good	FEATURES: .25mm ¹ SuperBright Diamondtron flat aperture grille tube, ¹ up to 87-Hz refresh rate, ² up to 1024 by 768 resolution at 70 Hz, three-year warranty, 24-hour daily toll-free support. SUMMARY: Small fonts on word processing and spreadsheet documents looked smudgy, with jaggy edges in spots. Test photos showed good saturation. Like its FE79ISB sibling, this model provides software for making on-screen adjustments. (★★ $f \lesssim 3$)
8	Dell M782 find.pcworld.com/21763		\$199	81	Good/ Fair	FEATURES: .25mm ¹ shadow mask tube, up to 85-Hz refresh rate, ² up to 1280 by 1024 resolution at 70 Hz, TCO'95 compliant, three-year warranty, 24-hour daily toll-free support. SUMMARY: Usually bundled with Dell desktops, this midnight-gray monitor displayed text slightly better than graphics, which looked bland. A help button in the on-screen controls provides useful tips. Retested this month. ($\star \star \star$
9	KDS USA XF 7b find.pcworld.com/33656	NEW	\$130	79	Good/ Fair	FEATURES: .25mm ⁺ DynaFlat shadow mask tube, up to 85-Hz refresh rate, ² up to 1152 by 870 resolution at 70 Hz, three-year warranty, 10-hour weekday toll-free support. SUMMARY: Inexpensive for a flat-screen CRT, this silver-and-black model is hampered by somewhat fuzzy text and uneven brightness. Color output wasn't as good as on others. The monitor tilts and swivels easily for presentations. (★★★Color)
10	AOC 7F find.pcworld.com/33653	NEW	\$149	79	Good/ Good	FEATURES: .25mm' shadow mask tube, up to 85-Hz refresh rate, ² up to 1024 by 768 resolu- tion at 70 Hz, three-year warranty, 11-hour weekday toil-free support. SUMMARY: This generic unit produced just middling text and graphics. Large dial in the center of the bezel makes cycling through and selecting the crudely designed on-screen adjustments a breeze. Unit lacks TCO compliance. (***:

HOW WE TEST: Twelve judges rate a monitor's text and graphics quality. We evaluate each unit on how well it displays typical business letters, spreadsheets, Web pages, and scanned photos. The overall rating is based on text and graphics quality (25 percent each), price (25 percent), features and ease of use (20 percent), and service and support (5 percent). The best possible overall rating is 100. Data based on texts designed and conducted by the PC World Test Center. All rights reserved. See find_pcworld.com/10860 for details on *PC World's* Star Ratings. All monitors are trice'99 compliant unless otherwise indicated. Specification represents diagonal dot pitch for shadow mask monitors and stripe or varying stripe p

TOP 10 DVD DRIVES



Visit find.pcworld.com/33869 for more details about all products tested this month and ranked in this chart.

THE COST OF REWRITABLE DVD drives is falling fast: Several models on our Top 10 chart have significant price cuts this month. For instance, the Pioneer DVR-A05 is now \$275, down \$35 from our last chart, while the Toshiba SD-R5002 drops \$45. The DRU-500AX, an updated version of Sony's chart-topping multiformat drive, is due out soon and will support burning 4X DVD+R discs. Meanwhile, with a free downloadable update, the DRU-500A can burn 4X DVD+R discs, too. Alera Technologies' new DVD-R Quad Cruiser is the only USB 2.0 external drive to make the chart.

	REWRITABLE DVD DRIVE	Street price (1/31/03)	Overall rating	Performance/ support policies	Write speed '/ rewrite speed '	Comments
1	Best Sony DRU-500A Find.pcworld.com/31409	\$340	86	Very good/ Very good	8:38/7:48 7:32/11:50 ³	FEATURES: Internal drive, 4X DVD-R, 2X DVD-RW, 4X DVD+R, 2.4X DVD+RW, 24X CD-R, IOX CD-RW, IDE interface, 8MB buffer, * Sonic MyDVD 4, Veritas RecordNow 4.5, Veritas DLA, CyberLink PowerDVD; 12-hour weekday and Saturday toll-free sup- port. SUMMARY: Fast, supports -RW and +RW formats, and comes with extensive software. DVD-R/-RW performance retested this month. (★★★★1: Dec 02)
2	Bost Pioneer DVR-A05 EUV find.pcworld.com/32642	\$275	85	Very good/ Good	6:43/36:27	FEATURES: Internal drive, 4X DVD-R, 2X DVD-RW, 16X CD-R, 8X CD-RW, 1DE inter- face, 2MB buffer, ⁴ Sonic MyDVD 4, Roxio EasyCD Creator Basic 5.3, Pinnacle InstantWrite 4, ArcSoft ShowBiz, Sonic CinePlayer; 10.5-hour weekday toll-free support, SUMMARY: The first drive we've tested with 4X DVD-R and 2X DVD-RW discs is one of the the fastest DVD-RW drives on the chart. (*****
3	Toshiba SD-R5002 find.pcworld.com/32645	\$220	85	Good/ Good	8:25/76:19	FEATURES: Internal drive, 2X DVD-R, IX DVD-RW, 16X CD-R, IOX CD-RW, IDE inter- face, 2MB buffer, ⁴ CyberLink PowerDirector 2.5 Pro DE, VOB InstantCD/DVD Instant- Disc, CyberLink PowerDVD; 10-hour weekday toll-free support. SUMMARY: With good performance, fast CD-ROM access, and a bargain price, this is a good drive for general use. (★★★☆ Feb 03)
4	Alera Technologies DVD-R Quad Cruiser find.pcworld.com/33680	\$390	85	Very good/ Fair	7:11/52:41	FEATURES: External drive, 4X DVD-R, 2X DVD-RW, 10X CD-R, 8X CD-RW, USB 2.0 interface, 2MB buffer, "Ulead DVD MovieFactory 2 SE, Ahead Nero Express 5.5, Ahead InCD 3.51, CyberLink PowerDVD; 10-hour weekday toll-call support. SUM- MARY: This drive is fast and very attractively priced for an external model that can be shared among several PCs. (****)
5	LG Super-Multi DVD-Writer GMA-4020B find.pcworld.com/31067	\$290	84	Good/ Very good	10:57/89:12	FEATURES: Internal drive, 2X DVD-R, IX DVD-RW, 2X DVD-RAM, 12X CD-R, 8X CD- RW, IDE interface, 2MB buffer, ⁴ BHA B's DVD 1.1, BHA B's Recorder Gold 5, BHA B's Clip 5, InterVideo WinDVD; 13-hour weekday and Saturday toll-free support. SUM- MARY: Combination DVD-RW and -RAM drive makes a good choice for backup and archiving, and has a well-rounded software bundle. (★★★☆ Dec 02)
6	Philips DVDRW 228 find.pcworld.com/31418	\$300	83	Good/ Very good	9:05/7:30	FEATURES: Internal drive, 2.4X DVD+R, 2.4X DVD+RW, 12X CD-R, 10X CD-RW, IDE interface, 2MB buffer, Sonic MyDVD 3.5, Ahead Nero Express 5.5, Ahead InCD 3.3, CyberLink PowerDVD, Pinnacle Studio 7; 11-hour daily toll-free support. SUMMARY: This drive performs adequately when burning both DVD+R and CD-R discs, but it is on the expensive side. (★★★☆☆ Dec 02)
7	CenDyne DVR-105 find.pcworld.com/33677	\$280	83	Very good/ Good	6:41/53:07	FEATURES: Internal drive, 4X DVD-R, 2X DVD-RW, 16X CD-R, 8X CD-RW, 1DE inter- face, 2MB buffer, ⁴ Sonic MyDVD 3.5, Ahead Nero Express 5.5, Ahead InCD 3.51, InterVideo WinDVD; 12-hour weekday and 4-hour Saturday toll-call support. SUM- MARY: This drive was the fastest at writing to DVD-R discs, but it has a higher price than other drives and its software bundle is mediocre. (★★★::::::::::::::::::::::::::::::::::
8	Memorex DVD+RW+R Internal ReWritable Drive find.pcworld.com/31421	\$260	82	Good/ Fair	9:06/7:33	FEATURES: Internal drive, 2.4X DVD+R, 2.4X DVD+RW, 12X CD-R, 10X CD-RW, IDE interface, 2MB buffer, Sonic MyDVD 3.5, Ahead Nero Express 5.5, Ahead InCD 3.3, CyberLink PowerDVD, ArcSoft ShowBiz; 9-hour weekday toil-free support. SUM- MARY: A good, no-frills drive with an adequate software bundle and a reasonable price. (★★★☆☆ Dec 02)
9	Aopen DVRW2412PRO find.pcworld.com/32582	\$270	82	Good/ Good	8:17/7:29	FEATURES: Internal drive, 2.4X DVD+R, 2.4X DVD+RW, 12X CD-R, 10X CD-RW, IDE interface, 2MB buffer, ⁴ MedioStream NeoDVD Standard 4, Ahead Nero Express 5.5, Ahead InCD 3.3, Ulead VideoStudio 6, CyberLink PowerDVD XP; 12-hour weekday toli-call support. SUMMARY: A moderately priced DVD+RW drive with a good soft- ware bundle. (****:
10	Panasonic LF-D521 find.pcworld.com/31415	\$299	80	Good/ Good	10:47/177:13	FEATURES: Internal drive, 2X DVD-R, IX DVD-RW, 2X DVD-RAM, 12X CD-R, 8X CD- RW, IDE interface, 2MB buffer, ⁴ Sonic MyDVD 3.5, BHA B's Recorder Gold Basic 5, BHA B's Clip 5; 8-hour weekday toll-free support. SUMMARY: One of the new breed of multiformat drives that support DVD-RAM and DVD-RW. Offers plenty of flexibility for both video and data use. (★★★★☆ Dec O2)

