

TROUBLE-FREE PRODUCTS! Readers Rate 31 Brands

SPECIAL
★
Hardware Issue

PCWORLD

new HARD DRIVES:
tiny Size, Big Storage



HUGE DISPLAYS

LCD, PLASMA, PROJECTOR:
WHICH IS RIGHT FOR YOU?



HACKER-PROOF Your PC

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LAB
TESTED

125+ Best

Hardware

DESKTOPS
LAPTOPS

Values

CAMERAS

DVD BURNERS

& MUCH MORE



monitor not included

HP WORKSTATION xw4100 High Performance

\$999 Lease for \$42
a month*

Intel® Pentium® 4 processor 2.60GHz (800MHz FSB)
Microsoft® Windows® XP Professional Edition
40GB Ultra ATA/100 Hard Drive† (7200 rpm)
512MB PC3200 DDR SDRAM
NVIDIA Quadro NVS 200 AGP
48X CD-RW Drive†
Broadcom Gigabit 10/100/1000 NIC
3-Year Worldwide Limited Warranty**

Get even more:

17" Flat Panel Display, add \$429



COMPAQ EVO N620c NOTEBOOK

Slim and Light

\$1,699 Lease for \$71
a month*

Intel® Pentium® M processor 1.40GHz
Microsoft® Windows® XP Professional Edition
14.1" TFT XGA Display
256MB DDR SDRAM
40GB Hard Drive†
DVD Drive

Integrated 56K V.92 Modem†† + 10/100/1000 Ethernet

3-Year Worldwide Limited Warranty**

Get even more:

Wireless 802.11b Wi-Fi Multiport Module, add \$99

Top-Load Leather Carry Case, add \$99

Advanced Port Replicator, add \$279



HP COMPAQ nx9010 NOTEBOOK

Performance and Value

\$1,249 Lease for \$52
a month*

Mobile Intel® Pentium® 4 processor 2.30GHz
Microsoft® Windows® XP Professional Edition
15" TFT XGA Display
256MB DDR SDRAM (1 DIMM)
40GB SMART Ultra ATA Hard Drive†
DVD/CD-RW Drive††

1.44MB Floppy Drive
Integrated 56K V.92 Modem†† + 10/100 NIC

8-cell Lithium Ion Battery

1-Year Worldwide Limited Warranty**

Get even more:

Top-Load Nylon Case, add \$49

Second Battery, add \$109

Simple Port Replicator, add \$149



monitor not included

HP WORKSTATION xw6000

\$1,349 Lease for \$57
a month*

Intel® Xeon™ processor 2.40GHz
Microsoft® Windows® XP Professional Edition
40GB ATA Hard Drive† (7200 rpm)
256MB DDR ECC
NVIDIA Quadro4 200 NVS 64MB AGP
Integrated Gigabit 10/100/1000 Ethernet NIC
48X CD-ROM Drive†
3-Year Next-Business-Day On-site Warranty**

Get even more:

18" Flat Panel Display, add \$499



HP COMPAQ nc4000 NOTEBOOK

Ultra Portable, Easy to Manage

\$1,699 Lease for \$71
a month*

Intel® Pentium® M processor 1.40GHz
Microsoft® Windows® XP Professional Edition
12.1" XGA Display
256MB DDR SDRAM
40GB Hard Drive†
56K Modem + 10/100/1000 Ethernet

3-Year Limited Warranty**

Get even more:

External USB Multibay Caddy, add \$79

Top-Load Leather Carry Case, add \$99

Travel Battery, add \$129



HP COMPAQ nx7000 NOTEBOOK

Thin and Wide

\$1,999 Lease for \$84
a month*

Intel® Centrino™ mobile technology
(Intel® Pentium® M processor 1.60GHz,
Intel® PRO/Wireless Network Connection
802.11b, Intel® 855 Chipset Family)
Microsoft® Windows® XP Professional Edition
15" WSXGA+ Display
512MB SDRAM Memory
60GB Hard Drive†
DVD/CD-RW Drive††

56K Modem + 10/100 Ethernet

1-Year Limited Warranty**

Get even more:

Top-Load Leather Carry Case, add \$99

Second Battery, add \$109

Port Replicator, add \$179

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media, the max transfer rate may be up to 1500 Kbps; for 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. †HDTV 960i/576i. Modems are designed only to allow faster downloads from K56flex- or V90/V92-compliant digital sources. Maximum achievable download transmission rates are currently unknown, may not reach 56 Kbps and will vary with line conditions. **4800 x 1200 optimized dpi color printing on premium photo papers and 1200 x 1200 input dpi. ††A standard WLAN infrastructure, other Bluetooth-enabled devices, and a service contract with a wireless service provider may be required for applicable wireless communication. Wireless Internet use requires a separately purchased service contract. Check with service provider for availability and coverage in your area. Not all Web content available. During the HP-Compaq product transitions, some HP PAVO™ 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, Intel Centrino, Pentium, Celeron and Xeon 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 of their respective companies. ©2003 Hewlett-Packard Development Company, L.P.

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Integrated Bluetooth™ Expandable

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- Microsoft® Windows® Mobile for Pocket PC
- Integrated Bluetooth™ Wireless^{†††}
- Built-in CompactFlash Type II and Secure Digital Memory Slot (SDIO support)
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- 3.5" Transflective TFT display with 64K colors
- 1-Year Limited Mail-in Warranty**

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- Intel® XScale™ processor 400MHz
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- 1000 mAh Removable Lithium Ion Battery

\$449



HP psc 2110 ALL-IN-ONE

Color Printing, Color Scanning, Color Copying

- Up to 4800 optimized dpi***
- HP PhotoREt III
- Up to 14 ppm black, 10 ppm color

\$149



HP LASERJET 1300

High-performance personal printer

- True 1200 dpi
- 20 ppm rich black text

\$399

HP printers got an A+ in 2003 printer satisfaction survey in *PC Magazine*



HP tc2120 SERVER

Dependable Value

\$1,099 Lease for \$46 a month*

- Intel® Celeron™ processor 2.20GHz/128KB
- Microsoft® Windows® Small Business Server 2003
- 40GB Ultra ATA/100 Hard Drive[†] (5400 rpm)
- 256MB Advanced ECC PC2100 DDR SDRAM DIMM Memory
- Integrated Dual Channel Ultra ATA/100 IDE Controller
- NC7760 PCI Gigabit NIC (embedded)
- 10/100/1000 WOL (Wake on LAN)
- 48X IDE (ATAPI) CD-ROM Drive[‡]
- 1-Year Next-Business-Day On-site Warranty**



HP PROLIANT ML330 G3 SERVER - ATA MODEL

Designed for Maximum Internal Expansion

HP ProLiant Servers Rank No. 1 in U.S. Customer Satisfaction Report

Editor's Choice Award - Network Computing

CNET Editor's pick award

\$999 Lease for \$42 a month*

Dual processor capable

- Intel® Xeon™ processor 2.40GHz
- 256MB ECC DDR memory, upgradable to 4GB
- 2x 80GB ATA Hard Drives[†] (7200 rpm)
- 4 PCI slots (3 available in SCSI models)
- Embedded NC7760 PCI Gigabit NIC
- 1-Year Global Pre-Failure Warranty**



HP PROLIANT DL320 G2 SERVER

Rack-Mountable, Optimized for Density

HP ProLiant Servers Rank No. 1 in U.S. Customer Satisfaction Report

\$1,374 Lease for \$58 a month*

- Intel® Pentium® 4 processor 2.26GHz
- 128MB Total PC2100 Registered ECC DDR SDRAM DIMM Memory, upgradable to 4GB
- Integrated Dual Channel Ultra ATA/100 Adaptor with integrated ATA RAID 0, 1
- 40GB ATA Hard Drive[†] (7200 rpm)
- Two (2) integrated Embedded NC7760 PCI Gigabit NICs
- SmartStart™ & Insight Manager™
- 3-1-1 (Parts/Labor/On-site) Limited Warranty**

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. *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 charges). Offer valid through 12/31/03 on all lease transactions with a total transaction amount between \$499 and \$100,000. 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 cancel the program at any time without notice. †For hard drives, GB=billion bytes. ‡48X Max CD-ROM Drive data transfer rates may vary from 6750 Kbps to 7800 Kbps. **Certain warranty restrictions and exclusions may apply. For complete warranty details, call 1-800-345-1518 (U.S.). ††16X, 48X 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 (see 48X discs for best performance); for writing to CD-RW

small and
medium business



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When you get the HP Compaq d220 Business Desktop for just \$599, you get more than a PC—you get an HP PC.

We build the Intel® Pentium® 4 processor-powered d220 to perform over and over. We shake them, shock them and rock them, and test them under high-intensity work situations. Because when your PC succeeds under stress, it's more likely that your company will. That greater reliability shouldn't be a luxury, so every HP product passes the affordability test too. Feel free to configure almost any HP system just the way your business needs it. With HP, get more than you expect—get more reliability, more service and support, and more local expertise through our SMB partners. Contact HP or a member of HP's SMB partner network.

HP recommends Microsoft® Windows® XP Professional for Business.



monitor not included

HP COMPAQ d220
Affordable Reliability

\$599 lease for \$25 a month*

Intel® Pentium® 4 processor 2.66GHz
Microsoft® Windows® XP Professional Edition
256M DDR SDRAM Memory
40GB Hard Drive† (5400 rpm)
48X CD-ROM Drive†
Integrated 10/100 Ethernet
PS/2 Scroll Mouse
1-1-1 (Parts/Labor/On-site) Limited Warranty**

HP COMPAQ d220
Affordable Reliability

\$399 lease for \$17 a month*

Intel® Celeron® 2.20GHz
Microsoft® Windows® XP Home Edition
128MB DDR SDRAM Memory
40GB Hard Drive† (5400 rpm)
48X CD-ROM Drive†
Integrated 10/100 Ethernet
PS/2 Scroll Mouse
1-1-1 (Parts/Labor/On-site) Limited Warranty**



monitor not included

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SMALL FORM FACTOR

Easy To Manage, HP's Smallest Footprint

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Best of Show Award, Best Security Product - TechXNY, September 2003

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Microsoft® Windows® XP Professional Edition
128MB DDR SDRAM Memory
Seagate 40GB Ultra ATA Hard Drive† (7200 rpm)
48X CD-ROM Drive†
Integrated Intel® Extreme Graphics 2
Integrated Gigabit Ethernet
3-3-3 (Parts/Labor/On-site) Limited Warranty**



monitor not included

HP COMPAQ d330
Performance, Value Desktop

\$679 lease for \$29 a month*

Intel® Pentium® 4 processor 2.66GHz
Microsoft® Works 7.0
Microsoft® Windows® XP Home Edition
256MB DDR SDRAM Memory
40GB Hard Drive† (5400 rpm)
48X/24X/48X CD-RW Drive†
Integrated Gigabit Ethernet
3-1-1 (Parts/Labor/On-site) Limited Warranty**

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 >> A Rating on ANY Merchant Ranking Site
 >> 98% of Orders Ship within 1 Business Day
 >> 50,000+ Product Reviews From Customers

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 32x64 DDR RAM
 KVR333X64C25/512
 - OEM

Kingston



PCW20144202 **\$80.00**

512MB PC 3200
 400MHz DDR RAM
 GL512PC3200B - OEM

GEIL



PCW20144305 **\$80.00**

512MB PC 3200 32x8
 Drams CAS 2.5 991093
 - Retail

Mushkin Enhanced



PCW20146219 **\$82.00**

512MB PC 3200
 64Mx64 DDR XMS
 Extreme Memory Speed
 Series - OEM

CorSAiRE



PCW20145420 **\$123.00**

Motherboard

AN35N-Ultra for
 AMD Processors - Retail

Shuttle



PCW13150045 **\$66.00**

D875PBZLK Intel
 857P Chipset 800MHz
 FSB ATA 100 - Retail

Intel



PCW13121180 **\$147.00**

SK8N for Opteron 200
 Series Processors - Retail

ASUS



PCW13131465 **\$215.00**

IC7-MAX3 Intel
 857P Chipset for
 Socket 478 800MHz ATX
 - Retail

18iT



PCW13127158 **\$219.00**

AMD

Athlon XP 2500+
 Barton 333MHz FSB
 - Retail



PCW19103379 **\$90.00**

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 - OEM



PCW19103376 **\$136.00**

Featured Item

Athlon 64 3200+ 2.0Ghz 1MB L2
 Cache 1600Mhz Bus FSB ADA3200BOX
 - Retail

The Only Windows-compatible 64-bit PC processor



\$458.00

Find It Code™ PCW19103416

Intel

Intel Pentium 4 512K
 2.6CGHz Socket 478 HT
 - Retail



PCW19116159 **\$182.00**

Intel Pentium 4 512K
 3.0CGHz Socket 478 HT
 - Retail



PCW19116156 **\$385.00**

Video Card

Radeon 9800SE
 128MB DVI/TV 8x AGP
 - OEM



PCW14102303 **\$173.00**

All-In-Wonder
 Radeon 9800 Pro 128MB
 DDR 8x AGP - Retail

ATI



PCW14102297 **\$374.00**

Geforce FX5200
 128MB DDR Video Card
 A-FX20 - Retail

CRAPTECH



PCW14145042 **\$68.00**

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 GeForce FX 5950 Ultra
 475MHz - Retail

VGA



PCW14130176 **\$499.00**

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40GB 7200RPM EIDE
 Ultra ATA 100 - OEM

Seagate



PCW22148013 **\$57.50**

80GB 7200RPM
 "Special Edition" EIDE
 8MB Cache - OEM

Western Digital



PCW22144122 **\$75.00**

120GB 7200RPM
 SATA 8MB Cache
 ATA 150 - OEM

Maxtor



PCW22144319 **\$108.00**

160GB 7200RPM
 SP1614N 8MB Cache
 Ultra ATA 133 - OEM

SAMSUNG



PCW22152014 **\$112.00**

Sound Card

Sound Blaster Live!
 Dolby Digital 5.1 Sound
 Card SB0226 - OEM

CREATIVE



PCW29102165 **\$33.00**

Revolution PCI 7.1
 Surround Sound 24-bit
 High Definition - Retail

M-AUDIO



PCW29121101 **\$90.00**

Sound Blaster Audigy 2 Zs Platinum
 Pro PCI 24-bit - Retail

CREATIVE



PCW29102164 **\$245.00**

Network

KVM 2 Port Switch Kit
 Hot Pluggable TK-200K
 - Retail

TRENDnet



PCW17107246 **\$27.00**

MR814 802.11b
 Cable/DSL Wireless
 Router w/ 4 Wired Ports
 - Retail

NETGEAR



PCW33122011 **\$61.00**

CD/DVD ROM

52x CD-ROM Drive
 Mode 1 & 2 ATAPI/IDE
 CD-Audio/CD-ROM XA
 CD-3002A/MXL - OEM

NEC



PCW27152005 **\$20.99**

16x DVD-ROM ATAPI
 EIDE 40x CD-ROM 85ms
 Seek Time DVD120
 - OEM

Pioneer



PCW27129125 **\$33.99**

CD/DVD Burner

52x32x52 CDRW
 Smart-Burn ATAPI/EIDE
 2MB Buffer LTR-523275
 - OEM

LITEON



PCW27106197 **\$37.99**

4x DVD-/R RW
 8MB Buffer Underrun
 Protection Technology
 ATAPI EIDE - Retail

SONY



PCW27131211 **\$189.99**

Speakers

Z640 5.1 Speaker
 Innovative Satellite Design
 Internal Power Supply
 - Retail

Logitech



PCW36121104 **\$70.00**

RW-360XL 360°
 Surround Sound 2.1
 Gaming Speaker System
 - Retail

ALCANTARA



PCW36130013 **\$89.99**

ProMedia Ultra
 5.1 Personal Audio
 System - Retail

Klipsch



PCW36119106 **\$360.00**



Case

208B 10-bay Case
350 Watt Power Supply
ATX - Retail
RAIDMAX



PCW11156106 **\$45.00**

Solution Series
350 Watt P4 Power
Supply ATX 12V - Retail
Antec



PCW11129122 **\$73.00**

IW ATX Mid Tower Case
300 Watt Power Supply
- Retail



PCW11108283 **\$83.00**

Xaser II A5000C
Plus Chassis 10-bay ATX
Full Tower - Retail



PCW11133116 **\$88.99**

Monitor

LCD1760V-BK
17" LCD 1280x1024
0.26mm Pixel Pitch
- Retail
NEC



PCW24002078 **\$429.00**

SDM-X73 17" LCD
1280x1024 Via HD15 &
DVI-D - Retail
SONY



PCW24006051 **\$426.00**

191T-Black 19"
LCD 1280x1024 16.7
Million Colors - Retail



PCW24001030 **\$589.00**

E70F+SB 17" Perfect
Flat Monitor 3x UltraBrite
Technology - Retail
ViewSonic



PCW24116254 **\$129.00**

Laptops

C2220 2.4GHz 256MB
Pentium 4 30GB 15" TFT
DVD/CD-RW Combo Drive
- Retail
FUJITSU



PCW34110078 **\$1399.00**

Vaio PCGFRV28 2.8GHz
512MB Pentium 4M 40GB
15" TFT - Retail
SONY



PCW34115067 **\$1599.00**

Satellite A20
2.66GHz 512MB 40GB
Pentium 4 15" TFT
- Retail
TOSHIBA



PCW34114026 **\$1415.00**

ThinkPad T30
2.4GHz 512MB 60GB
Pentium 4M 14.1" TFT
- Retail
IBM



PCW34146004 **\$1869.00**

Featured Item

Satellite A10-S128 Intel Celeron 2.0GHz
400MHz FSB 256MB PC2100 30GB Hard Drive
15" TFT Active Matrix Windows XP Homes
Wt. 6.1 oz - Retail



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Affordable Mobile Computing

\$899.00

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Digital Camera

Coolpix 3100
3.2 Megapixel 2048x1536
3x Optical Zoom - Retail
Nikon



PCW30113110 **\$257.00**

FinePix FP3800
3.2 Megapixel 2048x1536
6x Optical Zoom - Retail
Fuji



PCW30122002 **\$309.00**

PowerShot S400
4.1 Megapixel 2272x1704
3x Optical Zoom - Retail
Canon



PCW30120015 **\$399.00**

Easy Share DX6340
3.1 Megapixel 2032x1524
4x Optical Zoom - Retail
MINOLTA



PCW30170005 **\$257.00**

DiIMAGE XT
3.2 Megapixel 2048x1536
3x Optical Zoom - Retail
MINOLTA



PCW30126007 **\$268.00**

C750 Ultra Zoom
4 Megapixel 3200x2400
10x Optical Zoom - Retail
OLYMPUS



PCW30111120 **\$499.00**

Camera Accessories

Transcend 512MB
45x High Speed
Compact Flash
Card - Retail



PCW20160118 **\$125.00**

Sony 128MB
Memory Stick
MSA128A
- Retail



PCW20191207 **\$60.00**

Fuji 256MB
xD-Picture Card
22000056
- Retail



PCW20198004 **\$109.00**

Sandisk 256MB
Secure Digital Card
SDSDB-256-768
- Retail



PCW20180600 **\$70.50**

Power Supply

ATX400P4 400 Watt for
AMD Systems - Retail
ALLIED



PCW17154013 **\$39.00**

TRUE430 430 Watts
ATX12V for Pentium 4 &
AMD Systems - Retail
Antec



PCW17103908 **\$76.00**

Output Devices

Stylus C44UX Color
InkJet Printer - Retail
EPSON



PCW28103147 **\$50.00**

Photosmart 7960
Photo Printer - Retail
hp



PCW28104263 **\$285.00**

Miscellaneous

Clie PEG-UX50
Personal Organizer
- Retail
SONY



PCW58201015 **\$598.00**

XPC Series Silver
Barebone PC Intel Socket
478 800MHz FSB - Retail
Shuttle



PCW56101219 **\$320.00**

256MB USB 1.1 Flash
Pen Drive Data Traveler
- Retail
Kingston



PCW20189004 **\$65.00**

DVD-M500
Progressive Scan DVD/CD
SVCD/VCD Player - Retail
CyberHome



PCW82101002 **\$80.00**

PC Games

Half Life Platinum
Edition 2 - Retail
SIERRA



PCW32128103 **\$25.00**

Rise of Nations
DVD Box - Retail
Microsoft



PCW32102228 **\$39.00**

Input Devices

Cordless MX Duo
w/ Optical Mouse - Retail
Logitech



PCW23126124 **\$75.00**

Intelli-Mouse
Explorer Version 3.0a
- Retail
Microsoft



PCW26105121 **\$35.00**

Software

Antivirus 2004 w/ 1
Year Live Updates - Retail
symantec



PCW32108130 **\$52.00**

Easy CD & DVD
Creator 6 - Retail
Power2Go



PCW32110204 **\$69.00**

CanoScan LiDE
50 USB Flatbed Scanner
- Retail
Canon



PCW38111108 **\$83.00**

MOMO Force Steering
Wheel - Retail
Logitech



PCW26128005 **\$113.00**



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It's the smart way to navigate your day.™

PC WORLD

20TH ANNIVERSARY YEAR
DECEMBER 2003
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FEATURES

READERS RATE THE MAKERS

132 Reliability and Service Report Card

For the first time in years, reliability and service grades actually improved for notebook and desktop PC makers. But these vendors still get lower marks than makers of printers, digital cameras, gateways, and PDAs: In our first-ever survey of owners of these popular devices, satisfaction ran high.



HOME AND MOBILE GADGETS

155 Fun Tech

We found 12 innovative products guaranteed to keep you connected and entertained, whether at home or on the road. The goodies range from a portable DVD player and a GPS-enabled PDA to a plasma TV with connectivity options to an Internet refrigerator equipped with an LCD touch screen and a camera. And there's much, much more.

ON THE COVER



ULTIMATE HARDWARE GUIDE

PRODUCT RATINGS AND TESTS

100 The Best of Everything

Personal technology products are more specialized today, filling many different niches. With the holiday shopping season in full swing, how do you choose from the dizzying array of items now available? Our "Ultimate Hardware Guide" begins with editor's picks for the top PCs, printers, cameras, audio players, DVD drives, monitors, and other components and peripherals.

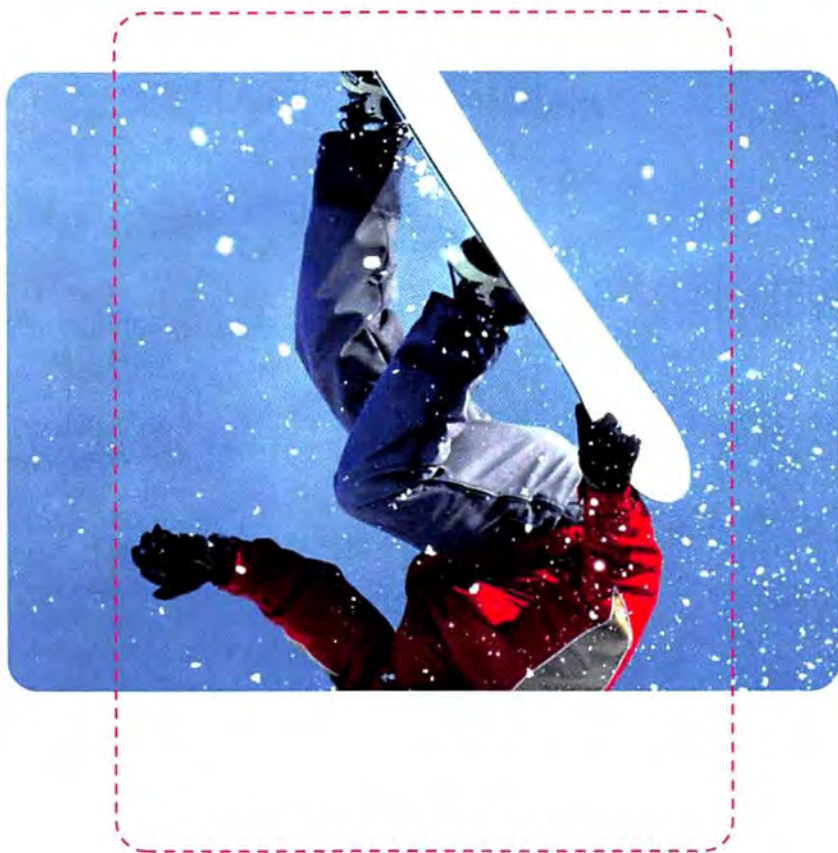


155

Cover Photography by Kevin Candland



BenQ.com



Portrait View.
See what you've been missing.



The FP991 19 inch display. Because sometimes vertical viewing is more fun.

The ultra-convenient FP991 with Pivot Pro™ Software allows you to easily switch from Landscape to Portrait View by simply turning your display. Now you can comfortably view documents and web pages without zooming or scrolling. With its impressive A+ Panel Quality, ultra-high contrast and brightness ratios, and flexible dual-input technology, the FP991 is the top-of-the-line choice for professionals who demand the best in image quality and style. Check out the view from BenQ. Call 1-866-700-2367 or visit us at www.BenQ.com/2003/PCWorld-FP991.

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Enjoyment Matters

TOP 100

Where's the Top 100? Don't worry. This month, we survey a multitude of *Top 100* categories in our special "Ultimate Hardware Guide." Starting on page 100, you'll find coverage of desktop and notebook PCs, ink jet printers, digital cameras, MP3 players, DVD drives, LCD monitors, PDAs, graphics boards, camcorders, and more.

DEPARTMENTS

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IM fees and 3D notebooks.
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Seven ways to ease the pain of working at your PC.
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One flaw affects many apps.
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The PC may be winning the battle for your living room.

RESOURCES

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TELL US WHAT YOU THINK

Visit www.pcworld.com/pcwinput and rate this issue—you could win a 20GB Apple iPod MP3 player, which currently sells for approximately \$400. You'll need the subscriber number from your mailing label to take this survey online. The site explains the official rules and also tells you how to participate in the drawing if you're not a subscriber. You can enter from November 6 through December 8, 2003.

COMING UP IN JANUARY

What's Hot in 2004: Which products and technologies will affect your life next year and beyond?
Find the Best Deals: Tips for finding true bargains and avoiding raw deals, both online and off.

Web Sites in a Flash: New tools and services let you create a Web site quickly and easily.
Photo Editors: We match several low-cost packages against each other—and against Photoshop.



55



71



NEWS & TRENDS

- 30 Prime Drive Time**
Advances in areal density permit huge desktop drives, tiny portables, and diverse new products.
- 36 Hot Rod PCs: Fast and Chic**
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- > 60GB hard drive
- > Intel Wi-Fi 802.11b wireless



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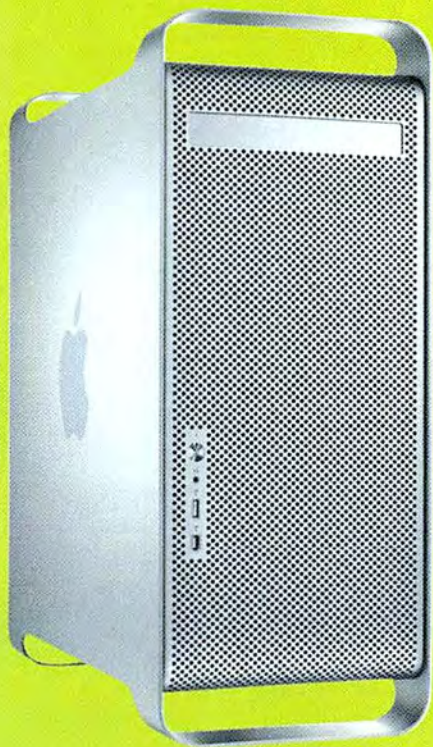
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This Month We Look at More Hardware Than You Can Imagine

FROM PRINTERS, laptops, and other office stalwarts to digital video recorders, smart TVs, and truly universal remotes, we have the hardware. A list of newcomers follows, with their star ratings, if any. Visit find.pcworld.com/10860 for more about PC World's Star Ratings.



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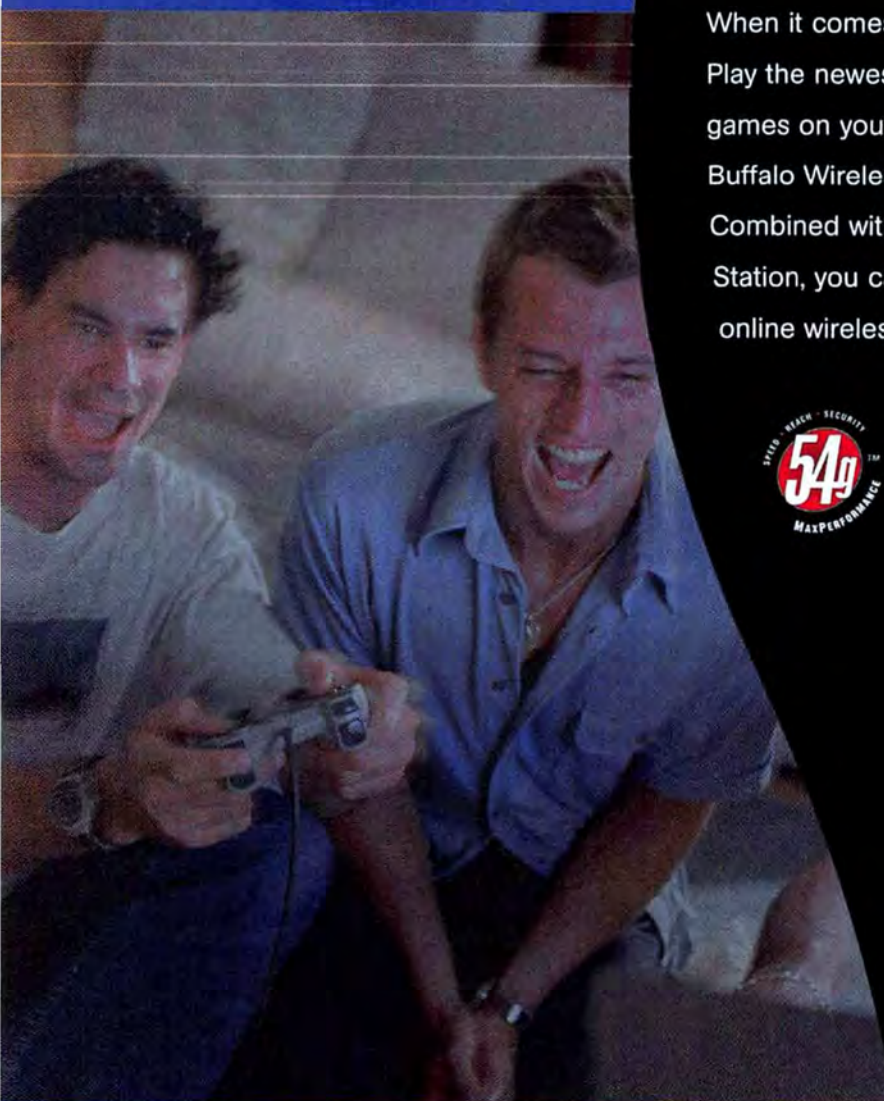
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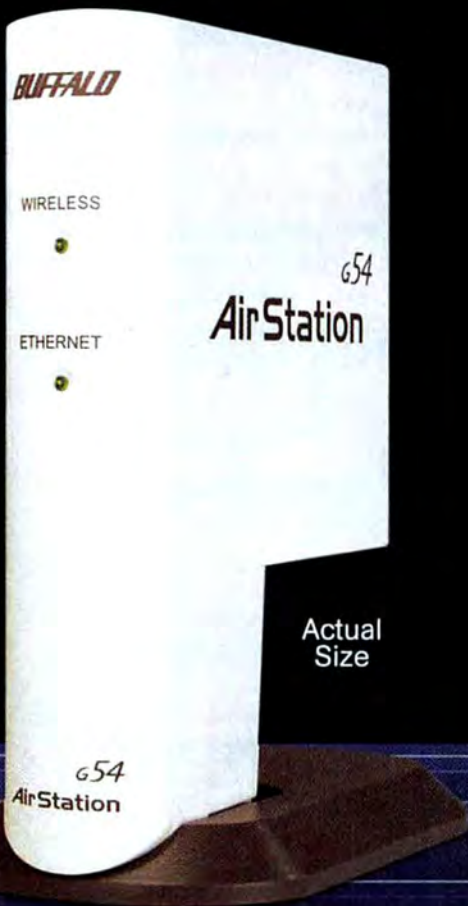
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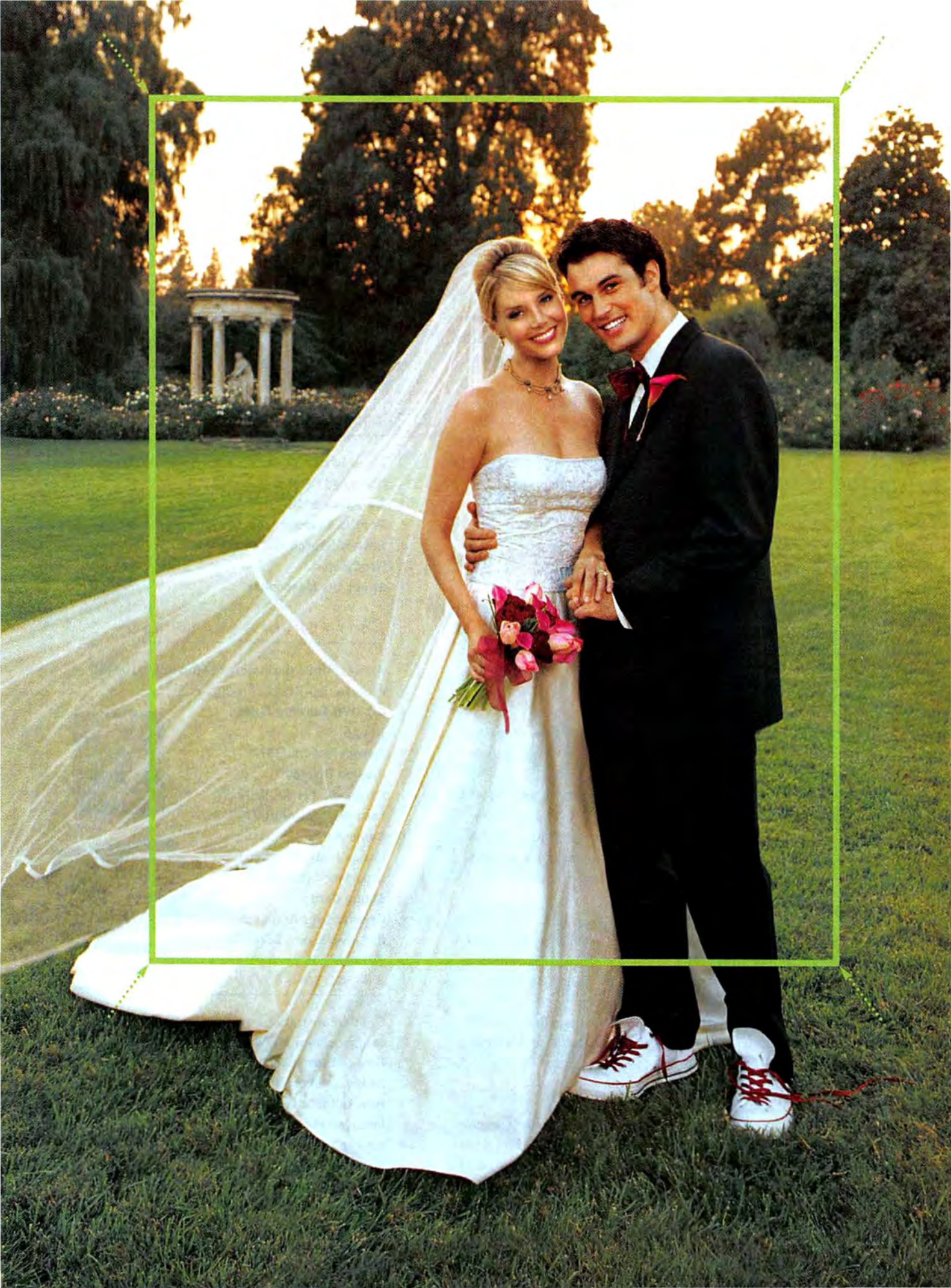
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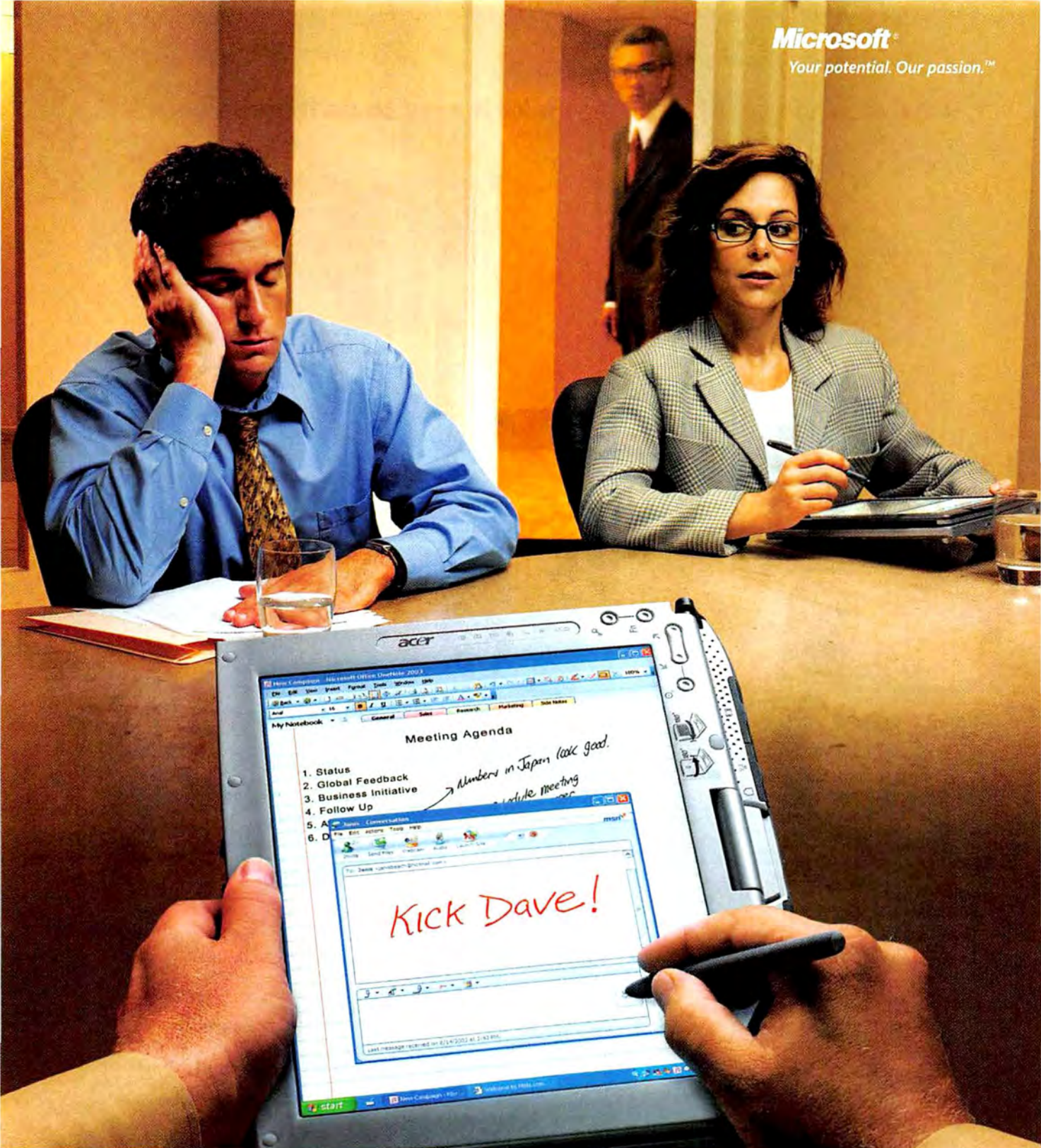
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UP FRONT

HARRY MCCrackEN

The Right Stuff Right Now—Right Here

Today's top products and makers, plus the debut of our newest section.