HOW WE TEST: 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. Visit find.pcworld.com/33869 for more on our test methodology; see find.pcworld.com/ 10860 for details on *PC World*'s Star Ratings 'Time (in minutes:seconds) to write two 10-minute video files to DVD. Does not include rendering, transcoding, or other preparation time. 'Time (in minutes:seconds) to format a blank rewritable DVD disc combined with time to copy 1180G of data to the disc. Due to their quick formation, which formats only enough space to complete the write, DVD+RW drives get much faster results. 'Results are for DVD+R/DVD+RW and then for DVD-R/DVD-RW. 'Drive uses buffer underrun protection.

TOP 10 DIGITAL CAMERAS

Visit find.pcworld.com/34046 for reviews of all products tested this month and ranked in this chart.

THE THREE NEW point-and-shoot cameras we reviewed this month are all easy to use and produce passable images. But Fujifilm's FinePix F401 stands apart: This small, attractively crafted camera uses interpolation to create higher-resolution, 2304-by-1728-pixel images from its 2.1-megapixel CCD. For its part, Pentax's medium-size Optio 330GS is the best allaround camera, with a moderate price and a sturdy design. Toshiba's bulky PDR-3200 missed the chart; it seems pricey for a camera without video recording. On the plus side, it accepts accessory lenses—rare for a simple point-and-shoot.

	CAMERA: UNDER \$500	Street price (1/29/03)	Overall rating	Image quality	Ease of use	Battery life/ shots	Comments '
1	East Olympus C-4000 Zoom	\$450	84	Outstanding	Good	Outstanding/ 700	FEATURES: 4-megapixel resolution, 16MB SmartMedia card, 32mm to 96mm focal range, USB and video output, 14 ounces. SUMMARY: Inexpensive for an advanced camera, the C-4000 blends great image quality, manual exposure settings, and a long battery life. Menus can be confusing. (★★★★ \rightarrow Nov 02)
2	Fujifilm FinePix 3800 Zoom find.pcworld.com/32450	\$400	80	Very good	Good	Outstanding/ 546	FEATURES: 3.24-megapixel resolution, 16MB XD-Picture Card, 38mm to 228mm focal range, USB and video output, 13.8 ounces. SUMMA- RY: The 3800 has a longer zoom and battery life than most models, and is styled like a single-lens reflex camera. Its image quality was only slightly behind that of the C-4000. (** * * * Feb 03)
3	Konica Digital Revio KD-400Z find.pcworld.com/32435	\$360	79	Outstanding	Very good	Fair/ 177	FEATURES: 4-megapixel resolution, 16MB Memory Stick media and Secure Digital media slot, 39mm to 117mm focal range, USB and video output, 7.3 ounces. SUMMARY: This camera earned very high image- guality scores, but the documentation is weak and the battery life only fair. Price has fallen by \$89. (★★★★☆ Feb 03)
4	Olympus D-550 Zoom find.pcwarld.com/30839	\$299	78	Outstanding	Fair	Very good/ 398	FEATURES: 3-megapixel resolution, 16MB SmartMedia card, 36mm to 100mm focal range, USB and video output, 11.6 ounces. SUMMARY: This bulky camera took sharp, evenly exposed photos and includes a few extra features, such a Virtual Mode Dial for fast changes to set- tings and a useful panorama mode. (***** 0 oct 02)
5	Pentax Optio 330GS find.pcworld.com/33713	\$300	77	Fair	Good	Outstanding/ 631	FEATURES: 3.2-megapixel resolution, 16MB CompactFlash, 38mm to 114mm focal range, USB and video output, 8.1 ounces. SUMMARY: This point-and-shoot is solid, relatively compact, and fairly easy to use. Its LCD panel folds out for self-portraits, and you can shoot, print, and then view (with an included viewer) 3D images. (★★★★\c)
6	HP Photosmart 720 find.pcworld.com/30494	\$299	π	Very good	Fair	Good/ 306	FEATURES: 3.18-megapixel resolution, 16MB internal memory and Secure Digital media slot, 34mm to 102mm focal range, USB and video output, 12.1 ounces. SUMMARY: Large, relatively heavy model lacks a macro mode, and the controls feel slow, but it took nice-look- ing photos. (* * * 10 Nov 02)
7	Fujifilm FinePix A303 find.pcworld.com/32453	\$299	π	Very good	Good	Good/ 353	FEATURES: 3.24-megapixel resolution, 16MB XD-Picture Card, 38mm to 114mm focal range, USB output, 7 ounces. SUMMARY: 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 and easy-to-use controls. Recent \$51 price drop. (★★★.% Feb 03)
8	Samsung Digimax 350SE find.pcworld.com/32489	\$379	72	Good	Fair	Good/ 352	FEATURES: 3.2-megapixel resolution, 16MB CompactFlash, 34mm to 102mm focal range, USB and video output, 10 ounces. SUMMARY: Samsung's Digimax 350SE is a solid-feeling, simple point-and-shoot camera. It comes with few controls beyond the basics, but the images it produced were fine for snapshots. (************************************
9	Fujifilm FinePix F401 find.pcworld.com/33767	\$449	71	Fair	Good	Good/ 359	FEATURES: 2.1-megapixel resolution, 16MB SmartMedia card, 36mm to 108mm focal range, USB output, 7.1 ounces. SUMMARY: Stylish, pocketable, and simple to use, the F401 is a nice travel point-and- shoot. But we were not impressed by its relatively large 2304-by- 1728-pixel images, produced with interpolation. (★★★↑)(2)
10	Canon PowerShot A200 find.pcworld.com/30488	\$199	70	Fair	Fair	Limited/ 61	FEATURES: 2-megapixel resolution, 8MB CompactFlash, 39mm focal length, USB and video output, 8.2 ounces. SUMMARY: Light, compact and fairly inexpensive for a 2-megapixel model, the A200 is also light on features. There's no optical zoom, just a 4X digital zoom. Think of it as a starter digital camera. (★★★☆☆☆ Nov 02)

HOW WE TEST: Each camera's overall rating is based on price (15 percent), picture quality (30 percent), ease of use (15 percent), features (20 percent), battery life (10 percent), and support (10 percent). For all ratings, higher is better. To gauge picture quality, we take a series of shots, with and without flash, at 640 by 480 resolution and at the camera's highest resolution. We photograph a complex still life and a mannequin to see how well each camera captures details and subtle coloring such as skin tones. A panel of judges reviews the on-screen and printed photos and assigns image-quality scores; we then average those scores. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. See find_pcworld.com/10860 for details on PC World's Star Ratings. ' Resolutions are expressed in effective pixels, focal range is identified as 35mm equivalent, and camera weights include batteries.