WRAPPING UP THE YEAR with a December hardware issue is a *PC World* tradition. Even by special-issue standards, though, this one is...well, special. Inside you'll find dozens of lab-tested products, our best-ever Reliability and Service survey, and a new section on the next wave of gear.

Our "Ultimate Hardware Guide" starts on page 100 with "The Best of Everything." Time was when you might have assumed that a *PC World* hardware extravaganza would center around reviews of desktops and laptops. But you've consistently told us that evaluations of products that make PCs better are at least as useful as reviews of PCs themselves. So "The Best of Everything" also covers digital cameras, rewritable DVD drives, LCD monitors, and much more.

Of course, savvy hardware-buying decisions are only partially about the hardware—they're also about the manufacturer behind it. Does the vendor have a history of building reliable equipment? And when problems crop up, does it fix them? To answer these questions, our Reliability and Service survey has reported on computer vendors, as rated by readers, since 1994.

We've upped the ante by adding printers, cameras, PDAs, and wireless gateways to our coverage of PCs in this year's "Reliability and Service Report Card" (page 132). The news is surprisingly positive: Readers reported fewer woes with peripherals than with the computers they plug them into. And for the first time in

years, our survey shows a modest uptick in overall PC reliability and service.

While "The Best of Everything" and "Reliability and Service Report Card" cover lots of territory, they're ultimately about traditional PC equipment. But these days, once-unshakable walls between product categories—from the PC to consumer electronics to mobile communications—are tumbling down. And as tech is evolving, so is *PC World*.

Consider the evidence: Media Center PCs are gunning to replace your stereo

and VCR. Newfangled consumer electronics products such as TiVo look suspiciously like specialized PCs, which, in fact, they are. Cell phones are tackling digital photography. And networking—wired and unwired, local- and wide-area—is

tying everything together.

Turn to "Fun Tech" (page 155), the last chunk of our guide, for a dozen products that reflect some of these trends. Then flip onward to page 167 for the inaugural edition of *Next Gear*, our new monthly section on the unified world of electronics. *Next Gear* will cover topics you might not expect to read about in *PC World*: This month's edition includes

next-generation TV sets, satellite radio, and universal remote controls. But we won't stray from our mission of helping you choose and use tech products and services. And in many cases, seemingly non-PC gear will have a PC angle after all.

Case in point: Among the multiplicity of inputs on many big televisions is a VGA port, which lets you turn a cutting-edge TV into an equally cutting-edge PC monitor. These models aren't cheap. Still, buying one huge, honkin' display could be smart if you're ready to put a PC at the center of your entertainment world.

One thing is for sure: In the months and years to come, personal-tech categories will continue to blur in unexpected ways. We can't wait to cover what's next, in print and on the Web—and we hope you'll be along for the ride.

Contact *PC World* editor Harry McCracken at mageditor@pcworld.com.



HARDWARE BONANZA: This special issue includes both "The Ultimate Hardware Guide" (above) and *Next Gear* (left), a new section on personal tech beyond the PC.

Product Ratings and Tests



Readers Rate the Makers



Home and Mobile Gadgets



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JEFF'S PRIME TIME

10:30 am	11:00 am	11:30 am	12:00 pm	1:00 pm	1:30 pm
Digital Photos Upload football game pics	Radio Tune into 'Football Talk' with Coach B	TV Review last week's football victory		E-mail Ask Billy in Philly for tickets	Web Check football chat board
News	Talk Show	Talk Show	News	Soap Opera	

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NEWS & TRENDS

EDITED BY RAMON G. MCLEOD

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PRIME DRIVE TIME

SLEEK, CAPACIOUS HARD DISKS ARE MAKING A NEW PLACE FOR THEMSELVES IN THE HOME AND ON THE ROAD. WE LOOK AT WHAT'S HERE AND WHAT'S NEXT. BY JON L. JACOBI

IT'S A HARD-DRIVE industry mantra: Each succeeding generation must be faster and fit more data into less space. But while performance gains have been modest recently, areal density (gigabytes per square inch) continues to grow. The result: roomy desktop drives, tiny portable hard drives that hold truly useful amounts of data, and other new products such as easy-to-install network-attached drives for homes and small businesses. And you can expect to see new functions and greater capacities in 2004.

LESS IS MORE

A COUPLE OF years ago, adding an external drive meant choosing between easily portable low-capacity models and bulky high-capacity units. But that has gradually changed as hard-drive makers squeeze additional storage into ever-shrinking forms. Consider the



D-LINK'S Central Home Drive device (left) and Ximeta's NetDisk.

smaller-than-a-floppy Archos 20GB ARCDisk (\$250, find.pcworld.com/38630; no other capacity currently available). Based on Hitachi's 1.8-inch DK14F1-20 mechanism and weighing only 2.7 ounces, this highly portable USB 2.0 drive sips power so parsimoniously

that you usually don't need its AC adapter: It can run off of USB power alone. LaCie uses Toshiba's similar 20GB drive in its nearly-as-small Data Bank (\$299, find.pcworld.com/38633), and the company plans to use Toshiba's 40GB model in future Data Banks.

Though both the LaCie and the Archos run a bit warm in constant use, both units make a great higher-capacity alternative to flash memory drives for your sneakernet or commuter net. (See "Little Drives, Big Promises" on page 32 for more about thumb drives.)

Internal drives remain far more cost-effective, of course. And people who want capacities above today's 300GB maximum won't have long to wait. Drive makers have announced technology (or actual drives) capable of raising areal density to permit drives of 400GB, 500GB, and even 1 terabyte in the next couple of years, say industry experts. Seagate's 200GB Barracuda 7200.7 SATA drive will ship before year's end for about \$200. It utilizes a pair of double-sided platters (each holding 100GB on board, up from 80GB); this lowers the number of moving parts, increases reliability, and reduces overall drive costs for makers. Maxtor's PMR technology can pack a whopping 175GB maximum per platter, but it is farther from production; the company has not released any specifics on drives using this technology.

NAS FOR HOME

RELATIVELY HIGH costs and complex setup formerly relegated network-attached storage (external storage that you attach to a router or ethernet port instead of to a USB or FireWire port) to a business-only product. No longer. New devices from vendors such as Ximeta and D-Link bring NAS to your home or small office, inviting you to add storage that (unlike your PC's local drive) is accessible by anyone on the network, whether the PC is on or not. And it allows you to increase the storage capacity of every networked system, without so much as a glance at your screwdriver.

As more people put irreplaceable personal data onto

their PCs (you can't rebuild, say, a picture of your 5-year-old on a merry-go-round), regularly backing up becomes even more important, says David Reinsel, IDC research manager for hard drives. Consumer NAS fulfills that need.

Such products may also become central data repositories.



ARCHOS'S ARCDisk packs 20GB in the palm of your hand.

Instead of buying a complex entertainment server, consumers may opt for simple-to-use drives for storing and sharing video files, music files, and other data everyone at home wants to access, Reinsel adds.

The 20GB D-Link Central Home Drive (\$249) uses Windows XP and Me's Universal Plug and Play to make installation a one-step affair: Connect the drive to a router or network connection using an ethernet cable, turn it on, and—faster than you can say “file sharing”—it's available via the Windows My Network Places icon. You don't have to configure your router or even install a software client to use the D-Link drive; but to create and delete folders and set read/write privileges, you must use a browser. Not to worry: We found the Web interface on our preproduction drive very easy and intuitive to use. Ship-

ping units should be available by the time you read this (find.pcworld.com/38639).

Shipping now, Ximeta's Net-Disk home NAS drive (find.pcworld.com/38642) is less expensive and comes in higher capacities (80GB for \$190, and 120GB for \$230), but it's also a bit harder to set up. To enable reading and/or writing for every PC you wish to access the drive from, you'll need to install a driver and client software, and then enter codes from a label on the bottom of the drive. Once you've finished that step, however, you won't need to browse the network to access the Net-Disk—it appears as a normal local internal or external drive within Windows Explorer.

IN THE WORKS

THANKS TO FASTER maximum transfer rates and more-compact cabling, Serial ATA drives have already made an impact, and they are well on their way to replacing PATA (plain old or parallel ATA). Not content to rest on SATA's laurels, the SATA II spec adds functions that should appear in drives within the next year.

The first new technology you'll see for SATA is Native Command Queuing. (A similar function has been available on SCSI and Fibre Channel products.) With NCQ, SATA drives can execute and prioritize multiple read/write commands on their own, saving CPU cycles and storing or retrieving data faster.

Western Digital and Seagate have each demonstrated SATA drives with NCQ, and Seagate includes NCQ support in its Barracuda 7200.7 units. ►

IN BRIEF

Product Pipeline



CUT THE CORD: LCD TV goes portable with the arrival of Sharp's 15-inch wireless Aquos LC-12LIU-S television. The battery-operated set can detach from its base station, and a built-in handle on the top simplifies carrying it between rooms or outside. You transfer content to the set from a video source (like a cable box or a DVD player), using Sharp's 802.11b-based SmartLink wireless digital audio transmission system. The \$1799 TV includes a rechargeable battery that Sharp claims should power the set for 3 hours at a time.

Tidbyte

NAPSTER REBORN: Are Web surfers ready to embrace the reincarnation of Napster? Roxio certainly hopes so: The company has just launched

Napster 2.0, a legal, fee-based version of the original song-swapping site, which was shut down by the courts in 2001. Napster 2.0 offers downloadable songs for \$1 each and albums for \$10, as well as a \$10 monthly subscription. This follows the successful model used by Apple's iTunes, which itself is now available for Windows PCs as well as for Macs.



Still, you won't be able to use the function until next year, when SATA chips and controllers implement it. Once that's done, expect boosts to apps that access smaller files multiple times, like databases or contact managers.

Even better for IT and business types are SATA II's port-selection and port-multiplying functions. With selection, several (in current practice, two) host adapters can attach to and access one drive. A SATA II port multiplier links to a SATA cable (SATA 1.0 is one drive per port/cable) and provides connections for multiple drives. This won't allow you to chain drives à la USB or Fire-

Wire, but vendors like Maxtor have shown four drives running off a single port.

These technologies should debut by mid-2004, says IDC's Reinsel. Increasing SATA's top transfer rate from 150 to 300 MBps will come later.

PATA drives will get boosts during the coming year, too, through ATA/7 (the latest revision of the spec). Copping a page from Maxtor's QuickView technology, which garnered the company a huge share of the drive-based digital video recorder market (TiVo, ReplayTV, and the like), ATA/7's T13 AV commands enable makers to ditch most of the error checking required by PC

apps. A bad bit can crash executable programs or ruin data files, but it's rarely perceptible in AV streams, so it makes sense to skip error correction and move on with the show, increasing performance by up to 30 percent. The new command set means more concurrent AV streams and reduced stress on the drive.

This probably won't be a user tweak: Drives will likely ship from makers to industry customers with error correction on or off, Reinsel says.

With vendors packing more bits and functions in, and with prices perpetually falling, hard disks continue to be one of the best values for upgraders. ■

FLASH MEMORY

LITTLE DRIVES, BIG PROMISES

FLASH MEMORY DRIVES in the popular thumb-drive format have moved beyond simple storage and are getting both handier and faster as they add new functions or upgrade to USB 2.0.

Vendor specs suggest many users can benefit by jumping from USB 1.1 to 2.0, which can yield speeds up to 9 megabytes per second for reads and 7 MBps for writes, up from about 1 MBps (read and write). Verbatim's Store-n-Go (find.pcworld.com/38645) and M-Systems' DiskOnKey Classic 2.0 and Pro (find.pcworld.com/36032), among others, offer USB 2.0 drives in capacities up to 1GB (the 1GB models cost over \$300).



M-SYSTEMS' DiskOnKey (top), Soyo's Aeriellink (middle), and Forward Solutions' Migo.

You may be able to use them to boot up, too, provided that your PC's BIOS supports booting from flash (you should be able to upgrade your BIOS if a version with support is available). We tried unsuccessfully to boot from our DiskOnKey with several systems. The vendor described the program as problematic at this point and is leaving implementation to PC vendors, but M-Systems will furnish the utility to users on request.

Another trick, practiced by M-Systems and by Forward Solutions with its Migo drive (\$150 for 128MB and \$200 for 256MB; find.pcworld.com/38648), is a utility that transfers some of your desktop or e-mail settings between each PC you work on and (with the M-Systems drive) can also sync some files. We found the Migo's interface funky and a bit unintuitive, although it worked more automatically than the M-Systems unit; the concept may be more trouble than it's worth.

Last but not least: Expect more combination thumb drives. Vendors have been using the drive format to provide wireless 802.11b connectivity, but now Soyo offers both wireless capability and 128MB of storage in its \$119 Aeriellink Wireless Flash Combo (find.pcworld.com/38651). The unit worked well in our trials and is available now; a \$199 256MB model is coming in early 2004.

IN BRIEF

Product Pipeline



MINI MEGAPIXELS: Interested in a truly tiny digital camera? The new Veo Mini Capture is a 1.3-megapixel digicam in a package that measures 1.5 inches by 2.4 inches—that's about the size of a typical car alarm remote. Designed to fit on your key chain, the \$70 Mini Capture comes with a sliding cover to protect the lens and viewfinder from getting scratched by your keys. The device has 8MB of built-in memory, and also comes with a slot for adding an SD memory card. find.pcworld.com/38555

Tidbyte

SPAM Watch COULD YOU BE to blame for the spam epidemic? Even if only a few people respond to a piece of junk e-mail, it's still worth the spammer's time to send out that unrequested message. To help put a halt to the onslaught of unsolicited commercial e-mail, we all need to stop replying. That's the central message of a consumer awareness campaign launched by Australia's Internet Industry Association. The research involved was supported by AOL, Microsoft, and Yahoo, among others. The IIA hopes to spread its message of "Don't Try, Don't Buy, Don't Reply" to consumers around the world. find.pcworld.com/38558



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For more information, visit
<http://www.BenQ.com/2003/PCWorld-PB2000series>.

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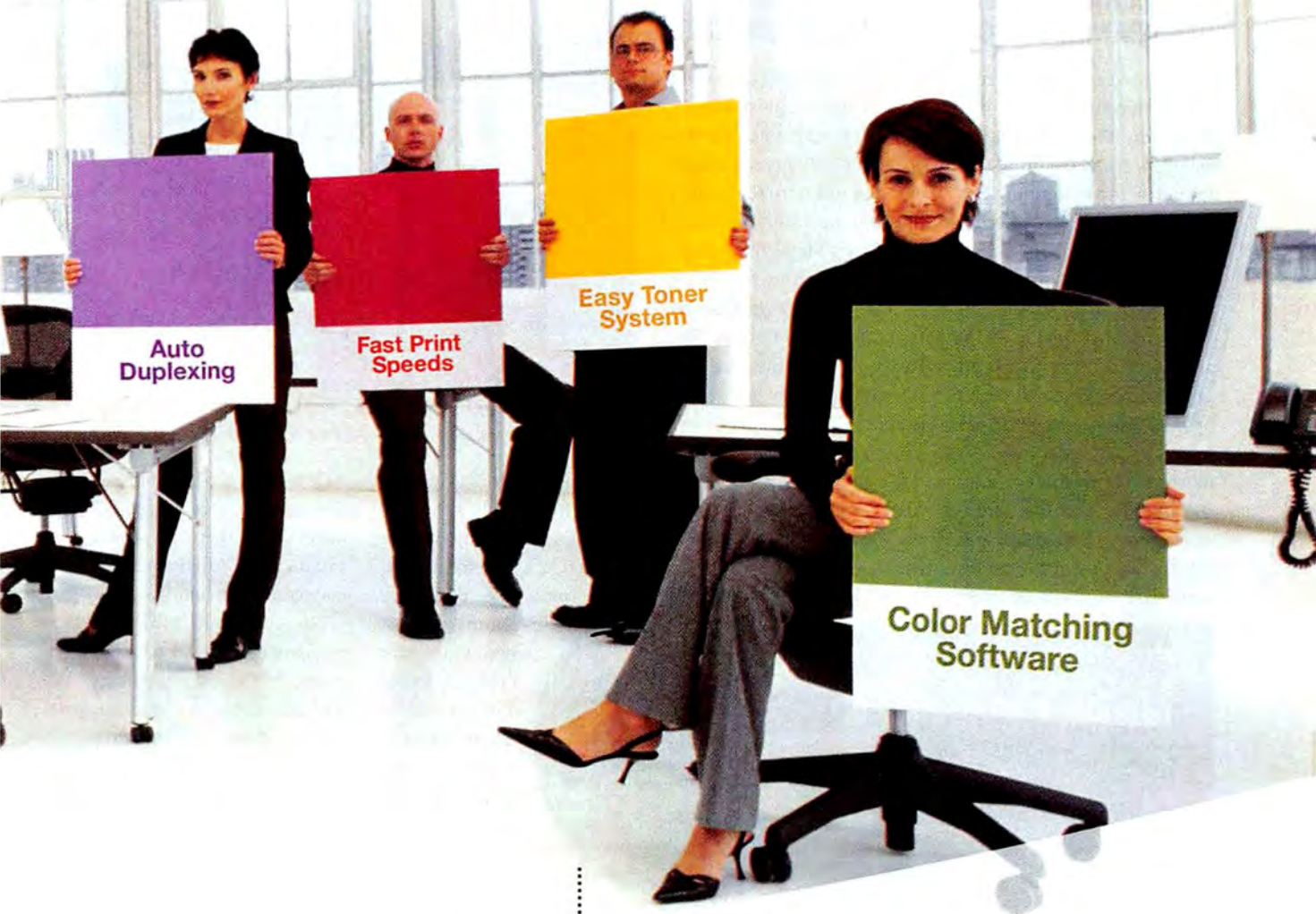
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DESKTOPS

HOT ROD PCs: CHIC AND UNIQUE

ONCE A NICHE, THE HIGH-END PC MARKET HAS DRAWN DELL, GATEWAY, AND HP ENTRIES.

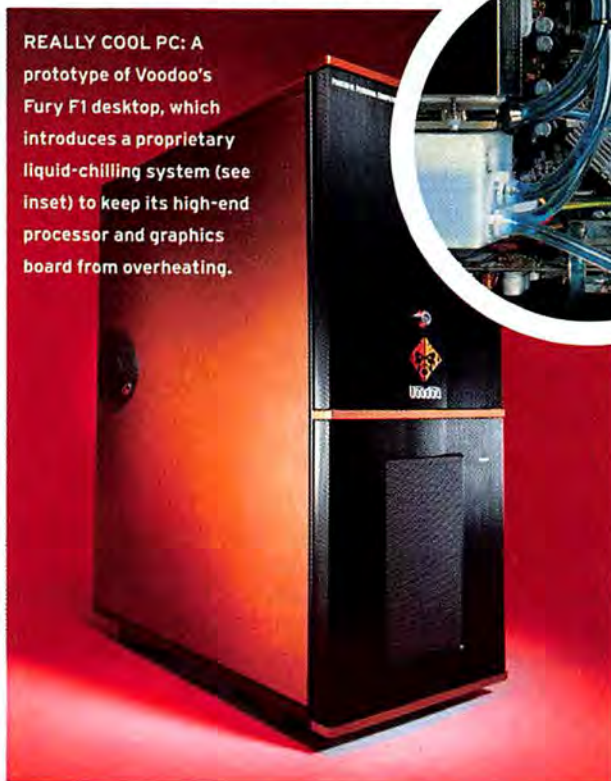
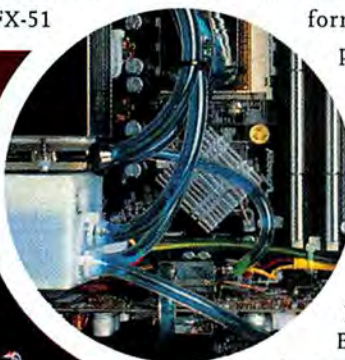
WHEN A DECENT PC from a reputable company costs just \$550, why should anyone be willing to spend ten times that for a desktop computer? For the same reasons that some people buy a Lamborghini instead of a Corolla: power, performance, and prestige.

Recent launches by AMD and Intel of ultra-high-end processors—along with forays by Dell, Gateway, and HP into expensive performance PCs—illustrate a trend that specialty PC vendors such as Alienware, Falcon Northwest, and Voodoo have cashed in on for some time: Offer a product

that's unique and fast—and maybe even cool-looking—and some people will pay top dollar for it. "There is a class of users out here that wants the best our industry has to offer," says Mark Vena, director of marketing for Dell's Dimension Desktop Transactional Products Group. "We have legitimized the category."

Serious money buys technologies you simply won't find in the average PC. Voodoo's new Fury F1 desktop, for example, uses a proprietary liquid-chilling system to keep its AMD Athlon 64 FX-51

REALLY COOL PC: A prototype of Voodoo's Fury F1 desktop, which introduces a proprietary liquid-chilling system (see inset) to keep its high-end processor and graphics board from overheating.



POSH PATRIOTIC PC: Falcon Northwest's hand-painted custom flag case features 19 layers of detail. Cost (case only): \$700.

CPU and its NVidia GeForce 5950 Ultra graphics card supercool, allowing the vendor to overclock each for top performance. The price premium over what you would pay for a plain air-cooled Fury system is \$500. Average wait time for a Voodoo system: 30 days. Average price: \$5800.

Big money also buys the "oooooh" factor—the reaction your rig elicits when your buddies come over to see it. Falcon Northwest's custom chassis paint jobs alone run from \$400 for a standard car-type color to \$700 for a hand-painted flag case, complete with 19 layers of detail.

But the beauty of these custom machines isn't just skin deep. They're typically outfitted with the latest, most powerful processors and plenty of fast memory. Our first three

Athlon 64 FX-51 systems—averaging a record-setting 142 on PC WorldBench 4—were produced by Alienware, Falcon Northwest, and Voodoo.

The small but influential group of enthusiasts who buy exotic PCs know technology and are willing to pay to stay on the cutting edge, says Roger Kay, director of client computing at IDC. Typically they are gamers, but other PC buyers often look to these early adopters for advice, which gives them considerable industry clout. "It's in this gaming PC market that some of the mainstream trends for tomorrow are forged," Kay says.

Falcon Northwest president and founder Kelt Reeves concurs, noting that avid gamers helped bring PCs with RAID hard-drive configurations into the mainstream. Next up: 64-bit computing. "Our enthusiast audience loves this sort of stuff," Reeves says.

—Tom Mainelli ■

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SECURITY

THE PATRIOT ACT RECONSIDERED

NEXT ROUND OF ANTITERRORIST LEGISLATION SEEKS TO BALANCE PRIVACY AND SECURITY.



SUPPORTERS of the Patriot Act consider it an invaluable tool in the fight against terrorism. Opponents view it as a crude cudgel that smashes electronic privacy rights and severely damages civil liberties.

Now, as elements of an expanded piece of legislation once dubbed Patriot II move through Congress, debate over the original Patriot Act has intensified, prompting legislation aimed at reining it in.

CALLS FOR REFORM

PASSED overwhelmingly by Congress shortly after the September 11, 2001, attacks, the wide-ranging Patriot Act contains provisions that tighten restrictions on foreign fund transfers, set border patrol officers' overtime pay, and reimburse victims of terrorist acts.

But the parts involving data gathering—including fewer restrictions on law enforcement, less oversight, and less public accountability for surveillance of electronic communications—have generated the most controversy. (Visit find.pcworld.com/38741 for a full copy of the law.)

Congress is considering at least eight bills that would alter the Patriot Act, which is set to expire in 2005. But the one drawing the most attention—and support, from both conservatives and liberals—is S. 1552, sponsored by Senator Lisa Murkowski (R-Alaska).

Cosponsored by Senator Ron

Wyden (D-Oregon), the bill would overhaul provisions that have raised privacy concerns, while acknowledging that law enforcement needs strong tools to fight terrorism. S. 1552 would give courts more power

about its chances in 2004 because it enjoys the backing of groups that span the political spectrum, from the conservative Americans for Tax Reform to the liberal American Civil Liberties Union.

“The charges of the hysterics are revealed for what they are: castles in the air.”

to regulate government investigations and would define the type of Internet-usage records and e-mail information that law enforcement agents could obtain. It would also require greater public reporting on activities conducted under the Patriot Act. (Browse to find.pcworld.com/38747 for a full description of S. 1552.)

“This legislation will give the courts more discretion in granting orders to allow search and seizure and electronic surveillance,” Murkowski said of her reform bill. “It should help calm the growing fears of Americans that government agencies might overreach and needlessly violate Americans’ rights to privacy without just cause.”

The bill, which is in committee for further study, is unlikely to pass this session. But legislative insiders are cautiously optimistic

Murkowski also supports the Security and Freedom Ensured Act (S. 1709), another bipartisan bill that would impose increased oversight on activities authorized by the Patriot Act. Its prime cosponsors are Senators Larry Craig (R-Idaho) and Dick Durbin (D-Illinois). (See find.pcworld.com/38744 for a description.)

Patriot II, originally known as the Domestic Security Enhancement Act, was circulated as a draft, but never actually introduced. It met such stiff criticism early this year that proponents broke it into several parts that are now components of separate legislation.

For example, a provision authorizing administrative subpoenas (search orders that don’t require court review) is in H.R. 3037, an antiterrorism bill sponsored by Representative Tom Feeney (R-Florida).

The Pretrial Detention and Lifetime Supervision of Terrorists Act, introduced as H.R. 3040 by Representative Bob Goodlatte (R-Virginia) and as S. 1606 by Senator Jon Kyl (R-Arizona), contains another Patriot II provision: It would let authorities detain suspected terrorists without bail, without

having to demonstrate to the presiding judge that the suspects are dangerous or are likely to flee. All of these bills were referred to committee and are unlikely to reach a floor vote this year.

TERROR TOOL

CRITICISM of the Patriot Act led this summer to an unusual series of speeches given by Attorney General John Ashcroft in defense of the law. He said that it has helped crack cases like one in Buffalo, in which six men arrested in ►



ATTORNEY GENERAL John Ashcroft hit the road to deliver speeches defending the Patriot Act.



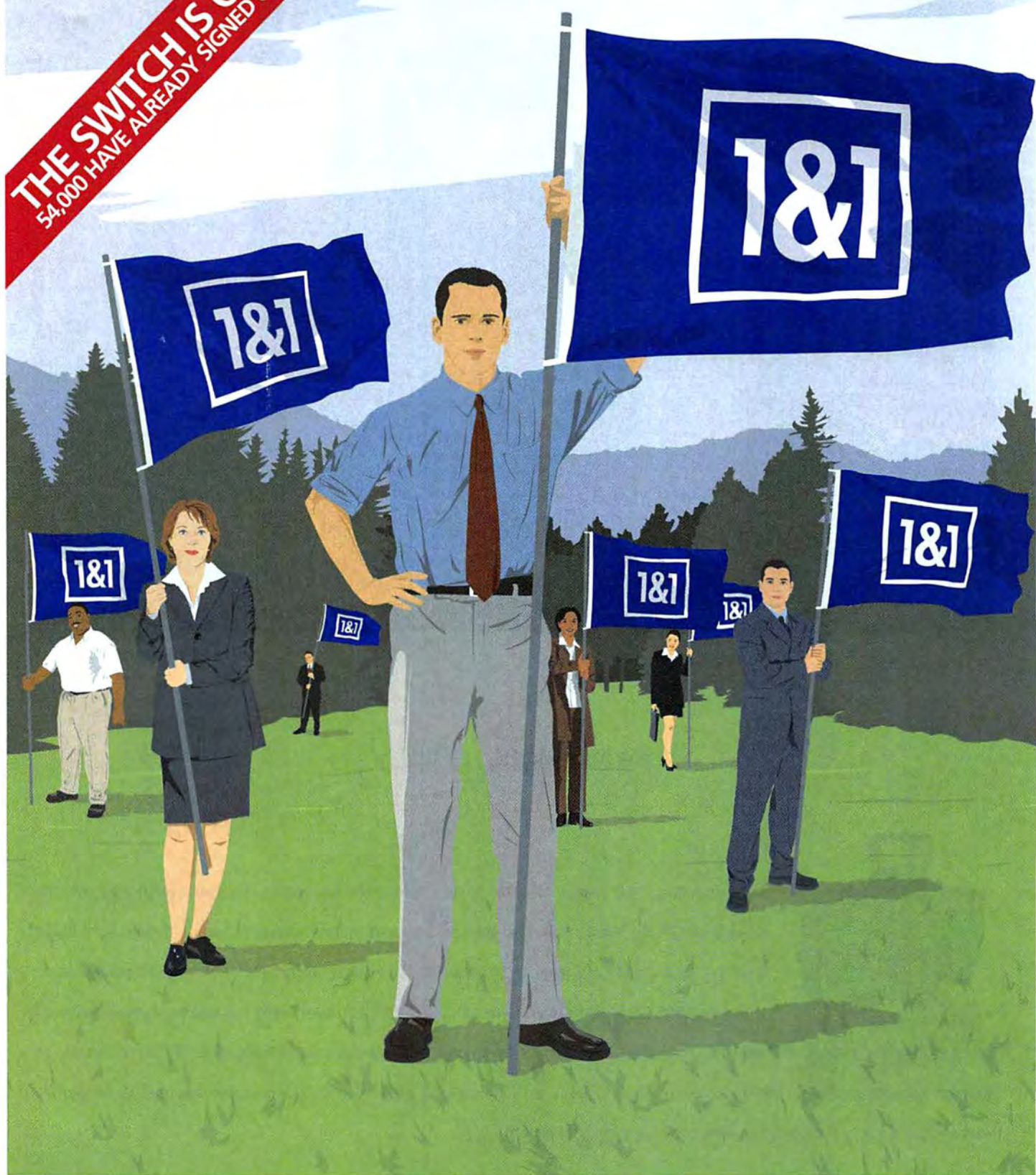
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1&1

WEB FREELY

July 2002 were charged with raising money for a terrorist training camp in Afghanistan. Two suspects have pleaded guilty to the charges and have agreed to assist prosecutors. Four other terrorist cells have been dismantled thanks to the law, according to proponents, resulting in criminal charges filed against 262 suspects.

Fears that the government might abuse the law are wildly exaggerated, its backers say.

"Not a single court in America has validated any of the

charges of violations of constitutional rights in connection with the Patriot Act," Ashcroft declared in a speech in Memphis on September 18. "And so the charges of the hysterics are revealed for what they are: castles in the air."

CHANGING ATTITUDES

YET A SEA CHANGE has occurred in many lawmakers' attitudes about the Patriot Act and other national security measures. Earlier this year, Congress eliminated the gov-

ernment's Terrorism Information Awareness program—a huge data-mining project that allowed cross-references of electronic transactions—which several civil-liberties groups denounced. And this summer, the House cut all Justice Department funds that would have been available for "sneak and peek" searches—those conducted covertly, without notifying the target.

The shift in congressional opinion seems largely due to the coalition of organizations

that oppose the Patriot Act—disparate interest groups that agree on little else. As a result, legislators in favor of various reform measures come from both sides of the aisle.

"When there is a letter of support for an ACLU position sent out to Republican members that's signed by [former Republican congressman] Bob Barr, I guess you could say the support is bipartisan," says Charlie Mitchell, ACLU legislative counsel.

—Bill Wallace ■

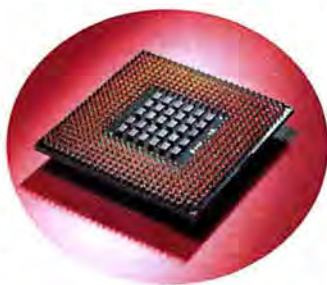
PROCESSORS

HIGH-END P4: BETTER, NOT BEST

INTEL'S SURPRISE CHIP IS COMPETITIVE, BUT DOESN'T BEAT AMD'S TOP ATHLON PROCESSOR.

WITH THE UNEXPECTED announcement of the company's first gaming-oriented processor—the Pentium 4 Extreme Edition—Intel obviously hoped to steal some thunder from AMD's Athlon 64 launch. But while *PC World* tests show that the new P4 EE outruns a standard Pentium 4, AMD's shipping Athlon 64 FX-51 outperforms both.

We tested the P4 EE, a 3.2-GHz CPU with a whopping 2MB L3 cache, on an Alienware PC originally equipped



TAKE THAT, AMD: Intel's Pentium 4 Extreme Edition.

with a standard 3.2-GHz P4. That system included 1GB of memory and an ATI Radeon 9800 Pro graphics card with

256MB of graphics memory—as did each of three Athlon 64 FX-51-based systems (from Alienware, Falcon Northwest, and Voodoo).

On PC WorldBench 4, the average score of the three Athlon 64 FX-51 systems was 142, about 8 percent higher than the P4 EE system's score of 131 (the same system with a standard 3.2-GHz P4 scored 126). The FX-51-based PCs also dominated the P4- and P4 EE-based PCs in our AUGI Gauge and Premiere 6 tests.

Other scores were closer, but the only test in which the P4 EE unit actually beat the AMD competition was the one for Musicmatch 7.1 encoding (see find.pcworld.com/38616 for a full test report).

The average cost of the FX-51-based systems we tested for last month's issue (see find.pcworld.com/38618) was over \$3300. Intel expected to begin shipping of vendor and retail processors in early November. Volume pricing for the P4 EE is higher than for the Athlon 64 FX-51, but the AMD chip requires both a more expensive motherboard and costlier memory. Analyst Kevin Krewell at Reed Business says that he expects P4 EE systems to cost about the same as comparably configured FX-51 PCs.

Gamers should be pleased with either chip, but the Athlon 64 FX-51 has two notable advantages: It's 64-bit-ready, and it's easier to overclock.

—Tom Mainelli ■

TEST REPORT

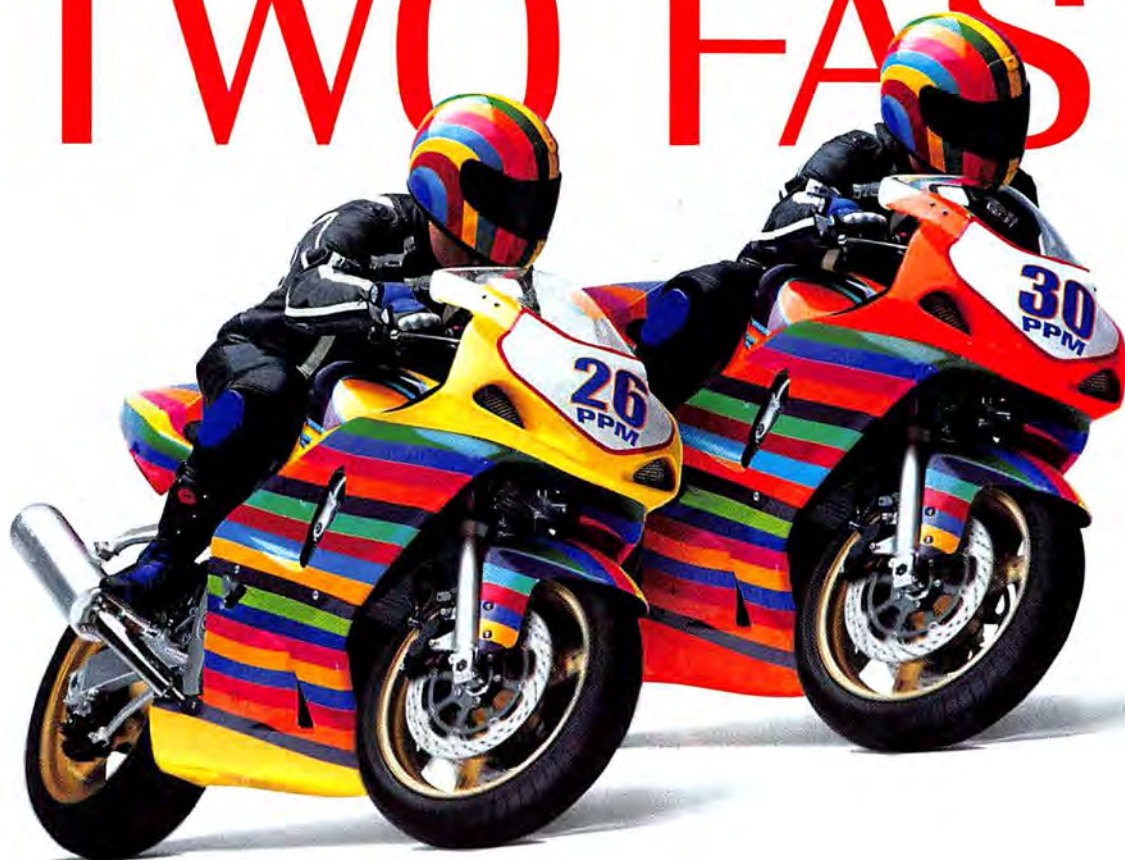
PENTIUM 4 EE CHALLENGES ATHLON 64 FX-51

AMD's LATEST CHIP still rules, beating the Intel competition in almost all tests.