MORE REVIEWS

CANON'S S330 Color **Bubble Jet Printer costs** just \$100, yet prints attractive photos at a

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/33032 for products on the Top 10 Ink Jet Printers chart). In next month's issue we'll look at photo printers, 17-inch LCD monitors, and digital cameras priced under \$500.

TOP 100

TEST Center

TOSHIBA'S SATELLITE 5205-S703 doesn't just look good, it also burns DVD movies: With a FireWire port, a built-in rewritable DVD drive, and a 60GB hard drive, it's a portable video-production system.



		-		respect	able clip.			
	INK JET PRINTERS		15-INCH LCD MONITORS		CD-RW DRIVES			AUDIO PLAYERS
	find.pcworld.com/33032		find.pcworld.com/33410		find.pcworld.com/33419			find.pcworld.com/33335
1	Best BUY Bubble Jet Printer find.pcworld.com/32105	1	Best NEC MultiSync L1560M BUY find.pcworld.com/33005	1	LG Electronics GCE-8480B find.pcworld.com/31754		1	Best IRiver IFP-1901 BUY find.pcworld.com/33320
2	Canon 1550 Color Bubble Jet Printer find.pcworld.com/32103	2	Ecst Compaq TFT 1520 BUY find.pcworld.com/32921	2	Bost TDK 48X VeloCD BUY find.pcworld.com/31757	(ER	2	Sonicblue Rio S50 find.pcworld.com/33332
3	Canon 1850 Photo Printer find.pcworld.com/32096	3	IBM T560 find.pcworld.com/32939	3	Asus CRW-5224A find.pcworld.com/33137	FLASH-MEDIA PLAYER	3	Panasonic SV-SD50 E-wear SD Audio/MP3 Player find.pcworld.com/33326
4	Canon S330 Color Bubble Jet Printer find.pcworld.com/32876	4	Samsung SyncMaster 152T find.pcworld.com/32927	4	Lite-On LTR52246 find,pcworld.com/33149	FLA	4	PoGo Products RipFlash DX find.pcworld.com/33329
5	HP Deskjet 3820 find.pcworld.com/30821	5	Sony SDM-X52 find.pcworld.com/32933	5	Yamaha CRW-F1 find.pcworld.com/31058		5	CenDyne Grüvstick MP3+3 find.pcworld.com/33323
6	HP Deskjet 5550 find.pcworld.com/30818	6	Dell 1504FP find.pcworld.com/32930	6	CenDyne 52X CD-RW find.pcwarld.com/33140		1	Bost BUY Digital Jukebox find.pcworld.com/33338
7	Epson Stylus C62 find.pcworld.com/30827	7	AOC LM520 find.pcworld.com/32909	7	Plextor PlexWriter 48/24/48A find.pcworld.com/31061	PLAYER	2	IRiver IMP-400 SlimX find.pcworld.com/33344
8	HP Photosmart 7550 find.pcworld.com/32102	8	Envision EN-5200e find.pcworld.com/32936	8	Pacific Digital Mach 48 CD-RW find.pcworld.com/29906	CD/HARD-DRIVE PL	3	Sony MPD-AP2OU find.pcworld.com/33341
9	Lexmark Z45se Color Jetprinter find.pcworld.com/32870	9	CTX S530 find.pcworld.com/32924	9	LG Electronics GCC-4320B find.pcworld.com/31763	CD/HA	4	Creative Nomad Jukebox Zen find.pcworld.com/32531
10	Lexmark Z35 Color Jetprinter find.pcworld.com/32867	10	IBM T541 find.pcworld.com/32948	10	Memorex Internal CD- ReWritable 52X E-IDE Drive find.pcworld.com/33161		5	Apple IPod for Windows find.pcworld.com/33347
-1-	From the March 2003 Issue		From the March 2003 Issue		From the March 2003 Issue			From the March 2003 Issue

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Air Station 654

RETIRE THE WIRE RELIABILITY AND SECURITY ARE COMING TO WIRELESS NETWORKS

www.buffalotech.com

Ah, wireless. Just wait, they keep telling you. Someday wireless connectivity will reign supreme in PC networking just as cell phones are beginning to dominate the phone business. But with cell phones, static or a dropped connection is little more than a fleeting annoyance. PC-to-PC data transmission is far more complex and unforgiving.

Let's face it: For all their many benefits and conveniences, wireless data networks have suffered from inadequate security and less-than-stellar performance. When compared to hard-wired networks that zipped your data along at 100 Mbps, the 5-11 Mbps of first-generation wireless architectures were glacially slow. What's more, those first-generation networks were susceptible to getting hacked, since intruders didn't need to physically connect to them. In fact, gaining access was a bit too simple. Intruders merely needed to fire up a wireless-equipped laptop running a protocol analyzer in the vicinity of a wireless network to successfully detect, and usually intercept, transmissions. To be sure, savvy users tried their best to provide some level of data security by implementing the 40-bit algorithm of the Wired Equivalent Privacy (WEP) protocol, but unfortunately, those early implementations of WEP proved no match for determined hackers.

Security and performance: the two reasons you haven't adopted wireless. Take heart—those problems have finally been solved.



Finally, an innovative company has figured out an affordable solution to improving both security and performance in wireless data networks. Buffalo Technology's (www.buffalotech.com) AirStation G54 Broadband Router AP delivers a blazingly fast throughput of 54Mbps, five times faster than 802.11b wireless LANs (Local Area Networks). It transmits over longer distances than 802.11a models, which means you need fewer access points. Chief among the 54Mbps Broadband Router's advanced features is Buffalo Tech's exclusive Intrusion Detector, a powerful firewall that identifies and blocks Trojan horses and intruders before they enter your network, alerting you via a pop-up window and email that you are under attack. Other security provisions include upgradeable support for 128-bit and 64-bit WEP, password protection, MAC Address Registration, Privacy Separator, VPN, and Dynamic Packet Filtering.

INCREASED RELIABILITY, REDUCED COSTS

In addition to delivering increased security, performance, and reliability, the AirStation G54 will lower the cost of building and maintaining a network. Do you want to move your PC to a different location? Go right ahead! No reconfiguration is necessary. Plus, you will not have to spend time searching behind desks for a free jack. Nor will you have to endure the inconvenience of having to run cables in ceilings and walls. A built-in 4-port Ethernet switch allows you to combine wired and wireless networks on the same LAN.

That's assuming, of course, that your network connects computers that are physically within the same building. But if you want your network to link to an office or a friend's house across the street or across a river, the G54 is still just the ticket you need to ride the airwaves. At 54 Mbps, the highest data transfer rate, Buffalo Tech recommends a maximum spacing of 165 feet outdoors and 65 feet indoors. At 18 Mbps throughput, you can stretch the distance to 490 feet outdoors and 195 feet indoors.

This is the way networks were supposed to work. Now they do.





FULL SPEED

FINALLY A WIRELESS NETWORK THAT WORKS AS FAST AS YOU DO

Air Station *G54* 54Mbps Broadband Router AP WBR-G54



Get your business up to speed with the fastest wireless solution – AirStation G54.

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- Backwards compatible with current 802.11b networks
- Enhanced security with Intrusion Detector Firewall to protect your privacy
- Powerful signal allows communication through most walls of your office or home

For information on the complete AirStation product line, please call 800-456-9799 or visit www.buffalotech.com/pcworldG54.

Faster performance at an affordable price!



54Mbps CardBus Card WLI-CB-G54A







FASTER

THAN 802.11b







HERE'S HOW

EDITED BY MICHAEL S. LASKY, DENNIS O'REILLY, AND ERIC DAHL



SCOTT SPANBAUER

Protect Your PC and Data With the Security Checklist

THIS COLUMN OFTEN DEVOTES a good bit of space to computer security and online privacy. But the tips have always appeared piecemeal, so it's difficult to remember (even for me) everything you should be doing to protect your PC and its data. This month I've assembled a safety checklist that gives you the big picture. Though it's not the final word on each of the topics presented, it will provide you with an overview of what you need to know and the steps you must take to avoid e-mail viruses, deter snoops, and halt attempts to hack into your PC or network. (For even more information on this broad subject, read the article "Internet Fixes," beginning on page 80.)