SYSTEM	Processor	PC WorldBench 4	
		Faster	FRAMES PER SECOND
Average of three systems	2.2-GHz Athlon 64 FX-51	142	379
Alienware Area-51 (modified)	3.2-GHz Pentium 4 EE	131	340
Alienware Area-51	3.2-GHz Pentium 4	126	292

¹Game tests performed at 1024 by 768 resolution at 12-bit color depth. See find.pcworld.com/38616 for a complete test report and methodology.

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NETWORKING

WI-FI AT THE SPEED OF ETHERNET?

NETGEAR'S 108-MBPS WIRELESS PRODUCTS ARE BASED ON THE 802.11G WI-FI STANDARD.

JUST WHEN you felt sure the fastest wireless networks move data at 54 megabits per second, Netgear introduces a wireless firewall router and PC Card that it says will transfer data at 108 mbps—speedier than 100-mbps ethernet.

The WGT624 router and WG511T PC Card, both based on the 54-mbps 802.11g standard, boost performance by using compression and by simultaneously broadcasting over 2 of the 11 channels in the 2.4-GHz band that 802.11b and 802.11g products use.



NETGEAR'S 108-mbps WI-FI router and PC Card.

But just as obstructions, distance, and encryption prevent an 802.11g network from truly moving data at 54 mbps, Netgear's new line doesn't work at anything like 108 mbps.

Typically, 802.11g networks perform at 10 to 15 mbps. In

my tests, Netgear's 108-mbps products succeeded in moving data at up to 24 mbps, roughly twice the rate of 802.11g products but still substantially lower than my 100-mbps-rated ethernet network's maximum real download speed of about 40 mbps.

When configured for 108-mbps mode, the shipping base station cannot handle traffic from 802.11b or 802.11g wireless cards. By year's end, however, Netgear plans to have released a firmware upgrade that will allow the base station

to operate automatically in mixed environments, albeit at significantly slower speeds. (Meanwhile, D-Link has announced a similar, free firmware upgrade that will enable its Xtreme G 802.11g line to match the Netgear's nominal 108-mbps transfer speeds.)

With current street prices for the WGT624 base station hovering around \$130 and the PC Card going for about \$75, Netgear's 108-mbps line costs about 20 percent more than comparable 802.11g products. But if you're upgrading from 11-mbps 802.11b, the performance gains are appealing.

—Matt Lake ■

CONSUMER ALERT

TOP CAMERA COSTS TUMBLE

CANON'S REBEL PUSHES PRICES OF DIGITAL SLR CAMERAS DOWN.

SLR (SINGLE-LENS reflex) digital cameras have reached a new low—in pricing, that is—with Canon's EOS Digital Rebel, the first SLR priced below \$1000. The 6.3-megapixel unit is \$899 (body only); for \$100 more you can add Canon's EF-S 18mm-to-55mm lens, which makes the Rebel cost about \$600 less than its closest competitors.

The Rebel won't remain the only sub-\$1000 SLR for long: Around March, you can expect news of

competition from Nikon and others, says Chris Chute, senior analyst at IDC Research.

Perhaps inevitably, some features are missing at this price. The Rebel's light, sporty

plastic case seems less resilient than the solid, heavy-duty case and accompanying parts of its closest rivals, Nikon's D100 and Canon's EOS 10D (each costs \$1499 for the body; lenses start at \$140). And though the Rebel has the same resolution and processing chip as the 10D, the pricier SLRs take more frames per second (3 fps for the D100 and 10D, versus the 2.5-fps limit of the Rebel), which makes a significant difference when you



CANON'S EOS Digital Rebel.

are shooting sports events or other fast-moving subjects. (Consult "Digital Cameras: Impress With Pixels" on page 114 to see our picks for the top cameras from \$150 to \$900, and see next month's issue for a full review of SLR models.)

Pros should benefit from the Rebel's debut, since it will likely lower the prices of other SLRs. Meanwhile, less demanding users seeking an entry-level SLR can save over \$500.

—Grace Aquino ■

DIGITAL SLR PRICING





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- Giga Pocket® Personal Video Recorder
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RZ Series

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CAN WE MAKE BACKUPS EASIER?

REGARDING STEPHEN MANES'S "Backing Up: Still Hard to Do" [*Full Disclosure*, October]: That it is—even though it's been drilled into our heads that backing up our files is almost as important as creating the information in the first place. And yet, as Manes says, "Microsoft still gives backup the back of its hand."

He mentions Microsoft's Backup utility—

installed on XP Pro, but buried as an extra in the Home-version CD and likely inaccessible to those with only recovery disks from their PC's manufacturer.

A slow trawl through the Net finally unearthed the backup utility NTBackup.msi on Bob Cerelli's Windows Page site (find.pcworld.com/38660).

While not the most elegant backup solution, it beats nothing at all.

Barry W. Cook, Toronto

THE BEST AND SAFEST way to back up is to use a second hard drive.

My medical office scans our inactive patient records into our computer, but I worried about losing these. Florida law requires us to keep records for at least six years. We also have a billing program that contains lots of valuable data.

So my computer guru suggested using an empty bay in the tower to add a second, removable hard drive. A few weeks later, our system would not boot up. I removed the defective drive and replaced it

with the spare one. Voilà! We were up and running. I used Symantec's Norton Ghost to copy from the good drive and overwrite the defective one.

It is important to keep the extra drive in a safe place. So even if someone steals my PC, I still have the programs and records.

L. Jerome Krovetz, via the Internet

STEPHEN MANES is right in saying that "there's no one right strategy" for backups. But even a good strategy can go wrong for unforeseen reasons.

I have long backed up my data files by using the compression program associated with Windows Me. Recently, when I tried to recover specific files, I learned that the compression program does not store files or folders with a comma in the name! This has required my renaming dozens of files and folders. For example, a folder called "correspondence, old" had to be renamed "correspondence - old."

Anyone with .zip files may want to check those files' contents.

Stanley J. Storf, Edison, New Jersey

TACKLING PC ANNOYANCES

AN UNEXPECTED benefit—that's what I got when I took your advice in the item "Nix the New Spam Threat" (from Messenger Service ads) and downloaded the freeware Shoot the Messenger ["50 Fixes for the Biggest PC Annoyances," October]. Not only did it block those annoying pop-up ads as advertised, but it completely eliminated a chronic problem. I had been getting continual "Access Violation" error notices for Outlook Express 5.5 and Internet Explorer 5 that required rebooting. I was just about to give up and switch to Netscape when your magazine arrived.

A week has now passed, and my system is rock solid.

Joel Barnett, via the Internet ▶

LETTER OF THE MONTH

Understanding Hard-Drive Sizes

I'VE BEEN READING about a group that's suing PC makers for deceptive advertising of hard-drive sizes ["PC Makers Sued Over Hard-Drive Storage," find.pcworld.com/38612, from MacCentral.com, the news site of PC World's sibling publication Macworld]. This case has no merit.

Hard-drive manufacturers usually determine the size of the drive based on the old metric standard, where kilo = 1000. So the notations are powers of ten (kilo, mega, giga). But this group seems to believe that kilo = 1024 (or 2^{10}) and that PC makers are using deceptive notations to promote drive sizes. Not so. A kilobyte (KB) nor-

mally means 1000, but a kibibyte (KiB) = 1024, according to the International Electrotechnical Commission standard [www.iec.ch/zone/si/si_bytes.htm]. Manufacturers are using the correct notation, as they are calculating the hard-drive size (unformatted) using the old standard (metric).

When a PC or operating system calculates a drive's capacity, the result will be a multiple of 1024 (1 kibibyte), but it uses metric notation such as gigabyte rather than gibibyte. So while capacity measurements may state x billion bytes (GB), actual formatted capacity will be less.

Aaron Lindsay, via the Internet

Home Networking?

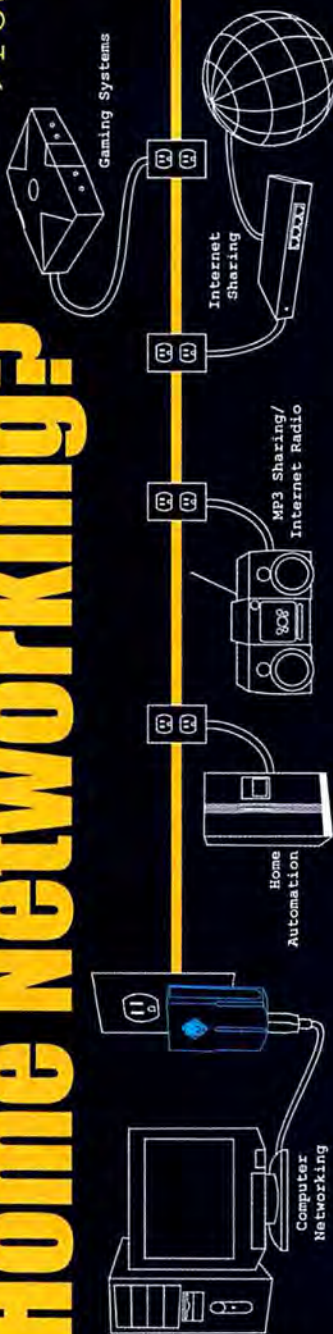
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LETTERS

I NOTICED THAT recently—including in the October issue—*PC World* has been carrying many articles about fixes, tips, and annoyances and how to correct them. I looked through my issues for the past year, and almost half have had a cover story on tips. Enough already! Get some real content, not the same old stuff.

Eric Levin, Fair Lawn, New Jersey

WHY DIGITAL CAMERA MISSED THE PICTURE

GRACE AQUINO'S response to Barry Rosen about the viewfinder problem with his Kodak digital camera may not be the whole story [On Your Side, October]. As the Kodak spokesperson suggests, one cause could be shutter lag. But another could be *parallax*, which occurs when the viewfinder is offset from the lens that actually takes the picture. The closer one is to the subject, the greater the parallax, and Rosen was trying to take close-ups.

Kathlene Flores

Huntington Beach, California

BEST SOFTWARE TOO SNEAKY?

I READ WITH consternation in "The Best Software You're Not Using" [October] that software (MSGTAG Status) can circumvent the read receipt on my e-mail program. "Sneaky"? You bet! I use Outlook with the "read receipt" option permanently turned off, as I don't want to inform senders by default that I've read/received their mail (I prefer to send my own reply, if warranted). More important, if a spammer uses the software, I have no control over read receipts, and the spammer will know my e-mail address is valid.

John Tait, Pinawa, Manitoba

Editor's response: This is a fair concern, and it's something we looked at carefully during the article development process. However, we determined that while the app is sneaky—

CORRECTION

IN NOVEMBER'S "64-Bit Takes Off" (*News and Trends*), the infographic entitled "The Bit Map" on page 27 should have placed Windows 2000 in the 32-bit era.

PC World regrets the error.

and we clearly say so in our story—MSGTAG is not the kind of tool spammers would use, given the massive volume of e-mail messages they send. The only way around the program's MO is to use an e-mail client that doesn't support in-line images. —Aoife McEvoy

MORE INK THAN YOU THINK

NOT ONLY MUST you spend a fortune on ink cartridges ["\$40 Printer, \$40 Ink," *News and Trends*, October], but your friendly printer bugs you repeatedly to replace your cartridge, even though it is still a long way from being empty. I just ignore these warnings and keep printing until the print starts fading. I get up to 100 more pages this way.

Hermann Schmid, Binghamton, New York

OUR HOW-TO VIDEOS

I JUST WANTED to say thanks for the how-to videos on your site. I received your e-mail alert and watched the panorama photo lesson. It was outstanding, as I am really into digital photography. Also, I had been thinking of installing a second hard drive; and after watching the video on that topic, I am going to do it.

Andy Leas, San Francisco

Editor's note: Find *PC World's* online videos at www.pcworld.com/resource/video and click on the title you wish to view. You can select either a dial-up or a broadband bit rate.

QUICKEN 2004: SOME NEED IT

I AGREE WITH everything Yarden Arar had to say about Quicken 2004 ["Solid Quicken Update Fails to Dazzle," *New Products*, October] except her conclusion that "there's no compelling reason to upgrade." One of Quicken's most useful features is tax planning on a continuous basis throughout the year to estimate the final settlement as of April 15 of the following year. But to get the new 2003 tax rates, you have to buy Quicken 2004, since a 2003 tax rate update has not been provided for Quicken 2003.

*Phillip A. Caron, CPA, FHFMA
West Monroe, Louisiana*

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



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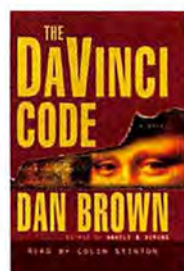
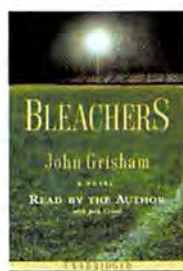
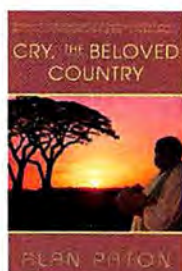
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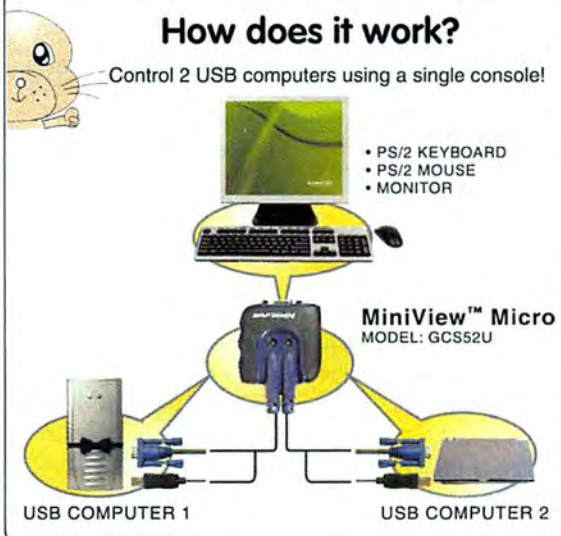




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STEVE FOX

Would You Pay the IM Piper?

Plus: Notebooks go 3D, Zodiac gets game, and spam busters give up.



1 New Tricks for IM

The Buzz: Don't panic: Basic instant messaging is still gratis. But multibillion-dollar companies have to make a buck somehow, right? Soon, those bucks will come from premium add-ons to your existing IM offering. AOL has announced AIM Games, which lets users play games with IM buddies—for a fee. Another AIM add-on will concentrate on "personals." MSN Messenger is examining "value-added services." And Yahoo recently surveyed users about their willingness to pay for exchanging messages with AOL, MSN, and ICQ patrons.

Bottom Line: Will users pay a fee for add-ons they can get elsewhere for free?

2 Sharp-Looking 3D

The Buzz: Toss out those zany, red-and-blue paper spectacles. Sharp has figured out how to do 3D without 'em. The cutting-edge Actius PC-RD3D notebook uses a screen with two LCDs—a standard 15-inch TFT panel in front and a passive-matrix LCD in back—to display three dimensions. At the push of a button, the 2.8-GHz machine can switch between 2D and 3D mode. The futuristic \$3299 notebook will ship with a few 3D-specific apps, and software makers are developing 3D games, CAD/CAM, and more. In the

meantime, gamers can take advantage of 3D right away, courtesy of an NVidia chip and driver pairing that converts standard games into stereo viewing mode.

Bottom Line: PCs are just the warm-up. Once 3D hits the boob tube, America will be riveted. I can't wait for "When Sharks Attack...in Your Living Room."

3 Game Device in Disguise

The Buzz: What looks like a Palm, plays like a game console, and is poised to be the next big thing? The Zodiac, a 6.3-ounce PDA/game-device hybrid from start-up Tapwave. Built on the Palm OS, the high-res handheld comes in 32MB (\$299) and souped-up 128MB (\$399) configurations. It sports a joystick, a 3.8-inch color screen, stereo speakers, an 8MB ATI graphics chip, MP3 software, expansion slots for SD flash, and various wireless options.

As expected, it runs all those Palm productivity apps—but why think about being productive when you could be play-

ing Doom and Tony Hawk's Pro Skater?

Bottom Line: The perfect gift for gamers who want to look like they're working hard, even when they're hardly working.

4 Fight Spam, Get Slammed

The Buzz: Seems like the spam is really hitting the fan. ISPs and businesses routinely rely on published antispam blacklists to block suspected junk mail domains. But now blacklist creators Osirusoft.com, Monkeys.com, and Compu-Net Enterprises are giving up the good fight. The first two shut down after repeated DDoS (distributed denial of service) attacks, while Compu-Net bowed out rather than risk a similar assault.

Bottom Line: Though no one can prove the attacks originate with spammers, something about them sure smells fishy. Or is that the pungent aroma of spam I detect? ■



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.

NAGGING QUESTION

Why Is IBM Called Big Blue?

THOUGH IBM WAS born in 1911, the Big Blue label entered the vernacular in the early eighties, when it started cropping up in the popular press. "Big" alludes to the company's size. "Blue" is more of a mystery: Most techno-linguists say it refers to the iconic



blue logo or the blue covers on many of IBM's old mainframes. Obscure etymology aside, IBM now embraces its colorful nickname, as evidenced by Deep Blue, the chess-playing supercomputer that made world champ Garry Kasparov see red in 1997.

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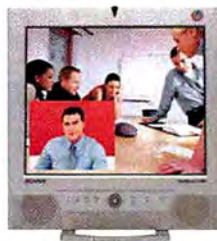
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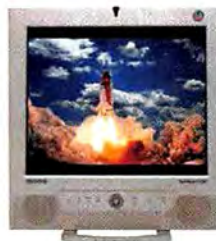
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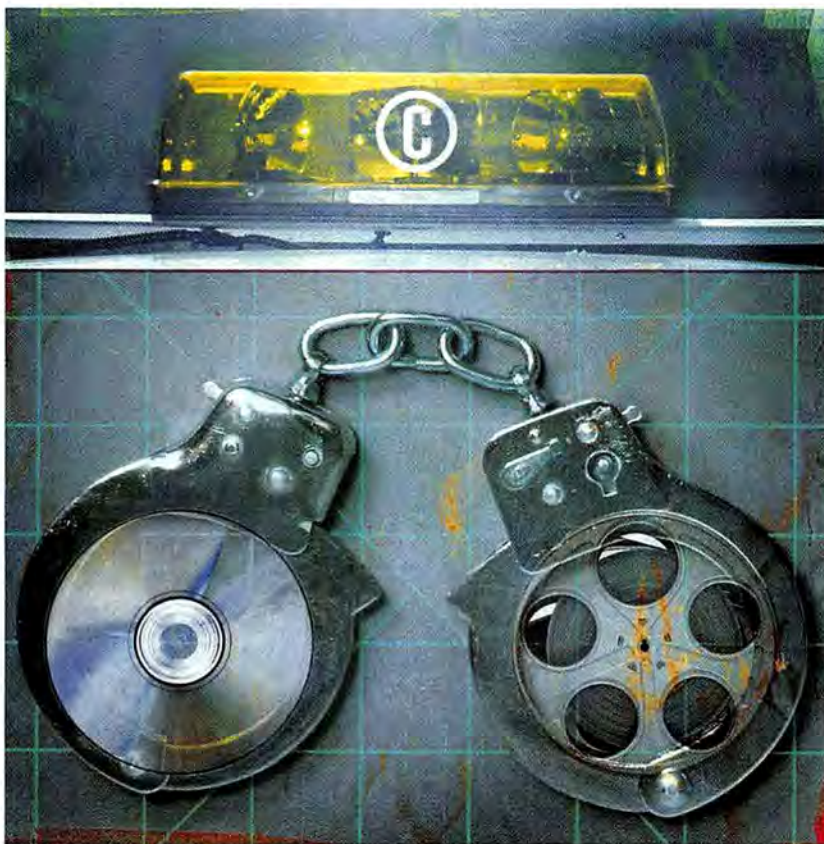
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To Copy or Not to Copy?

Here's what the law says you can—and can't—do with digital media files.



THE PARTY'S OVER. Or at least it's winding down quickly. The law is closing in, and this time it's taking prisoners. Jittery file swappers across the country are turning off the tunes and scrambling to clean up the evidence.

If you've been scared straight by the Recording Industry Association of America's recent slew of lawsuits against accused file sharers (for more information on the suits, see find.pcworld.com/38540), you aren't alone. A study done by Nielsen//NetRatings indicated that traffic from homes to peer-to-peer site Kazaa—the

leader in the file-sharing industry since the original Napster's plug was pulled—has declined by 41 percent in the months since the RIAA started slapping suits on suspected file-sharing kingpins.

Now chances are, you weren't spending hours a day downloading MP3 versions of the Billboard Top 40 anyway. But the lawsuits, some against people who say they believed that what they were doing was legal, highlight the thorny nature of copyright law, in which it's not always easy to know what's right and what's wrong.

And the problem isn't just with music.

The emergence of DVD burners for the living room gives home users the means to create versions of television broadcasts and movies that are almost as easy to transmit and copy as the MP3 version of a Miles Davis CD. As a result, consumers have to figure out what they can and can't do with that digital content as well.

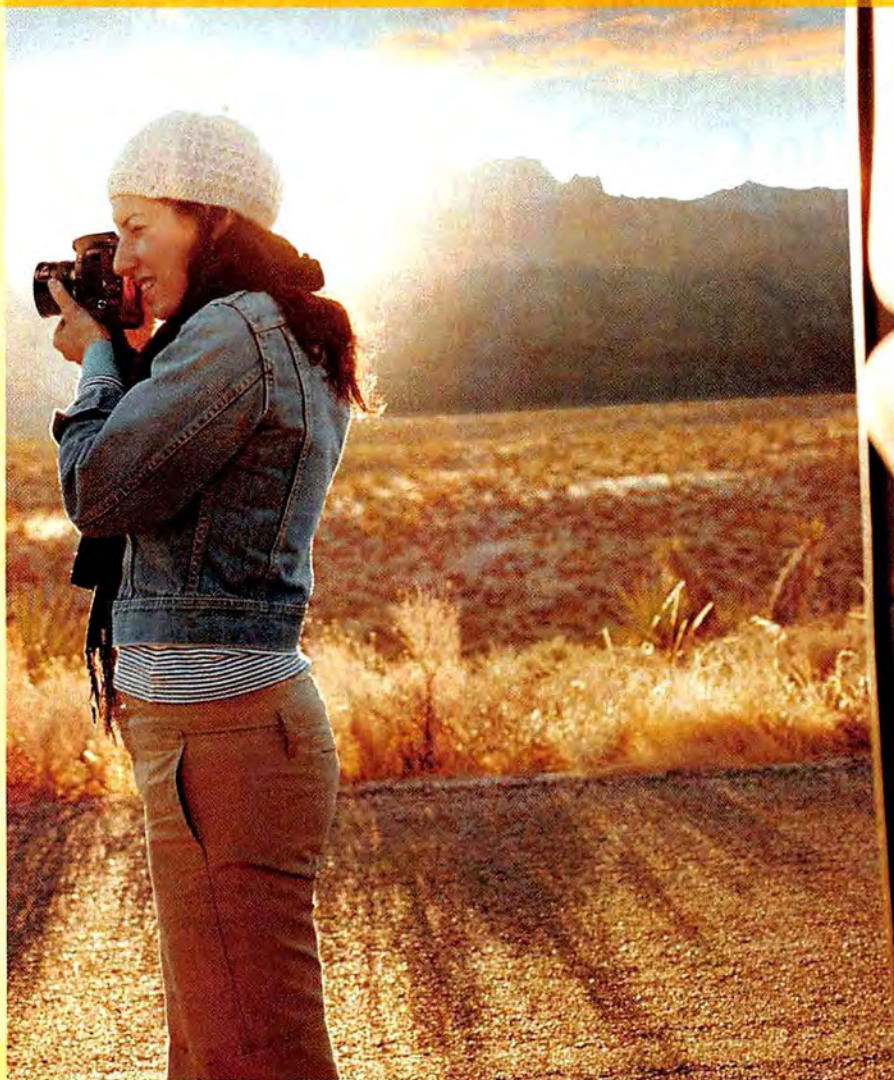
In 2001, for instance, media powerhouses including Disney and AOL Time Warner sued the makers of ReplayTV, saying the device's capacity to pause live TV, skip commercials, and transmit digital copies of television shows to other ReplayTV devices infringed on the content producers' rights. The suit was stayed when the product's manufacturer, SonicBlue, declared bankruptcy. ReplayTV's new maker, D&M Holdings, has removed the ability to automatically skip commercials and send recorded programming over the Internet to other ReplayTV users.

YOU'VE GOT QUESTIONS

NOT SURE WHETHER using Aerosmith to pump through your morning workout means you're breaking the law, or whether you can legally share your complete collection of *Sex and the City* with friends? Here are answers to a few common digital entertainment questions (the answers come from attorneys with long experience in copyright law, but remember that reasonable lawyers can disagree—in fact, that's how they make their living).

Can I rip MP3 files from CDs I already own and copy them onto my hard drive or another media player? Sure, unless the disk includes copy protection that prevents you from doing so. In fact, as long as the files are for your own personal use—▶

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PRIVACY WATCH

A Latte, a Wi-Fi Link, and a Hacker



IF YOU HAVE EVER CONNECTED to the Internet through a wireless hot spot at a Starbucks, McDonald's, or other business, you know how convenient it can be. Unfortunately, the setup is convenient for other people, too—hackers intent on stealing your log-in information for their own use.

At most businesses that offer wireless access, connecting is as simple as setting up an account and choosing how you'll be billed (either on a pay-as-you-go basis or at a flat rate for unlimited access). Then you sign in with the user name and password that you set up in advance.

But a group of clever independent security analysts has created a program that makes it easy for a hacker to slurp up your log-in information before you've even quaffed the foam on your cappuccino. The miscreant can then use the information to obtain free wireless Internet access and make you foot the bill.

The new tool, called Aircsnarf, broadcasts a powerful signal that disconnects any nearby hot spot users from the Internet. Then it broadcasts a sign-in page that looks like the log-in site of the legitimate Wi-Fi provider. When users, figuring they were knocked off the Internet momentarily, log in again, their user name and password go to the hackers, not the ISP.

The Aircsnarf program could be running on the laptop—or even the PDA—of the person sitting next to you. With the right

antennas, crackers intent on stealing passwords wouldn't even need to get out of their cars. All they'd have to do is park in front of the café, sit for a while running Aircsnarf, and then move on.

The program was never intended to be used as a tool for theft, according to its creators, members of a loosely affiliated group of computer security experts who call themselves the Shmoo Group. "Aircsnarf was developed and released to demonstrate an inherent vulnerability of public 802.11b hot

spots," the group writes on its Web site.

Spokespeople for two of the largest wireless access providers, T-Mobile (the provider for Starbucks) and Wayport (which serves many airports across the U.S.), say they don't know of any subscribers whose log-in information was stolen this way and don't anticipate the problem being widespread enough to warrant major changes to the way they run their services. Both say that if you notice odd usage patterns in your account, you should report them to your provider's customer service department, which will issue credits for stolen service. But can a hacker use your log-in information to get at more sensitive personal data? Both companies say no. Though you may use the same user name and password to connect to the Internet and to manage your account online, the ISPs report that credit card numbers and other sensitive data are hidden from view when you log in to your account information.

If you use a wireless hot spot, the best defense against this kind of service theft is to change your password regularly—at least once a month. And keep close tabs on your monthly bill, even if you're on a flat-rate plan; you may not be losing money, but you still shouldn't let crime pay for data thieves, who might be using your wireless account for other nefarious purposes. —Andrew Brandt

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CONSUMER WATCH

which means you don't share them with anyone else—you can make as many copies as you like. So go ahead and bring Yo-Yo Ma to the office, and copy him to your PDA, your portable MP3 player, and your notebook. Just be sure to keep all that cello music to yourself.

Suppose I buy a song from an online music service like MusicMatch or EMusic—can I make any number of copies to add to my collection of digital devices? Maybe not. But the reasons for this have less to do with copyright law than with the rules of the site you buy from. Some sites, such as EMusic, allow you to make as many copies as you want for your own personal use—and that makes sense. After all, why should you be penalized simply because you chose to download a file instead of schlepping to the music store three towns away? Nevertheless, plenty of download sites place restrictions on how you can use

the music you buy, such as limiting the number of copies you can make. The moral? Always read the terms and conditions of the site you're shopping at before you buy. But you probably don't have to worry about inadvertently breaking the rules. Most of these files come with sturdy built-in copy protection that makes it very difficult to do anything verboten.

I spent hard-earned money to get Abba's Greatest Hits on vinyl years ago. If I want a digital version, what's wrong with downloading it from Kazaa? After all, I already paid for the music. Not so fast, Dancing Queen. You didn't pay for any and all use of the Abba tunes, just for that particular copy in that particular format and for the right to make limited copies for yourself. If you want it in a different format, you have to pay. That's why owners of eight-track tapes couldn't go into stores and grab CDs of the same music for free.

Okay, so I won't trade music online via a peer-to-peer network anymore. Can I at least burn copies of the songs I already own onto a CD and trade 'em with my friends? Nope. Whether you're using the Internet

or a sneakernet, file sharing is illegal. Of course, as long as your friends aren't undercover RIAA operatives, you probably won't be sued for giving your high school sweetheart a copy of "Bohemian Rhapsody" for old times' sake. But the bottom line is this: Any copyrighted material, digital or otherwise, is for the personal use of the purchaser only—you can't make copies for others.

If I download music or movies from a site that's based outside the United States, am I responsible for following stateside copyright laws? Yep. As long as you're in the United States, U.S. laws apply to you.

Is it okay to record an over-the-air broadcast of *The Simpsons* on my DVD recorder and watch it later?

Yes it is. All the rules that go for VCRs apply to digital video recorders like a TiVo as well. You can even invite a small group of friends over to sit and watch with you and your family; but

if the group extends beyond your friends and acquaintances, you're stepping onto shaky legal ground. And if you charge admission, consider yourself a crook.

My neighbor, who's never missed an episode of *Survivor*, came down with food poisoning the other night and is begging me to lend him the copy of the latest episode I made with my DVD burner. Can I oblige without jeopardizing my future appointment to the Supreme Court? Probably, though if you really want to be cautious, you should invite him over to watch it in the comfort of your living room. Just as in the case of music files, the law prohibits you from giving friends copies of any form of copyrighted material—including over-the-air broadcasts. But most of the attorneys I spoke with agree that this type of situation would probably be considered legal.

The popcorn's hot, the beer's cold, and I've just ordered up a pay-per-view screening of *The Real Cancun* from my cable company. Suddenly, the phone rings. I've got to hop a flight to Burkina Faso. Can I record the show to DVD and catch it when I get home? Putting aside the obvious question of ▶



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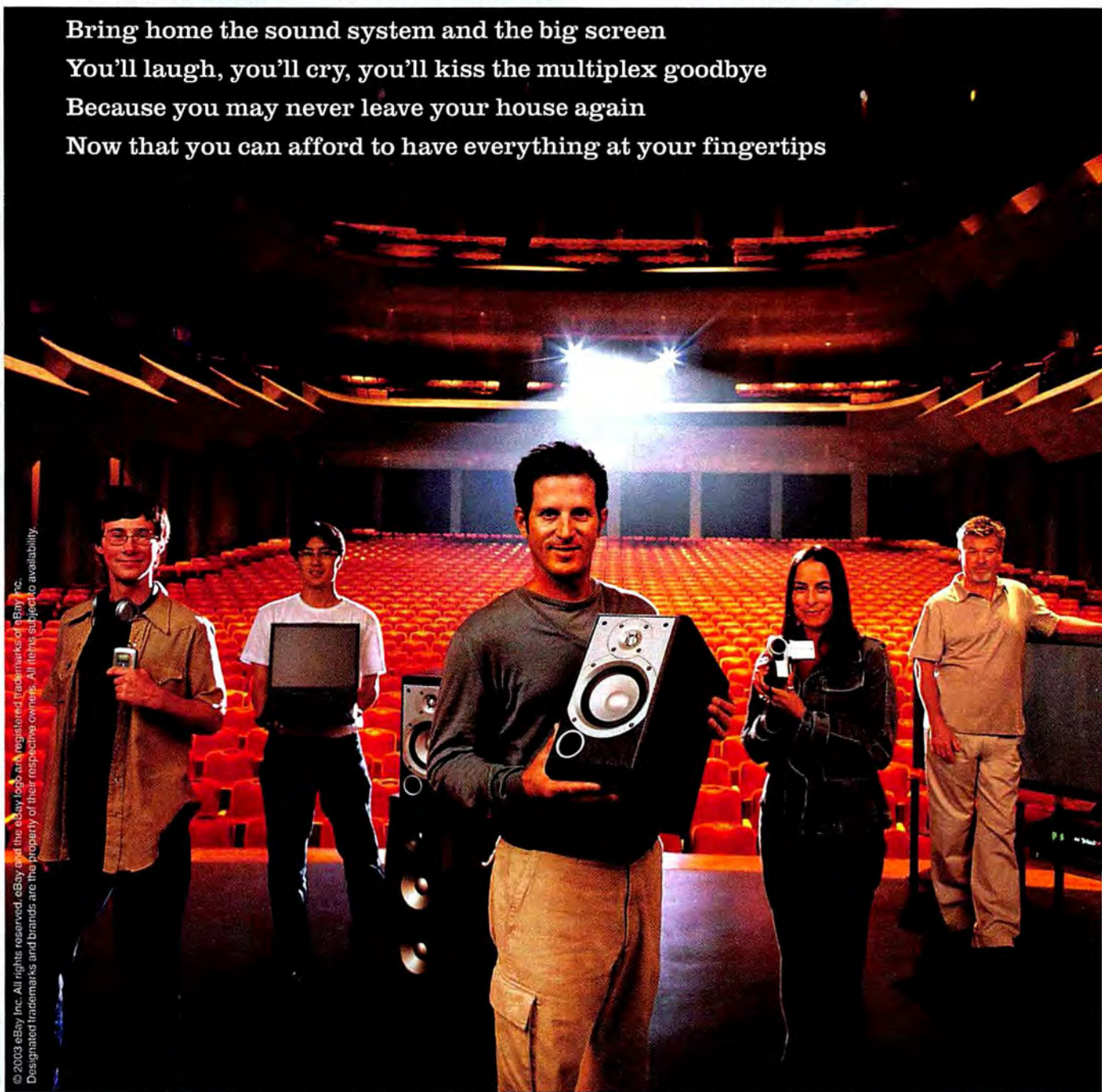
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ON YOUR SIDE

Dialer Racks Up Huge Phone Bills

I MY SON TRIED to download some gaming hints online, but instead he got a self-installing program that dials out for access to porn sites. Then our phone bill showed two calls to Guinea-Bissau in West Africa costing \$118. I explained to AT&T that this was a fraudulent charge. No one at our house physically dialed the number; our computer did. But AT&T insists that we made the call, so we have to pay. After some research, I found that many others have been taken in by this scam and have had to pay substantial bills to AT&T.

Steve Traylor, Eugene, Oregon

On Your Side responds: Shady Internet operators use seemingly benign sites to lure people into downloading programs that automatically dial overseas adult sites. In many cases, the mention of the dialer and what it does is buried in legalese that few users labor through. The unscrupulous sites have arrangements with their local

telephone companies to take a percentage of the fees, explains AT&T spokesperson Bob Nersesian.

What can you do? Block access to international calls. But beware that some dialer programs have a workaround. According to AT&T, they use access codes to make local or international calls through carriers that may not be your chosen provider. Install a utility, such as Ad-aware 6 or Spybot Search & Destroy (both available at www.pcworld.com/downloads), that will detect and delete unwanted programs.

AT&T eventually reversed all of the charges, according to Traylor. If you're an AT&T customer and you believe you have experienced this type of Internet scam, call 800/222-0300. Although AT&T will investigate billing issues on a case-by-case basis, Nersesian says AT&T doesn't police telephone fraud. For that, customers should contact the Federal Communications Commission. —Grace Aquino

why you'd want to record that show, the short answer is yes. Pay-per-view broadcasts are a hotly debated area, with some in Hollywood trying to impose severe limitations on the rights of viewers to copy, or *time-shift*, the shows. But at this point, as long as you follow the rules by keeping the file to yourself—and assuming that the broadcast isn't copy-protected—you should be in the clear.