BLOCK HACKERS AND VIRUSES

CONNECTING YOUR PC to the Internet without using a firewall and antivirus software is like leaving your front door unlocked when you go on vacation—if you're lucky you'll come home to find that all is well, but it's still risky.

Install a firewall on every computer: Even if you have a hardware firewall between your PC or network and the Internet, you should still install a software firewall. Although a hardware firewall can be set to block or allow all packets passing in and out through port 500, for example, it doesn't know which application initiated the communication on your system. A software firewall routinely queries you to confirm whether it should let an application communicate over a given port (see FIGURE 1), so you can tell it that MyCool-InstantMessenger.exe is allowed to use the port but NastyTrojanHorse.exe isn't. Use a bidirectional firewall: The firewall in Windows XP is better than nothing, but not much better. Free firewalls such as Zone Labs' ZoneAlarm 3 (find.pcworld. com/30950) and Sygate's Personal Firewall 5 (find.pcworld.com/30953) monitor and control both inbound and outbound network traffic, allowing them to block connections initiated on your PC by the aforementioned NastyTrojanHorse.exe or any real-life backdoor program.

Don't skip the antivirus: If you're not using antivirus software right now, stop what you're doing, go get some, and then continue reading after you've installed it. If you use Windows, not using antivirus software is simply irresponsible because of the high volume of viruses that target any version of this OS. Even if you think you know how to avoid viruses, you may eventually get nailed by one that employs a new and unexpected technique. If you get infected, chances are you'll infect the family members, friends, colleagues, and others who are in your address book, too.

If you don't want to shell out for a top commercial package like Symantec's Norton AntiVirus, at least download Grisoft's

INSIDE

144 INTERNET TIPS

Protect your PC and its data with this three-part Internet checklist on privacy and security issues.

148 WINDOWS TIPS

Take the shortcut route to instant file backups for all versions of Windows; selectively hide file extensions of your choice.

150 STEP-BY-STEP

Master the software Easter egg hunt with these undocumented and fun gems hiding in your applications.

152 HARDWARE TIPS

Power tips on power supplies: How much power your PC really needs depends on the peripherals you add.

154 ANSWER LINE

How to restore your Windows Registry; easy network backups; quirks of Windows PowerToys and how to get around them.

free AVG 6 Anti-Virus System (find. pcworld.com/33218). AVG isn't great at catching the latest known in-the-wild viruses, according to UK-based antivirus journal Virus Bulletin (find.pcworld.com/ 32798). Because of this shortcoming, using AVG could be just as bad as having no antivirus protection if you blindly launch every e-mail attachment that slithers into your in-box. However, if you have other prevention methods in your tool bag (such as a script-resistant e-mail program and a healthy distrust of e-mail attachments), it will at least prevent you from being nailed by those viruses that perennially come around. I've been using AVG for more than a year with great success and a minimum of hassle, but it's a period I nevertheless consider an experiment in living dangerously.

UPDATE EVERYTHING, AND OFTEN

ONE OF THE easiest ways to prevent email viruses from exploiting flaws in your programs and hardware is to download and install the regular updates (sometimes called software patches) that vendors provide. Microsoft's Windows Update site (windowsupdate.microsoft.com; see FIGURE 2) is a great source for fixes to that company's software. For a roundup of vital patches, as well as directions on downloading and installing them, see "Internet Fixes" on page 80.

1940		1	100
2	Agent for Windows is trying to connect to INTP - Network News Transfer Photocol network?		

FIGURE 1: FIREWALL SOFTWARE can keep Trojan horses and other unwanted apps from communicating with remote sites.

SET THE CONTROLS FOR SECURITY

ONCE YOU'VE UPDATED your software with the latest patches and bug fixes, check the applications' security settings. The programs you use every day often offer little-known features that can block viruses, stamp out cookies, and keep snoops off your computer or network. Block It in the browser: You can download and install a zillion different utilities that corral

your cookies and prevent Web sites from doing things on your computer that they shouldn't. But your browser also gives you lots of control over Web content. In my August 2002 column (find.pcworld. com/32804), 1 offered cookie-crushing tips for Internet Explorer 6, Netscape 6.2, and Opera 6.*x*, and in the January 2003 column (find.pcworld.com/32807), I provided instructions for deleting cookies. Here's a brief recap of the steps for IE 6, plus updated directions for Mozilla 1.1 and Netscape 7:

In Internet Explorer, choose Tools-Internet Options and click the Privacy tab. To reject or accept an individual site's cookies, click the Edit button, enter the site's address, then click either Block or Allow. When you're done entering site addresses and settings, click OK to close the dialog

> box. To block third-party cookies (which are usually related to advertising or marketing), click the Privacy tab's Advanced button, check Override automatic cookie handling, select Block

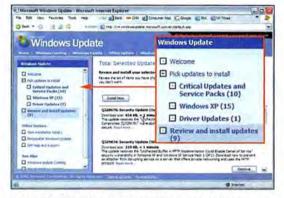


FIGURE 2: GET THE LATEST security fixes for Windows, Internet Explorer, and Outlook Express here.

under 'Third-party Cookies', and click OK twice. To view and delete stored cookies, select Tools-Internet Options, then click the General tab, the Settings button, and the View Files button. In the resulting window, right-click a cookie and choose Delete. To remove all cookies stored by IE, select Tools-Internet Options, then click the General tab and the Delete Cookies button.

If you use Mozilla 1.1 or Netscape 7, choose Edit-Preferences, double-click Privacy & Security to open its subcategories, and select Cookies. To block all third-party cookies, look in the right pane and click Enable cookies for the originating web site only. To view and delete cookies, click the Manage Stored Cookies button, select a cookie in the list, and click the Remove Cookie button. Choose Remove All Cookies to wipe the entire cookie sheet clean. If you want to banish an individual site's cookies in perpetuity, check Don't allow removed cookies to be reaccepted later, and then delete the cookie. (Note that the siteby-site cookie controls that you would expect to find when you click the Cookie Sites tab in Mozilla 1.1 and Netscape 7 appear to be under construction.)

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Derail e-mail threats: If you prevent your e-mail program from executing scripts and attachments in the messages you receive and keep your program updated to repair newly discovered security flaws, chances are good you'll keep viruses and Trojan horse programs off your PC. The latest versions of Outlook and Outlook Express wisely block all scripts and dangerous attachments by default, by placing any incoming HTML mail in the Restricted security zone (to see your security settings in either program, choose Tools. Options and click the Security tab).

In the June 2002 Internet Tips column (find.pcworld.com/32810), I suggested that readers disable their e-mail program's message preview pane to doubly ensure that viral mail remains inert. To disable Outlook Express's preview pane, choose View-Layout and uncheck Show

etwork Connection Deta	la:
Property	Value
Physical Address	00-30-AB-12-6F-7F
IP Address	192 168 2 9
Subnet Mask	255 255 255 0
Default Gateway	192 168 2 1
DHCP Server	192 168 2 1
Lease Obtained	11/13/2002 11:11:14 AM
Lease Expires	1/18/2038 8 14:07 PM
DNS Server	192 168 2 1

Physical Address

FIGURE 4: WARD OFF WIRELESS snoops by limiting access to known network adapter MAC addresses, as In this Windows XP box.

ne. In Outlook, click View and eview Pane. To hide the preview Mail & Newsgroups program 1.1 and Netscape 7, choose /Hide Message Pane.

ral readers wrote to say that eeded a way to peek into mes-

> sages with attachments to see what kinds of scripts or files they contain. To do that in Outlook Express without opening the e-mail, right-click the message, choose Properties, click the Details tab, and then click the Message Source button. Now you'll see the exact text of the entire missive.

including the names and encoded content of any binary attachments. Maximize the window to make it easier to read. To safely view files attached to a message in Outlook, right-click the e-mail and choose View Attachments (see FIGURE 3). To view a message's plain-text contents (to see the names of attached files) in Mozilla or Netscape, select the e-mail, and then choose View-Message Source.

Use MAC filtering on your wireless LAN: If you have a wireless network, you m

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want to use multiple security features for maximum protection. In the November 2002 issue (find. pcworld.com/32813), I discussed several ways to keep drive-by network hackers at bay. One more security option your wireless router or access point may offer is med access control (MAC) address filtering

Each network adapter on a LAN-wir or wireless-has a unique physical a dress that operates at a lower level than IP address in the hierarchy of network protocols. Many routers, including wireless ones, let vou restrict wireless network access to a limited set of hexadecimal

MAC addresses. You'll need to get out the router or access point's 00-30-AB-12-6F-7F manual to set it up, then drill down into the network card proper-

ties for each connected computer to find and jot down its MAC or physical address (see FIGURE 4). Like IP addresses, MAC addresses are easy to spoof, or falsify. And

DOWNLOAD OF THE MONTH

Streamripper 32

I OFTEN LISTEN to streaming Internet radio stations to learn about new kinds of music not featured on my local stations. Often, I'll purchase the CD of an artist I hear online. Sometimes I realize I really like a song about 10 seconds after it's over. By then, it's too late to see the artist's name and song title in my player.

Naturally, there's a solution. Oddsock.org's free, open-source Streamripper 32 tool (find.pcworld.com/33866) takes that audio stream, breaks it up into songs, and saves the individual tracks on your hard disk, embedded ID3 tags (with the track name, length, and artist) and all. It'll even grab only those songs you specify. It's not the second coming of Napster, though, so the RIAA can relax.

Most streaming broadcasts are noticeably less than CD quality, and many cross-fade their tracks or intersperse them with station identifiers, so Streamripper's output is more informational than archival. It does let you identify those tunes you'd like to add to your permanent library by some other means.

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pton		Sit
TALL	Y - I M P O R T E D - European Trance, Techno, HI-NRG we can'	128
e Salad	a nicely chilled plate of ambient beats and grooves. [SomaFM]	125
USIQU	E - Smooth Stylish Downtempo from Flaresound	12
TALL	Y - I M P O R T E D - European Hard Trancel - Are you Ready for t	12
we -M	lusic Beyond - 24/7 DnB and Jungle	12
TALL	Y - I M P O R T E D - Hard House, Tedt House, UK Hard House D	12
20.000	The Paralistance and Manage Constructions From Florence and	
MUSIC	UE	12
	a tik a - 100% Goa Psychedelic Trance - Get your stomp on!	
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a d	a ti k a - 100% Goa Psychedelic Trance - Get your stomp on!	

because it doesn't encrypt traffic, MAC filtering alone won't make your network secure. But it's one more roadblock that could send a hacker elsewhere in search of an easier network to crack.

Send your questions and tips to nettips@ spanbauer.com. We pay \$50 for published items. See find.pcworld.com/31523 for more Internet Tips. Scott Spanbauer is a contributing editor for PC World.

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Mapctor Hard Drive

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"What sets ABS apart from other computer companies I researched? Not only was the price compatible, but also the fact that I knew exactly what componetns were being installed in my computer. Think of purchasing a new car and when you order from ABS it is like having the car manufacturer building it from scratch to your exact specifications." - R. Carl from Chicago, Illinois



NVDA/® nForce 112 DOR400 EX ASP Motherboard w/Dual LAN Kingston 512MB Fast PCI/200 400MHz DDH SDRAM Memory Two 100GB 7200RPM Litra ATA Hard Dowis w/BMB Cache Poneer 16X DVD Player & Mitsumi 1 44MS Floppy Driver Poneer DVD-Recordable Drive All RADEON 9700 PRO w/126MB 8X AGP Votes Card NEC 19* 22mm 1600x1200 Color Monitor Creative SoundBlaster Audigy 2 Platmum Sound Card & Mic Klipsch ProMedia 5.1 THX Certified Subwoofer/Speakers DualNation board w/WDIA Networking & 3Com Networking & V92 PCI Selk Modern Logitech Cordiess Duo Keytoard & Mous Microsoft Windows¹⁸ XP Home Edition Free 7/24 Tech Support & 1 Year Onste Service Free Software. Microsoft Works 7.0 Free ABS® PC Organizer (3" Color Binder for Manual, Drivers, etc.)

Anter: PlusVew1000/WG Case w/Acrylic Windows 400-Watt PS & M

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WINDOWS TIPS

SCOTT DUNN

RESTORE 'CHANGE PASSWORDS' PANEL HIDE HARMLESS FILE EXTENSIONS PRESET CUSTOM WINDOW SIZES

Take the Shortcut Route to Instant File Backups

FULL SYSTEM backups are the safest way to protect all the files and programs on your hard drive, but the files you need to back up most often are the ones you use every day. Fortunately, it takes just a few minutes to create application shortcuts to back up each file as soon as you finish working with the program.

First, open Notepad or your text editor of choice and type **start /w** (in Windows

9x and Me) or start "" /w (in Windows 2000 and XP), followed by a space and the path to the application whose work you want to back up automatically. For

example, to back up your Word files in Windows 2000 or XP, your first line might look something like start "" /w "c:\program files\microsoft office\office10\ winword.exe" (your path may differ, of course). If your application's path contains spaces or any folder names longer than eight characters, as this example does, be sure to include the path in quotation marks but place your commandline parameters outside the quotes.

Now press **<Enter>**, and on the next line type **xcopy /m /d /y** followed by a space, the path of the files you want to back up, another space, and the path to the device and folder where you store your backups such as on a Zip disk, an external hard drive, or a network drive. As before, place quotation marks around paths with spaces or with folder names that are longer than eight characters. To continue our example, if you store your Word documents in

	Wordbak
Target type	MS-DOS Batch File
Target loca	tion BATCH
Larget	C:\BATCH\WordBak.bat
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FIGURE 1: PROCESS BATCH FILES in the background via the 'Minimized' Run option.

My Documents, your second line might look something like xcopy /m /d /y "C:\My Documents *.doc" "d:\backup\doc\" (again, your path may differ). The /m switch ensures that only documents that have the archive attribute are copied. (Applications typically apply this attribute to files when . you save them.) The switch then removes this attribute from the file you backed up so that it won't be backed up again until the next time you save it. As an extra precaution, the /d switch ensures that only files newer than those with the same names in the destination folder are copied. The /y switch suppresses prompts to overwrite files during copying.

Choose File-Save As and navigate to a folder where you will store this batch file. Save it with a name like "wordbak.bat",

taking care to include the quotation marks so that Notepad doesn't add its default .txt extension. Next, in Explorer locate the .bat file you just saved. Click the right mouse button and drag the .bat file from the Explorer window over the Start button, without releasing the right mouse button. After the Start menu appears, drop the .bat file on an appropriate submenu, and choose Create Shortcut(s) Here. Right-click your new shortcut and choose Properties. Make sure the Program tab (Windows 9x, Me) or Shortcut tab (Windows 2000, XP) is in front. On the Run drop-down list, choose Minimized (see FIGURE 1). In Windows 9x and Me, check the Close on exit box. Then click OK.

From now on, when you launch your application from this shortcut, it will open your designated application and wait quietly while you work. When you exit the application, it will back up the files you just worked on (or whatever file types you designated in the batch file).

But what if you tend to open your application not by going to the Start menu but by double-clicking a file in Explorer or in the Start-Documents menu? No problem. Just follow the same steps described above, but add a space followed by %1 to the end of the first line in your batch file. After saving this file, right-click one of the application's data files (or in Windows 9x, <Shift>-right-click it) and choose Open With or Open With-Choose Program. Click Browse or Other, and then navigate to your batch file shortcut (in Windows 9x and Me) or to the batch file itself (in Windows

FREE LESSON IN VOLCANISM

YOU MAY NOT realize it, but a free geography lesson is built into Windows' screen savers. Right-click the desktop, choose *Properties*, and click the *Screen Saver* tab. In the Screen Saver dropdown list, choose *3D Text*, then click the *Settings* button. Select the *Text* option in the upper-left corner, and in its text box, type volcano. Click *OK*, then either *Preview* or *OK*, and wait for your screen saver. Instead of the word *volcano*, you'll be treated to an ever-changing list of volcanoes of the world (see FIGURE 2).



FIGURE 2: THE NAMES OF volcanoes dance on your screen via the 3D Text screen saver.