My kids have a nasty habit of playing Frisbee with my DVDs, and I want to make sure I always have a working copy of *Dude, Where's My Car?* Can I use software to make a backup copy? We won't know the answer to that question until a judge rules on it. Seven major movie studios have filed suit against 321 Studios, which makes DVD-Xcopy software for copying DVD discs. 321 Studios argues that creating backup copies for personal use is perfectly legal. But Hollywood claims that the software maker's process violates the law because it circumvents copyright protection technology, a no-no under the Digital Millennium Copyright Act.

The bottom line? If you're pondering the legality of making a copy, ask yourself whether what you're doing will diminish the value of whatever you're copying. Copying your Rolling Stones album so you can hear it at work doesn't cost Mick and the boys a sale, but copying it so that 5—or 500—of your closest friends can download it might. Attorney and author Susan Butler, who has over 20 years of experience in copyright, media, and technology law, puts it this way: "Ask yourself: 'If I owned the rights to this material, and that's how I made my living, would I want someone to do this?'" Think that way, and you're unlikely to end up on the wrong end of subpoena. ■

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, respectively.

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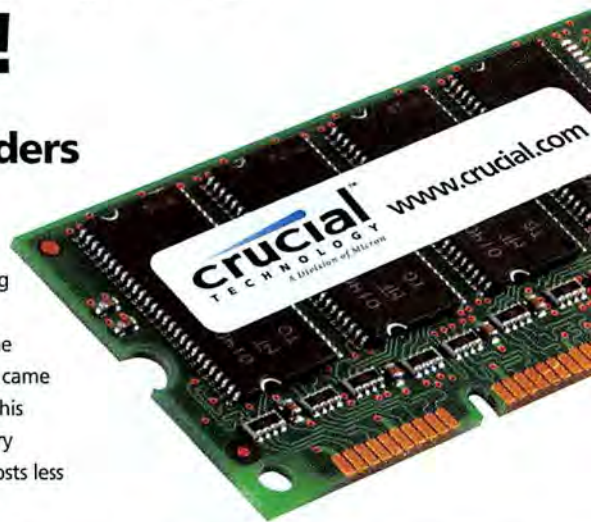
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STEVE BASS

Take Comfort in Your Home Office

Seven ways to soothe the aches and pains of life in a digital world.

NEWS FLASH: PCs are a pain. Nope, I'm not talking about buggy software or torrents of spam. I mean the body aches all of us get from poorly designed computer equipment. Rest easy, though. I found a bunch of nifty gizmos and utilities that make me more productive by reducing the soreness in my neck, arms, and back.

My phone used to top the list of pain-inducers in my office. If you still cradle a handset between your shoulder and ear as you type, save on chiropractic adjustments with a telephone headset. Labtec's \$40 **Dialog-301** wired headset lets you switch between your PC's audio and your telephone at the push of a button. I use Plantronics' \$87 **CT-10** wireless model, which lets me enjoy the cool breeze on my back porch while my editor blows hot air over the phone. Go to find.pcworld.com/37997 for more on both products.

You may not realize it, but a correctly adjusted monitor can reduce eye fatigue. I know because staring at my display all day used to induce headaches—until I raised the refresh rate. (My hair loss may be related; my attorney's investigating.)

Displays often arrive with their refresh rates set too low—say, at a flickering 60 Hz, or 60 screen refreshes per second. A higher rate—for example, 72 or 85 Hz—reduces flickering and the eyestrain that can result. I use **RefreshForce**, a free tool that lets me set my monitor's refresh rate in a blink. Browse to find.pcworld.com/38129 to download it. For more on fine-tuning your monitor settings, read Kirk Steers's June *Hardware Tips* column, "Simple Tweaks for Peak PC Graphics Performance" (find.pcworld.com/38000).

Staring at a computer monitor, even one that has a healthful refresh rate, can tucker out your peepers. That's why the

experts recommend that you look away from your monitor at least once every 15 minutes. I found a more intriguing solution: multiple monitors. They save me mouse clicks and keystrokes because—instead of jumping between screens on a single monitor—I just move my gaze from the open app on one screen to the open app on the other. Even this slight change of focus keeps my eye muscles from cramping up. Go to find.pcworld.com/38003 to see *PC World* Senior Associate Editor Richard Baguley explain the process in "How to Set Up Multiple Monitors," one of our slick video tutorials.

If you use an LCD monitor on a Windows XP machine, turn on ClearType to see a remarkable improvement in your display's font resolution. ClearType is switched off by default, but to turn it on, simply right-click the desktop, choose *Properties•Appearance•Effects*, check *Use the following method to smooth edges of screen fonts*, and select *ClearType* from the drop-down list. Click *OK* twice.

HEALTHY KEYBOARDS, MICE

I RECENTLY VISITED an office and saw people using keyboards with their elbows and hands out of the correct position (think 90-degree angles). They needed keyboard drawers like my **Adjustable Underdesk Shelf** (\$90) from Kensington. One knob lets me adjust the shelf so the keyboard's at the proper height—with my arms bent at right angles. The adjustable mouse tray attaches on the right or left side of the shelf. Fair warning: The shelf took me a good 45 minutes to install.

Finding a mouse that fits my hand comfortably was tough, but I like Logitech's **MX700**, an oversize mouse that costs \$59. Still, I'm tempted to replace it



with Contour Design's **Perfit Mouse Optical**, which resembles a steam iron and comes in sizes from small through extra large. The Perfit mouse fits my hand extraordinarily well, and southpaws will love the left-hand models. The downside? Perfit prices range from \$90 to \$140.

Hands (or derrières) down, the best chairs I've tried are Neutral Posture's **5000** and **9000** series, which cost from \$600 to \$1000. They let you adjust backrest angle, height, and depth, as well as seat height, tilt, and tension. And their highly contoured seats distributed my body weight over more surface area.

(For more on the four products in this section, go to find.pcworld.com/38663.)

Excuse me, but it's time for my afternoon office-chair nap. ■

Contributing Editor Steve Bass is the author of PC Annoyances (O'Reilly Press). Contact him at homeoffice@pcworld.com, and visit find.pcworld.com/31610 to read more Home Office columns.



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BUGS & FIXES

STUART J. JOHNSTON

Microsoft Software: Problems All Around

Fix weak links in popular programs before your PC comes under attack.

MONTH AFTER month, I report on the latest problems with Internet Explorer and Windows. You might think that these are the only pieces of software at risk, and they are often under constant scrutiny (see "In Brief" on this page). But don't assume that you're covered after plugging holes in the usual suspects. This month, Microsoft Office is vulnerable—along with a host of other programs—due to three newly discovered holes.

The first flaw affects any program that uses Visual Basic for Applications—a programming language common to all Office apps, as well as Publisher, Visio, and others.

Microsoft didn't make VBA bulletproof. It has an "un-



checked buffer" that, if exploited by malicious code, could let an attacker take over your PC. Buffer checkers are like the safety cutoff valves in self-serve gasoline pumps. When your tank—or in this case, a buffer meant to hold data until it's needed—is full, the pump automatically shuts

off. But the VBA buffer lacks a shutoff valve. In theory, a miscreant may send you a malformed PowerPoint file, say, containing an attack macro capable of sending too much data to the buffer. If you load the file, the macro begins to execute. As the data overflows, the cracker's code moves to take over. Go to find.pcworld.com/38357 for a list of affected programs and a link to the fix.

The other two flaws affect Word (versions 97 through 2002) and Works Suite (versions 2001 through 2003). One of them involves macros. If you open a Word file containing a nasty macro, it can execute automatically and cause a lot of damage. Jump to find.pcworld.com/38360 to get a link to the patch.

The final vulnerability affects Corel WordPerfect word processor documents. If you need to be able to read WordPerfect files within Microsoft Word, you probably use Microsoft's file converter. But the converter has a hole consisting of another unchecked buffer that a miscreant could misuse by sending you an infected WordPerfect file. Go to find.pcworld.com/38363 to get a link to the patch and to read details about other susceptible programs. ■

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

IN BRIEF

New IE Update

MICROSOFT released its umpteenth cumulative patch for IE (labeled 828750), which includes fixes for several new security holes. Go to find.pcworld.com/37964 for a link to the patch.

Access Attacks

IF YOU USE Microsoft's Snapshot Viewer to look at data from an Access database, you need a patch to keep snoopers from peeking at your data. Visit find.pcworld.com/38378 to grab the fix.

IBM Recall

BIG BLUE IS recalling approximately 118,000 G51 and G51t 15-inch CRT monitors built between June 1997 and September 1998, due to a fire hazard. Browse to find.pcworld.com/38375 to learn how to tell whether your monitor should be inspected—and possibly repaired.

BUGGED?

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

VIRUS ALERT: READER SPOTS FAUX FIX

I JUST RECEIVED two identical e-mail warnings from the "Microsoft Network Security Division." The messages said that they contained a "Current Microsoft Critical Patch." I once read in your column that Microsoft never sends out patches in e-mail, so it was clear that this was a phony.

Kenneth Allison, Hereford, Arizona

ALLISON AVOIDED the latest sham e-mail message making the rounds. The e-mail in question uses text that closely resembles a genuine Microsoft security alert. But the attached file, described in the e-mail as a "cumulative patch" for Outlook, Outlook Express, and IE, actually contains the Swen virus. The new worm exploits a hole in Outlook and OE that Microsoft patched two years ago (go to find.pcworld.com/38369 for the fix). Hop to find.pcworld.com/38372 for Microsoft's advice on how to defeat Swen.

The Gadget Guru In Us

No doubt about it—digital enthusiasts love their gadgets, which have become an integral part of today's lifestyles. And if there are two things digital gadget hounds want, they are value and selection. That is why Best Buy (BestBuy.com®)—the largest-volume specialty retailer of consumer electronics, personal computers, entertainment software, and appliances—can be the enthusiast's best friend.

For the digital camera beginner, the Kodak DX6440 is a 4-megapixel dream machine that is not only fast but also very easy to use, with low-light autofocus, programmed screen modes, and a high-performance flash. Also available for the Kodak DX6440 is Kodak's EasyShare Printer Dock—for 4" X 6" prints that go directly from camera to printer.

The Olympus® Stylus 300 3.2-megapixel camera features all-weather reliability for shooting in all conditions. The Stylus 300 sports five Preset Creative Scene modes as well as a 3X optical zoom and a 4X digital zoom.

The Canon S50 is a 5-megapixel dynamo with a 3X optical and 4.1X digital zoom and a DIGIC image processor to capture extra-sharp still shots and clear video with audio.

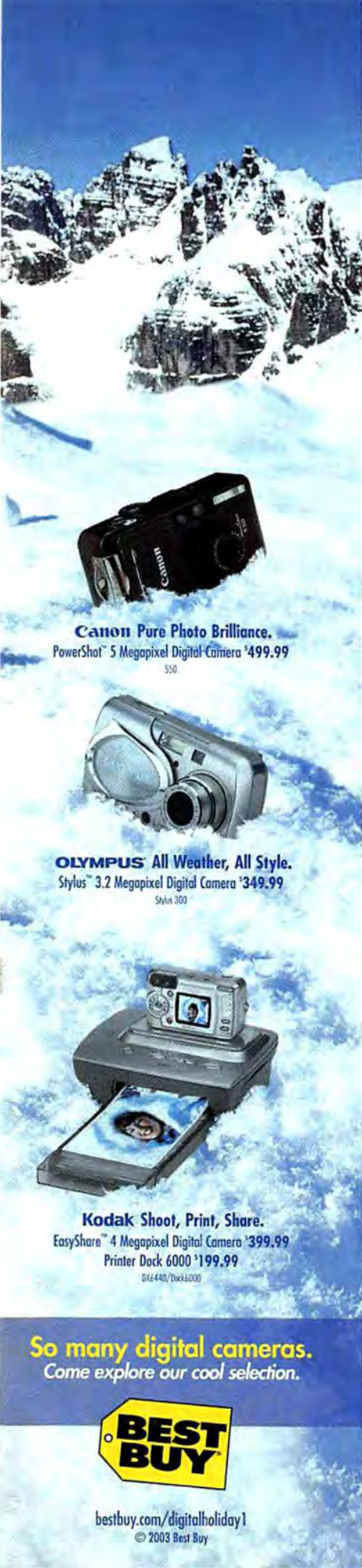
If what you want is an easy-to-use camcorder that simplifies making and sharing your videos and pictures via DVD, look no further than the Sony® DVD300 digital camcorder. With a super-sized 3.5-inch viewing screen, the DVD300 can capture up to 60 minutes of video at high resolutions on a single 3-inch disc, while its 10X optical/120X precision digital zoom brings the action up close.

Sony's DVD300 digital camcorder is an easy-to-use camcorder that simplifies making and sharing your videos and pictures via DVD.

To print out the great shots you'll take with these cameras, consider the Epson Stylus® Photo R300 printer, which can crop, resize, and print photos from memory cards and PictBridge-enabled cameras without a PC. What's more, you'll save \$50 on the combined purchase price of the printer and any digital camera.

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DIGITAL PHOTOGRAPHY: A Whole New World

Getting the most out of your digital camera

If there is one category in which digital gadgets have grown beyond even the most optimistic projections, it is photography. An astounding 20 million digital cameras will be sold this year in the US and another 16 million in Europe. In the space of just a few years, digital cameras have replaced what now seem like antiquated film cameras for the majority of hobbyists and, increasingly, for the pros as well.

There are several features of digital photography that have helped to win these millions of converts. For one thing, the user has much more control over the photos he or she takes. Easy-to-use software allows even novices to significantly enhance and improve their photos before printing. Then there's the element of instant gratification—being able to see immediately on the LCD whether the photo just taken is the one desired. If not, you can simply eliminate it and take another. And, of course, it's a lot cheaper to print only those photos you really want.

The ability of today's digital lifestyle enthusiasts to enjoy their avocations and pursuits to the fullest depends in strong measure upon a reliable power source for their gad-



◀ The Energizer charger can recharge two or four rechargeable NiMH AA or AAA batteries in the time it takes to have lunch!

gets. Where digital cameras are concerned, that means dependable, long-lasting batteries.

Small wonder, then, that applause has greeted Energizer's news of improvements to its digital camera batteries—specifically,



◀ Energizer's e2 AA-sized batteries last up to five times longer in digital camera applications than do ordinary batteries.

the Energizer e2 photo lithium battery, which now lasts even longer than before. In fact, the e2 is the world's longest-lasting AA battery. These latest improvements translate into the ability to take up to 30%

more digital photos than before. The Energizer e2 AA-sized batteries last up to five times longer in digital camera applications than do ordinary alkaline or oxy-alkaline batteries.

In addition, Energizer is featuring improvements for customers who prefer rechargeable batteries. The company's current charger has cut recharging time from an hour to a half hour or less. This innovative product can recharge any two or four NiMH AA or AAA batteries in the time it takes to have lunch, after which you are good to go with your digital camera once again.

So now there is no reason to be without the most important feature of any digital camera—namely, the power to make it work.

■ For more information on these and other Energizer products, click now on www.energizer.com.

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*vs. ordinary alkaline, in device AA digital camera testing. Results vary by camera.



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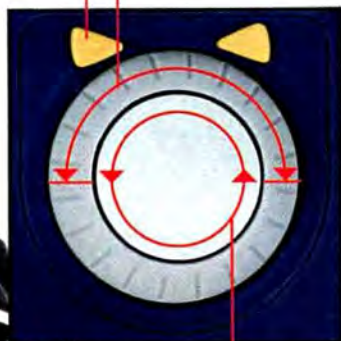


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NEW PRODUCTS

EDITED BY ANNE B. McDONALD

Adobe Gets Creative

Updated Photoshop, Illustrator, InDesign, and GoLive now combine into one Creative Suite—but do you want to learn to work Adobe's way?



PUBLISHING

THE WAIT IS OVER for updated versions of Adobe Systems' popular design and desktop publishing programs—Photoshop, Illustrator, InDesign, and GoLive. And now you can get them individually or in one big integrated package dubbed Creative Suite (CS), along with Adobe's Acrobat Professional 6 and a new file manager called Version Cue.

CS comes in two flavors: We looked at a beta of the \$1229 Premium version, which includes all the applications and is for shops that handle both print and Web publishing. A Standard version for print publishing (\$999) dispenses with GoLive and Acrobat 6.

Photoshop CS, a program for creating high-quality images, is the star update, with a much improved File Browser

that shows thumbnails of images in a selected folder, as well as other productivity enhancements. Our enthusiasm wanes with Illustrator CS (for creating designs and illustrations); InDesign CS (for handling design and page layout); and GoLive CS (for creating professional Web sites).

However, the make-or-break member of the suite is the Version Cue file-management

application, which is designed to allow all members of a team to work on a project simultaneously. For example, a designer can tweak an image in Photoshop while an editor works on the text in InDesign. Changes from both can then be saved as new versions of the file. Adobe says that it's possible for users to add searchable comments to each version and to view thumbnails of each version, making it easy to see which changes were made where and to roll back any of them if necessary.

Unfortunately, we weren't able to test Version Cue's file-reconciliation features in our beta software. Despite the best efforts of Adobe technical support, we never got this function to work properly. Even if Adobe's approach does ultimately make teams more efficient, our experience with the beta version suggests that it will take time to learn and will require that people change the way they do their jobs. And we all know how easy that is.

PHOTOSHOP CS SHINES

WHILE ADOBE plays up its integration of the separate CS applications, we were most impressed with the new features in the company's flagship Photoshop image editor. Topping the list of useful additions are the File Browser's expanded metadata and key-

78 PUBLISHING

Adobe Creative Suite Premium, including new versions of Photoshop, Illustrator, InDesign, and GoLive

80 MONITOR

Dell W1700 LCD TV

PDA PHONE

Handspring Treo 600

85 CONTACT MANAGERS

Intuit QuickBooks Customer Manager, Surado Solutions Smart Contact Manager Pro 4

85 POWER ADAPTER

Targus Universal AC/DC Notebook Power Adapter

86 MULTIFUNCTION PRINTER

Lexmark PrinTrio Photo P3150

PHOTO PRINTER

Hewlett-Packard Photosmart 7960 Photo Printer

88 E-MAIL

Qualcomm Eudora 6

PROJECTOR

Toshiba TLP-S41U

92 SERVER

Triton Technologies Advanced Server Appliance Product

94 WIRELESS NETWORKING

Microsoft Wireless Base Station MN-700



88

word panes. These panes simplify the task of searching an image database for files related to specific projects, themes, or subjects. We only wish that it were easier to assign new keywords to a file (you have to click on a keyword icon at the bottom of the keyboard pane, type the keyword, select the items to which the keyword will apply, and check a box).

Working with multiple layers is now less laborious, too, thanks to a new ability to nest layer sets within other layer sets. This speeds your scrolling through long lists of layers, and it lets you create a mini-hierarchy of layer sets. All in all, the new version is a good upgrade for Photoshop users.