2000 and XP). Select it and click *Open*. If you're sure you want to open every data file this way, check the *Always use* box and click *OK*. Your document will open in your application and be backed up when you exit.

THE DISAPPEARING PASSWORDS PANEL

IN THE SEPTEMBER 2002 Windows issue (find.pcworld.com/ 32765), I explained how to make Windows stop showing a password prompt each time you log on. Quick review: Begin by opening the Network control panel, and then set the Primary Network Logon to Windows Logon. Now open the Passwords control panel and use the Change Windows Password button under the Change Passwords tab to set your new password to nothing at all (in other words, don't type anything in either the 'New password' text box or the 'Confirm new password' text box).



FIGURE 3: LOG ON WITH YOUR password to see the Change Passwords tab in Passwords Properties. Unfortunately, a great many readers wrote to say that when they double-clicked the Passwords icon in Control Panel, they discovered to their frustration that the Passwords Properties dialog box had no

Change Passwords tab at all-where oh where had that little tab gone? Though the tab's disappearance can be the result of restrictions set by an administrator using the System Policy Editor utility, reader Alethia Mongerie of Jamaica, New York, points to a more likely culprit: If you are in the habit of pressing <Esc> or clicking Cancel when you see the Enter Windows Password prompt on the screen, you are entering a configuration of Windows that will not let you change the Windows password. The solution is simple: All you need to do is log off, enter your password and log on normally, then return to the Control Panel and open the Passwords Properties dialog box. Just like that, you'll find the restored Change Passwords panel (see FIGURE 3).

SELECTIVELY HIDE FILE EXTENSIONS

BACK IN THE November 2002 issue (find.pcworld. com/32768), I explained how to edit the Windows Registry so the threeletter file-type extension of certain file types is always visible. Reader Steve Wong sent an e-mail to point out that if you prefer, you can pull the opposite trick: Keep all your file extensions showing, but hide just a few that get in the way (such as the .stky extension I created for making on-screen sticky notes; read about them at find.pcworld.com/32771).

To hide a single extension type, follow the steps in the November tip (including a Registry backup), then click *Start-Run* and type **regedit**

to launch the Registry Editor. Locate the branch in the Registry corresponding to the file type whose extension you want to keep hidden—for example, HKEY_CLASSES_ROOT\stkyfile for the .stky file extension.

Note that in recent versions of Windows, the branch (a folder icon

WINDOWS TOOLBOX

Sizer: When Size Matters

SOMETIMES YOU NEED a folder or application window to be just the right size. For example, you may need to know how that Web page you're designing looks at different screen sizes. Or maybe (like me) you want your current window to fill the entire desktop except for a strip along one side to let the desktop icons peek through. Well, you can say good-bye to dragging title bars and window edges this way and that to get the perfect size and position for each window. Download Sizer, a free utility from Brian Apps. Just right-click Sizer's tray icon and choose Configure Sizer to add your own custom window sizes and positions. Thereafter, as long as Sizer is running, you simply have to right-click any window edge and choose one of your custom commands to see the window instantly snap into place (and size). Go to find.pcworld.com/32774 to get your copy of Sizer.

called a "key" in Registry lingo) for any homegrown file types, such as the .stky example I described, is named something like ft000001 or ft000002. If you select this folder icon in the left pane and see 'Sticky Note' under the Data column in the right pane for the '(Default)' icon, you know you've selected the correct icon.

To prevent this file extension from appearing, select its folder icon in the left pane, then right-click anywhere in the right pane and choose *New-String Value*. Type *NeverShowExt* (all one word) and press *Enter*. The right pane should now have an icon named NeverShowExt. At this point you may need to log off and log back on to Windows to see the effect, but from now on, files of that type should never show the extension, even when you use the *View-Folder Options* or *Tools-Folder Options* dialog box (under the *View* tab) to make extensions visible all the time.

Send Windows-related questions and tips to scott_dunn@pcworld.com. We pay \$50 for published items. Visit find.pcworld.com/ 31607 for more Windows Tips. Scott Dunn is a contributing editor for PC World.



STAN MIASTKOWSKI

HERE'S HOW

Find Software Easter Eggs

FOR A QUICK break from your serious computer work, try accessing the Easter eggs that programmers have tucked inside many applications and utilities. These hidden goodies range from mundane lists of the program's developers to unusual messages, eye-popping graphics, hidden features, and even entertaining games. All provide a short diversion from your otherwise-productive day. Nobody knows who coined the term *Easter egg*, but it's a fitting description. All Easter eggs are well hidden, and to find them you must type a series of specific—and sometimes complicated—keystrokes.

Below you'll find some examples of the most popular Windows-based Easter eggs and instructions on how to access them. We've mixed the simple with the complex. And we've shown only a couple of screens because part of the fun of finding Easter eggs is in seeing the results.

One caveat, though: Easter eggs depend heavily on specific versions of applications. If you've patched or updated the application with a service pack, the egg may be cracked and no longer accessible. So if it doesn't work, don't blame us.

To see if your specific applications have Easter eggs, check out www.eeggs.com or www.eggheaven2000.com. Another popular trend these days involves hiding away Easter eggs in DVD movie discs. You can find out all about them at dvdeasteregg. com/eastereggs.html.

Stan Miastkowski is a PC World contributing editor. Contact him at stan_miastkowski@ pcworld.com. Visit find.pcworld.com/31676 for past Step-By-Step columns.

UNCOVER HIDDEN TREATS IN YOUR SOFTWARE



Adobe Photoshop 6.0: Venus in Furs

EVERY NEW version of software has an internal code name while it's under development. In the case of Adobe Photoshop version 6.0, the moniker was "Venus in Furs." The illustration of Venus (in feline form) is still there, and relatively easy to access. But there's more in this two-part Easter egg: You can also read dozens of "secret messages" from the development staff team that scroll below the cat illustration. To see the cat:

- 1 Open Photoshop 6.0.
- 2 Press and hold <Ctrl>-<Alt>.
- 3 Drop down the Help menu and click About Photoshop.
- To see the secret messages:
- 1 Follow the steps above to access the cat.
- 2 Wait a few seconds for the credits below the cat illustration to start scrolling.
- 3 Press and hold down <Alt>.
- 4 Click the cat's big eye.
- 5 Press and hold down <Ctrl>.
- 6 Release <Alt>.

Microsoft Excel 2000: Racing

A FULL-FLEDGED game is hidden in the first release of Excel 2000. (It was removed in SR1 and SR2.) Follow these steps to access a racing game similar to Spy Hunter.

- 1 Open Excel 2000 with a blank worksheet.
- 2 Select File•Save as Web Page.
- 3 In the Save As dialog box, choose Selection: Sheet, check Add interactivity, and click Publish.
- 4 Click Publish in the 'Publish as Web Page' dialog box.
- 5 Close Excel, declining to save the worksheet.
- 6 Open Internet Explorer.
- 7 Choose File•Open, click Browse, and open the file you just saved.
- 8 Click in the spreadsheet, and hold <Page Down> to go to row 2000.

Microsoft Word: Dummy Text

A SIMPLE programming language comes built into Microsoft Word. One Word Basic command can fill a page with dummy type.

- 1 Start a new document.
- 2 Type =rand(x) in which x is a number from 0 to 200.
- 3 Press <Enter>, and you'll see the sentence "The quick brown fox jumped over the fence" repeated five times per paragraph in x number of paragraphs.

- 9 Click the gray header to select row 2000.
 10 Use <Tab> to move the active cell pointer to cell WC2000.
- 11 Hold down <Ctrl>-<Alt>-<Shift> and click the Office logo in the upper left corner.
- 12 If you've come this far, congratulations! Use the arrow keys to navigate, the spacebar to fire, 0 to drop an oil slick, H to turn on your headlights, and <Esc> to quit playing.



Netscape: Book of Mozilla

WE'VE SAVED OUR easiest Easter egg for last. Hidden inside Mozilla-derived browsers like Netscape is the "Book of Mozilla," chockfull of vaguely Biblical-sounding off-the-wall quotations. The quotation you'll see depends on the version of the browser you use.

- 1 Open Netscape or Mozilla.
- 2 Click the location box, or press <Ctrl>-L to bring up the location dialog box. Then type about:mozilla and press <Enter>.



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HARDWARE TIPS

KIRK STEERS

CALCULATE YOUR PC'S POWER NEEDS CD-R AND CD-RW DISC READABILITY STORE WINDOWS CD FILES LOCALLY

Keep the Juice Flowing Smoothly to Your PC

YOU WOULDN'T THINK to look at them, but PCs are picky eaters. They subsist on a diet of uninterrupted, precisely regulated electricity. Provide too little power, and your system behaves erratically or completely blacks out. Provide too much, and its tiny circuits—each 1/400th the width of a human hair, or thinner—are permanently fried. Here's how to ensure that your computer is properly nourished.

SAFETY FIRST

THE BIGGEST THREAT to your PC's survival is a sudden increase—or spike—in the amount of electric current flowing to it. Normally, your PC's power supply controls the flow of electricity from the wall socket into the system. But a fallen power line or nearby lightning strike can easily overwhelm the power supply and send a mortal surge of electricity coursing through your motherboard.

KEEP SYSTEM FILES HANDY

IF YOU'RE LUCKY, you'll never need to use your Windows CD-ROM. But if you ever have to add or reinstall hardware, or replace a corrupted system file, that disc is essential-and if you don't have it handy, you can end up wasting lots of time. Save trouble by copying all of the .cab files (compressed Windows files) from your Windows CD to a folder on your hard drive. Name the folder after the disc's Product Key. Then in the future, when Windows asks you for the Windows CD, just point it to that folder. Safeguard your computer with a highquality surge protector. Expect to spend at least \$20 to \$30; cheaper models probably won't provide the shielding your machine needs. The surge protector should meet the Underwriters Laboratories' UL 1449 specification (most will state this on their packaging).

If your area is prone to electrical storms or other power fluctuations, get a surge protector with an indicator light to confirm that the unit is working properly. Many surge protectors lose their ability to guard against excess current after a single high-voltage surge. Since the unit still provides power to your PC, without an indicator light there's no way to know whether the device has lost its ability to

fend off surges. Note that some surge protectors, such as Kensington's \$40 Smart-Sockets tabletop unit (find.pcworld.com/ 32777), have an audible alarm to indicate when a surge has damaged the unit.

Don't forget your phone lines: Your modem and telephone are just as vulnerable to power spikes as your PC is. You can buy a phone-line protector separately or as a feature of your surge protector.

Providing too little voltage to your PC can be as bad as providing too much. A sudden absence of power can trash unsaved data or damage important system files, both of which can be devastating to a business. To avoid these pitfalls, install an uninterruptible power supply. When the power goes out, a UPS provides sufficient operating current to your PC (usually no more than 10 minutes' worth) for you to save your data and properly shut down the computer. UPSs often come with software that automatically does this for you if you're not around.

Many UPSs cost less than \$100. American Power Conversion (www.apc.com) offers a wide selection of affordable power-protection products, including the \$40 Back-UPS ES 350VA (see FIGURE 1).

But don't pinch pennies. A UPS must be able to meet your PC's power needs. Before buying, check the UPS's specifications for maximum running time and wattage values, and compare them with your PC's wattage requirements (see below). And be wary: Some UPS vendors state the run time for a "half load," or half the wattage load listed in the specs. Rarely are all the components of a PC running at



FIGURE 1: APC'S BACK-UPS ES 350VA keeps a powerless PC running long enough to save your data.

full speed concurrently, so a UPS vendor's claim to keep your PC running for *x* minutes is based on a PC's usual power load, not its rated maximum.

IT'S WATTS YOU NEED

HOW MANY WATTS does your system use? Some PCs are power-hungry beasts, especially if you've added a second hard drive, a CD-RW drive, more memory, or other extra hardware to your system's original configuration. To calculate your computer's wattage needs, add up the individual wattage requirements for all its components, including the motherboard, expansion cards, optical drives, and hard drives. Your PC's documentation should provide some of these numbers, but FIG-URE 2 lists the typical wattage values for common PC components.

Once you have a total for your PC, add a 30 percent safety factor—multiply your calculated wattage by 1.3. Make certain the UPS you buy is capable of providing this level of power to your system for a minimum of 6 or 7 minutes.

And while you're calculating wattages, confirm that your PC's power supply is capable of providing sufficient wattage to your PC. With luck, the power supply's wattage rating is indicated on the back of your PC. If it isn't there, open your PC and look on the power supply itself (see **FIGURE 3**). Note that many power supplies include their maximum wattage in their names, such as the pictured PC Power and Cooling Turbo-Cool 510 ATX-PFC, which is rated to 510 watts.

An overwhelmed power supply may not be able to keep adequate current flowing to your PC's components, and that can mean error messages, strange behavior, or even system shutdowns. But instead of those obvious signs of trouble, an overworked power supply may just pump extra heat into your PC, speeding up the system's aging process and pushing your

POWER ACCOUNTING

COMPONENT	Typical wattage range
CPU	
Celeron	15-20
Pentium II, III	20-30
Pentium 4	40-60
AMD Athlon	40-50
Motherboard	20-30
128MB of RAM	10-15
IDE hard drive	5-15
SCSI hard drive	20-35
Floppy drive	5
Optical drive	15-25
Zip drive	10
Graphics card	1
20	5-10
3D with 16MB VRAM	20-30
Sound card	7
Additional PCI card	5

FIGURE 2: USE THESE FIGURES to compute your PC's power-supply wattage needs. PC's components to an early demise. If you suspect your power supply may be about to give up the ghost, replace it. PC Power and Cooling (www. pcpowerandcooling.com) is a good source for quality power supplies.

Here are common powerproblem warning signs:

A dead PC: You flip the power switch and get nothing—no fan noise, no hard disk noise,

and no image. If your PC is plugged in and the wall socket is live, you probably need a new power supply.

No fan noise: If your power supply's fan stops, check for obstructions like dust or paper. If it won't start, replace your power supply immediately.

The smell of smoke: If a burning odor is coming from your system, there's a good chance it's your power supply. Open your PC and sniff around for the source. If the cause isn't obvious, shut the PC down, wait several minutes, and then restart.

Noisy hard disk but no picture: If this happens when your PC isn't in a power-saving mode, electricity may be reaching the hard disk but not the motherboard. Check inside your case to see if the power connector attached to the motherboard is loose. Otherwise, you may need a new power supply—or a new motherboard.

CD COLOR BIND?

I JUST BOUGHT a new CD-RW drive, and I've found that my original CD-ROM drive won't read some of the CD-R and all of the CD-RW discs I've burned. (It seems to read gold- and black-colored CD-R discs, but not silver-colored ones.) Do you know of any hardware or software settings that can correct this?

Ian Moore, Pensacola, Florida THIS ISN'T A problem with your settings; it's a result of the design of CD-R and CD-RW media. CD-RW discs reflect only a

fraction of the light that standard CD-ROM or CD-R discs reflect, and all but the latest CD-ROM drives lack the sensitivity to accurately read them. Chances

Back-UPS ES 350VA \$40 American Power Conversion www.apc.com



FIGURE 3: THE MAXIMUM WATTAGE of your PC's power supply is listed on the device's label.

are, your current CD-ROM drive isn't up to the task. And unfortunately, neither are most people's CD-ROM drives, so don't count on using CD-RW discs as a means of passing data to others unless they too have a CD-RW drive.

CD-R discs are easier to read than CD-RW discs, and many CD-ROM drives can read them easily. But not always. CD-R discs are still far more delicate than your garden-variety CD-ROM disc. Rough handling and excessive exposure to heat or sunlight can quickly render a CD-R disc useless, whether blank or filled with data.

Some CD-ROM drives work better with certain brands of CD-R media. It used to be that discs made with a gold reflective coating (but not necessarily with a gold color) were of higher quality than discs using other reflective coatings, but this is no longer the case. There's no surefire way to determine what brand of CD-R will work with a given CD-ROM drive.

You'll usually have fewer problems reading recorded optical media with a CD-ROM drive made by a first-tier vendor such as Plextor or Hitachi. Check with the manufacturer of your CD-ROM drive or system for a recommended brand of CD-R media. In the end, however, finding what works best with your CD-ROM drive is a matter of trial and error, so don't buy a giant spindle of blank media until you've run a few test burns.

> You can reach PC World Contributing Editor Kirk Steers at kirk_steers@pcworld.com. We pay \$50 for published items. Visit find.pcworld.com/31511 for more Hardware Tips.

LINCOLN SPECTOR

HERE'S HOW

How Do I Restore My Windows Registry?



WHAT'S THE BEST way to back up and-just as important-restore the Windows Registry?

Hubert Harriman, Miami

WINDOWS 98, Me, and XP back up the Registry automatically at regular intervals, but it's still safest to back up your Registry manually before you make any major changes to your system. These are the best ways to back up and restore the Registry in various versions of Windows.

Windows 98: Select Start-Run, then type scanreg and press <Enter>. When you're told that there are no errors, click Yes to back up the Registry, then OK. To restore the Registry, select Start-Shut Down, click Restart in MS-DOS mode, and click OK. At the C:\WINDOWS> prompt, type scanreg /restore (don't forget to put a space before the slash) and press <Enter>. Select a backup from the list and press **<Enter>** again. Windows 2000: There's no good method to back up the Registry in this OS. Some people use Regedit's Export feature, but in my experience this isn't a reliable way to back up the entire Registry (although it works quite well if you're backing up only parts of it). For backing up and restoring the Registry in Windows 2000, 1 recommend Super Win Software's \$25 Win-



FIGURE 1: POWERTOYS replaces Windows' simple <Alt>-<Tab> with a fancier alternative. Rescue 2000. Go to find.pcworld.com/ 32849 to download a trial version.

Windows Me and XP: Select Start-Programs (All Programs in XP)-Accessories-System Tools-System Restore to bring up the System Restore Wizard. To back up your Registry, choose Create a restore point; to restore the Registry, select Restore my computer to an earlier time.

OLD-FASHIONED <ALT>-<TAB>

IN PREVIOUS versions of Windows, I could quickly <Alt>-<Tab> between open programs. But Windows XP shows each open program in a kind of preview mode, slowing the whole process down. Is there a way to turn off this preview mode?

Stephen Payne, Glastonbury, Connecticut THAT OVERLY graphical version of the <Alt>--{Tab> pop-up is actually not part of Windows XP, but of Microsoft's Power-Toys for Windows XP. This free collection of utilities has several useful tools, including the oft-recommended Tweak UI. The PowerToy that's slowing you down is called Alt-Tab Replacement. FIGURE 1 shows both the old <Alt>--{Tab> window and the PowerToy version.

It's not surprising that you mistook this optional add-on for a part of Windows.

Accidentally installing more PowerToys than you want is quite easy. Some systems even have PowerToys preinstalled.

> What's more, the Alt-Tab Replacement tool doesn't show up on the Start menu with the rest of the PowerToys.

To get rid of it, select Start-Control Panel, then double-click Add or Remove

Programs. On the list of currently active programs, choose Powertoys for Windows XP and click Change. In the resulting wizard, click Next, select Modify, and click Next again. Choose the icon to the left of Alt-Tab Replacement and select This feature will not be available. Click Next-Install-Finish, and reboot Windows.

RETURN OF THE ARROWS

I USED TWEAK UI to turn off the arrows on shortcut icons, but after I loaded a Windows Security Update and Internet Explorer 6, the arrows returned. Tweak UI thinks they're gone. What can I do?

Robert H. Kase, Roanoke, Virginia MANY WINDOWS 98 users had shortcut arrows come back after they installed a security update. Tweak UI considers the arrows off, and setting the program to turn them on, then off again, won't work.

Freshdevices' free Fresh UI utility will do the trick. Point your browser to find. pcworld.com/31472 to download your copy. Inside Fresh UI's left pane, navigate to Windows Interface Desktop Shortcuts-Shortcut Arrow. Next, in the right pane, double-click the Show arrow on shortcuts option. Uncheck the three options it gives you, and then click OK.

Send your questions to answer@pcworld. com. Answer Line pays \$50 for published items. See find.pcworld.com/31577 for more Answer Line columns. You'll find Contributing Editor Lincoln Spector's humorous writing at www.thelinkinspector.com.

EASY NETWORK BACKUPS

ED ANDERSON of Syosset, New York, suggests a fast and easy way to back up multiple PCs that are networked together (for instance, via an Internet-sharing router): Simply back them up to each other. It's faster than backing them up to CD-RW or other removable media, and if the PCs all have enough extra space on their hard drives, it's cheaper as well. Should the hard drive on one system fail, your data is safe on the other computer. Anderson uses Iomega's QuikSync for his backups, but the same technique should work with most backup programs.

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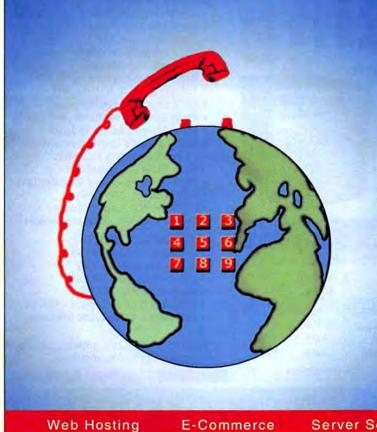
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Now Playing on Your Computer: Reality!

ON APRIL 1, "REALITY TELEVISION" takes on a new meaning when The Reality Network goes live on the Internet with "PDA-quality video." This 24-hour streaming service delivers reality programming for a new but coveted demographic—people chained to their PCs. "This is tech reality

for the first time on the Net," the producers boast. "And it's the best reason to go broadband since Microsoft began delivering mammoth security fixes every day or two." Just look at the prime-time lineup: Fear Factor XP: Six cyberhotties confront stomach-churning tech challenges. Who dares to tackle the horrifying task of backing up a hard drive, reformatting it, and restoring it to the point that it will boot again? Who will upgrade a two-year-old PC's operating system without upchucking? Don't miss the bonus round, which forces blubbering contestants to migrate apps and settings to a new machine! Survivor Silicon Valley: Bankrupt dot-com moguls, marooned on a floor of aban-

doned cubicles, pitch brilliant ideas for new products and services, such as software that shouts "Meeting!" every time it finds an imminent appointment in Outlook, or a .Net system devoted solely to the delivery of bubble gum and ferrets. Thanks to interactive technology, it's viewers who get to vote them off the peninsula—fast!

The Mole Presents: Can

a team of young MBAs finish an important Power-Point presentation before they are sabotaged by a turncoat in their midst? Is the mole the gal who keeps trying to insert animated "flying" transitions or the guy who thinks a pinkish green background "really looks cool"? And who's messing up those printouts—the mole or a bug?

Big Browser: A houseful of Web designers vie to come up with egregious privacy violations in this real-life drama narrated by the Cookie Monster and sponsored by Spam. Winners take home the objects of their dreams by stealing viewers' identities and using their credit cards.

With PCs, truth is stranger than fiction. And dumber.

Temptation Cell Block: Four customers apiece from AT&T, Sprint, Verizon, and T-Mobile attempt to communicate their desires while locked in isolated wings of a giant prison. Which cellular system will rule the scene? Sample dialog: "Huh?" "Whadja say?" "Can't hear you." "Again?" Bill Billionaire: Ten lovelies vie for the hand of a man they believe to be an underwear model. When he reveals that he is really the unimaginably wealthy chairman of a gigantic software company, the duped women demand to know why if he's so rich he can't release his products without annoying "activation" schemes.

American Support Idol: Representatives from tech support desks confront a jury's tough questions and improvise their way to stardom. Keep your eye on that cute ventriloquist who keeps putting words in the other people's mouths! Contestants are judged on style and believability; accuracy only matters as a tie breaker.

> The OSbores: A quirky family argues in bleepworthy language about which operating system is best: Mac OS X, Linux, Windows XP, or PlayStation 2. Typical hijinks: "Who \$#!@in' needs a right \$#!@in' mouse button?" "Who \$#!@in' needs to play \$#!@in' games?" "Stop fightin' a \$#!@in' monopoly!" "Ka-\$#!@in'-blam!"

> > Visit find.pcworld. com/31595 for more columns by Contributing Editor Stephen Manes. He has been writing about PCs for two decades.

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