BETTER DESIGN TOOLS

THERE'S LESS to cheer about in the CS versions of Illustrator, InDesign, and GoLive, although all three programs do add important features. Illus-

FEATURES COMPARISON**ADOBE'S CREATIVE SUITE: APP BY APP**

ALL FOUR CS APPLICATIONS are available in the suite, as single products or as upgrades.

PROGRAM	Price (stand-alone/upgrade)	Hard disk space required	What's new
GoLive CS	\$399/\$169	275MB	Tighter integration with Photoshop CS's ImageReady image editor; support for the Extensible Metadata Platform; support for Cascading Style Sheets Level 2.
Illustrator CS	\$499/\$169	550MB	Revised text engine with character and paragraph styles and advanced OpenType feature support; five preset text paths in the Type menu's new Path Type submenu.
InDesign CS	\$699/\$169	250MB	New Control palette centralizes character, paragraph, transform, stroke, and table palette options; a Package for GoLive option on File menu.
Photoshop CS	\$649/\$169	350MB	Photomerge feature automates conversion of several images into a panorama; ability to view image changes on the Histogram palette as you make them; Lens Blur effect.

trator's new 3D Effects function comes from Adobe Dimensions, which in the past was sold separately. The new 3D Effects option in the Effects menu permits you to apply 3D effects independently of the original shape. However, you can't set the preferences for the bevel (the slanted edge of a 3D object) without changing the front face of the 2D art, and the shading in the 3D dialog box is hard to control.

Illustrator CS's new Glyphs palette is a great way to view all of the characters in a font package. And the new Artwork Mapping feature in the 3D Effects Dialog menu enables you to easily wrap artwork around 3D shapes for package-design mock-ups.

InDesign CS's new Story Editor word processor is for simplifying copy fitting in lay-

outs by letting you view and apply paragraph and character styles, XML tags, and text formatting to several pages at once. Unfortunately, it also takes up more screen space by adding a text-entry window that duplicates the text in the layout itself. More useful are the Separations Preview palette and the Flattener Preview palette, which help you avoid unpleasant surprises in your printed output.

The most important change in GoLive CS is the rewritten source code editor. Use it to select specific code snippets automatically; validate and optimize your code; and access JavaScript link, image, form, and event information from the handy Inspector palette, which serves as GoLive's info central. This editor helps tremendously in editing and de-

bugging JavaScripts. The new editing tool also features code completion, the ability to color-code your source, customizable tag libraries, and source code-difference checking (to compare files as you hunt for bugs and other code anomalies in your Web pages).

IT NEEDS ITS SPACE

NOTE THAT Version Cue will work only if all team members have the CS versions of the individual apps installed on their PCs. And how are you set for hard drive space? CS Premium takes close to 2GB of disk space, and the individual applications use between 150MB and 550MB apiece. A last warning: The suite—and its individual apps—runs only on Windows XP and 2000.

—Dennis O'Reilly
and Diego Aguirre ■

Creative Suite Premium

Adobe Systems

Beta software, not rated

Buy this if your production group is willing to learn new work methods and if you can afford to put CS on all PCs.

List: \$1229, upgrade \$749;

Standard \$999, upgrade \$549

(Upgrades available to owners of Photoshop 7 and many older Adobe design packages.)

find.pcworld.com/38492



DELL'S W1700.

MONITOR

I'VE NEVER BEEN a fan of the image quality on LCD monitors and LCD TVs, but Dell's first try at a hybrid PC monitor and TV set has almost

A Smoothie: Dell's First LCD TV

brought me around, delivering one of the smoothest flat-panel images I've seen.

The company's 17-inch wide-screen **W1700 LCD TV** distinguishes itself by including Faroudja "line doubling" video processing technology. Long a feature of high-end digital displays, plasma flat-screen TVs, and rear-projection sets, this capability is rare in entry-level LCD TVs and gives this \$699 monitor a large advantage.

Faroudja technology dramatically reduces the annoying jaggedness that has long plagued video displayed on LCDs. The line doubling produces a clean, natural-looking image that makes watching broadcast TV or DVD movies a pleasure, especially in the

16:9 wide-screen aspect ratio.

You will need to fiddle with the W1700 panel's extensive on-screen controls to get your best picture, however. With the factory settings, I found the contrast to be too low, the picture too dark, and overall color too green. Happily, the adjustments were simple.

You can quickly switch from a wide-screen to a 4:3 aspect ratio for standard television shows, but the narrower display left distracting midnight-blue bands on either side of the image on my preproduction unit. Dell says it is working to correct the problem.

The W1700 makes a capable, though unremarkable, PC monitor. It took me a little while to get used to its wide-screen format, but I appreciat-

ed it when I used the picture-in-picture function.

The monitor includes a TV tuner, has a competent 25-millisecond response time, is HDTV-ready, and has a 1280-by-768 native resolution. It comes with decent integrated speakers and with inputs for VGA, component, composite, and S-Video. I plugged a television cable from my satellite TV box into the monitor without a problem.

The W1700 competes well with others in its price class and could be a great companion for a Media Center PC.

—Ramon G. McLeod

W1700 LCD TV

Dell

★★★★☆

Street: \$699

Dell's first dual-purpose LCD TV displays excellent video.

find.pcworld.com/38546

Impressive Treo 600

PDA PHONE

HANDSPRING'S **Treo 600** is the hottest new handheld in town, and rightly so. A radical departure from the company's previous clamshell PDA/cell phone hybrids, this unit combines a Palm-based organizer, a cell phone, a keyboard, and a camera in a sleek, silvery 5.9-ounce package that isn't much bulkier than less capable com-

petitors. I looked at a preproduction GSM/GPRS model—a CDMA version is available, too. The Treo 600 is not perfect, but after testing one, I'm ready to swap it for my current PDA and phone.

The Treo 600 ranks as the first phone to ship with Palm OS 5. The device doesn't take advantage of the OS's support for higher-resolution displays, but its bright and crisp 1.75-inch-square screen is so small that the old 160 by 160 resolution looks fine. Also missing: built-in support for Graffiti or other handwritten input. The Treo does have a slot for SD/MMC memory and hardware cards.

Using a tiny lens located on the rear of the device, the Treo

600 captures so-so 640-by-480 images. Its Blazer browser made complicated Web pages readable, but I wanted the included POP3 e-mail client to send my outgoing e-mail before downloading it, which can take a while. The lags might frustrate heavy business e-mail users, but third-party software can sometimes address this problem.

Although usable, the small keyboard feels rather cramped. And an automatic keyboard lock prevents you from inadvertently making phone calls or otherwise using the device; but I sometimes had to press the unlock key several times before it worked.

Nevertheless, the Treo 600 fit well in my hand, either as a phone or as a PDA. And the



TREO 600: An excellent PDA/cell phone hybrid.

Treo 600

Handspring

Street: \$500 to \$700, less with new service plan or upgrade.

★★★★☆

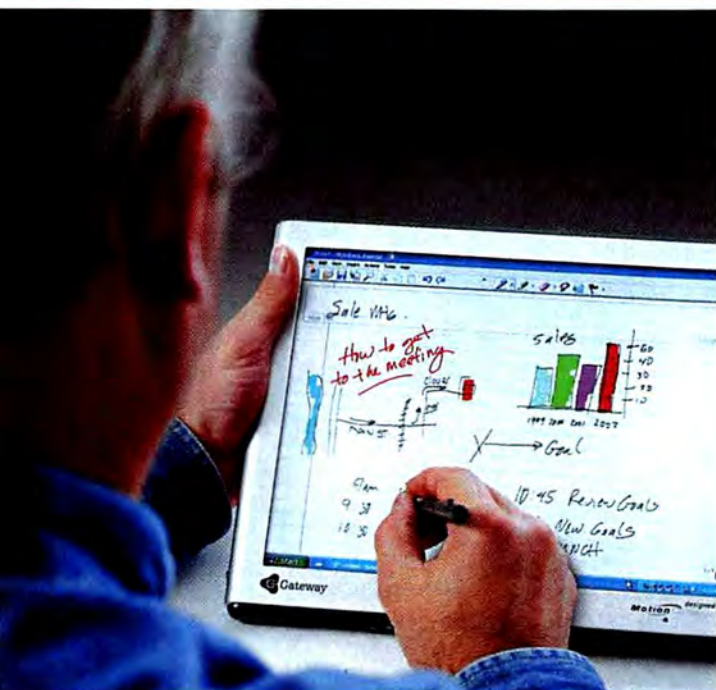
Powerful, attractive Palm PDA/cell phone with good battery life and many extras.

find.pcworld.com/38543

battery life is terrific for this kind of device—three or four days between charges after moderate phone and heavy Palm use. I'd like a removable rechargeable battery, but the Treo 600 does so much right, I can forgive its minor flaws.

—Yardena Arar ■

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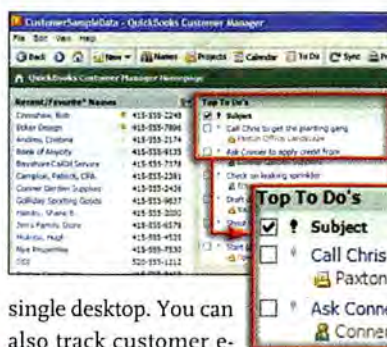
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Affordable Customer Management Tools

CONTACT MANAGERS

ACCOUNTING software may tally up your financial results, but effective customer relationship management can make those bottom-line numbers bigger by helping you convert prospects into customers and sell more to existing customers. Now, Intuit's **QuickBooks Customer Manager** and Surado Solutions' **Smart Contact Manager Pro 4** packages offer small businesses various

CRM tools that previously were available exclusively in sophis-



INTUIT'S CRM software displays your contacts, appointments, and those important to-dos all in one desktop.

single desktop. You can also track customer e-mail and documents to keep communications from falling through the cracks.

This program will be most useful to the QuickBooks user whose business has a selling cycle longer than a day or two

or whose business delivers goods or services on a project basis and requires customer approvals or interaction. However, if you sell standard products on a one-off basis to most of your customers, you probably won't benefit sufficiently to justify

adding this extra layer of management to your day-to-day business procedures.

MORE FIREPOWER

IF YOU NEED more advanced customer management capabilities than Intuit's product offers, you'll find them in Surado's **Smart Contact Manager Pro** software—though its setup isn't as automated.

The \$180 shipping application comes with nearly 160 built-in reports covering everything from marketing and sales information to detailed price quotes. You can customize reports using Crystal

Reports Writer, a third-party program that's included.

SCM Pro reaches beyond basic CRM by throwing in a host of useful capabilities such as an electronic version of an employee in/out board and a knowledge database that allows you to share company policies and procedures with employees or inform them of solutions to problems.

This software is particularly well suited to those users in the financial services sector, as it includes a selection of industry-specific templates for mortgage lending, insurance (both life and property, and casualty), and real estate.

Unfortunately, getting data created by other programs into SCM Pro isn't easy. The program supports Outlook files, but pulling in accounting data is more difficult. In most cases you'll have to export the data you need into CSV (comma-separated values) format, then import it into SCM Pro, unless it's already in natively supported

QUICK TAKES

Power Up!

IF YOU EMPLOY a variety of electronic devices in a variety of places, Targus's \$130 **Universal AC/DC Notebook Power Adapter** might help to streamline your travel. It's one of the first such chargers to deliver up to 120 watts (as required by some newer notebooks), and it weighs less than 12 ounces. And by purchasing additional tips, you also can power or charge digital cameras, PDAs, portable CD and DVD players, and mobile phones. find.pcworld.com/38552

—Anne B. McDonald



files such as those created by Microsoft Excel or dBASE IV.

Though QuickBooks Customer Manager may stick too close to the basics, its straightforward setup delivers the right approach for the majority of QuickBooks users who think they can benefit from CRM. Larger businesses that want more powerful software should consider Surado Smart Contact Manager Pro.

—Richard Morochove ■

SURADO'S SMART Contact Manager offers one-click access to your e-mail and scheduler.

ticated, expensive financial management systems intended for larger businesses.

Intuit's new program works in tandem with its popular QuickBooks bookkeeping program. The preproduction \$80 QuickBooks Customer Manager version I tried out offers basic CRM functions and acts as a central clearinghouse for tracking interactions with a small business's customers. Customer Manager automatically draws in data created by recent versions of QuickBooks and Microsoft Outlook or Outlook Express, and displays the information conveniently on a

QuickBooks Customer Manager

Intuit
Preproduction version, not rated
Easy, entry-level CRM.
List: \$80
find.pcworld.com/38483

Smart Contact Manager Pro 4

Surado Solutions
★★★★☆
Robust, small-business CRM.
List: \$180
find.pcworld.com/38486

Lexmark's So-So All-in-One

MULTIFUNCTION PRINTER

TEST THE NEW **PrinTrio** **Center Photo P3150** from Lexmark is a photo-oriented multifunction printer attractively priced at \$100. It's also simple to use, with one-touch scanning and copying, as well as a driver that makes setting up, editing, and printing photos easy, even for novices.

The P3150 places memory card slots up front, which lets you quickly upload images

from CompactFlash, Memory Stick, Microdrive, MultiMediaCard, SD (Secure Digital), and SmartMedia cards to your PC, then edit and print them. The photographs that our shipping P3150 printed on glossy paper had rich colors, showed smooth transitions, and exhibited just slight graininess. A 4.5-by-7-inch photograph printed in 93 seconds, compared with an average of 73 seconds for other MFPs we've tested. Though 20 seconds isn't a long time, speed matters if you print a lot of photos.

But as a copier, the P3150 is a disappointment. At the default settings (designed for black-and-white photos), text and color copies were light and faded, and came out very



PHOTO PRINTING and more: Lexmark's P3150 all-in-one.

slowly. When we changed the settings, copies started emerging much more quickly, but their quality was still poor.

Scanning on the P3150's flatbed was easy—done with a single push of the button on the console. The print quality of the scanned documents was fairly good, though as in the copies, the text was light and washed out.

Printed text looked slightly jagged but surprisingly good

for output from a photo printer, though nonphoto color prints appeared washed out and foggy. Print speeds were comparable to those of other multifunction printers: 4.8 pages per minute for text and 0.3 ppm for color graphics.

The PrinTrio Photo P3150 won't serve as a rugged multifunction printer, but it is a reasonably good photo printer with an appealing price.

—Lisa Cekan

Lexmark PrinTrio Photo P3150

Lexmark

★★★★☆

An inexpensive photo printer with limited office capabilities.

List: \$100

find.pcworld.com/38432

Eight Inks, Great Photos

PHOTO PRINTER

TEST A NEW \$300 printer by Hewlett-Packard, the **Photosmart 7960** uses no fewer than eight different inks to print color photos—with spectacular results.

The 7960 employs the same black, tricolor, and photo color ink cartridges as the \$260 Photosmart 7550 (one of our

top-rated photo printers). To print photographs, however, you swap the regular black cartridge, which contains a pigment-based ink perfect for text documents, for a new photo-gray cartridge containing light gray, dark gray, and a new black ink reformulated for photo printing.

The record number of inks

is not simply a case of one-upmanship. In our tests the shipping 7960 produced excellent color photos, with smooth gradations, vivid colors, and natural-looking gray tones. Black-and-white photos were also superb, exhibiting none of the color tints we frequently see from other printers.

On the downside, the 7960 is a bit slower than most competitive ink jets, printing photos at 0.36 pages per minute compared with the 0.43 ppm from similar printers we've tested. And its print quality comes at a price. Because the 7960 uses the new photo-gray cartridge, a tricolor cartridge, a text black cartridge, and a standard photo cartridge, you'll shell out \$105—or more than one-third the printer's price—every time you need to replace them all.

You can print photos right from your camera's memory card—the 7960 reads six types in four card slots under the top cover. Or you can plug in an HP camera directly via the printer's USB 1.1 port, located beside the slots. A 2.5-inch LCD screen makes the control panel easy to use.

Buy this printer if you want high-quality prints that faithfully reproduce your camera's images, but bear in mind its sluggish performance and high ink costs.

—Paul Jasper ■

Photosmart 7960 Photo Printer

Hewlett-Packard

★★★★☆

Produces beautiful color photos, but ink costs could be high.

Street: \$300

find.pcworld.com/38489



HP'S 7960 Photosmart printer.



Hyper-Fun.

Hyper-Threading Technology from Intel.



The fun stuff in life requires real PC power. And the Intel® Pentium® 4 Processor with HT Technology is designed to let you do two things at once — at full throttle*. So even if you're playing an advanced game as you rip a CD in the background, the action won't stop. Find out more at intel.com/go/ht.



intel

*Look for systems with the Intel® Pentium® 4 Processor with HT Technology logo which your system vendor has verified utilize Hyper-Threading Technology. Performance will vary depending on the specific hardware and software you use. See www.intel.com/info/hyperthreading for information. ©2003 Intel Corporation. Intel and the Intel Inside logos plus Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. All rights reserved.

Eudora 6's Better Spam Solution

E-MAIL

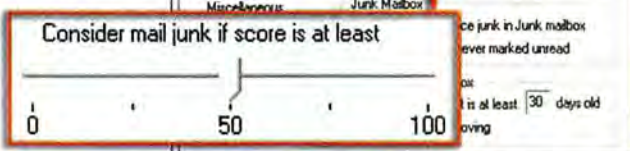
THERE WAS A TIME when I could deal with junk e-mail by simply pressing my computer's <Delete> key. Now, with 1000 or so pieces of spam flooding my in-box every day, I need help from my e-mail software. The latest version of Qualcomm's Eudora offers enough assistance to warrant investing in the \$50 paid version—the only Eudora version that offers new preloaded anti-spam plug-ins.

The SpamWatch suite of antispam tools in **Eudora 6** in-

cludes a junk-mail detection engine that, right out of the box, quarantines a majority of spam by analyzing its content. Better yet, you can train the filter by identifying junk mail that escapes detection and lands in your in-box. The software's ability to learn distinguishes Eudora's junk filter from Outlook 2003's, which can specify only that new sender addresses be either blocked or trusted. This evaluation process will make downloading your e-mail with the spam-fighting version slower than normal, but it's worth it.

When first training Eudora's junk filter, you must visit the junk mailbox frequently to identify missorted legitimate mail. Eudora helps you to separate the wheat from the chaff by showing a junk mail score for each message (a numerical

EUDORA 6 assigns scores to messages to sort out and block spam.



value from 1 to 100, where 100 is identified as junk and 1 as legitimate mail).

You can save a lot of time by quickly looking at the lower-scored messages, which are by far the most likely to be legitimate. You can also make sure that any mail coming from a sender in your address book gets through (although this may make you more vulnerable to attacks from people who have spoofed return addresses). In my tests with shipping

software, the spam filtering worked very well after a few days of training.

You can still get Eudora's free versions: The Light mode has minimal features, and the Sponsored mode runs ads but delivers all features except SpamWatch. However, if your in-box is under siege from spammers, maybe it's time to pony up the \$50—less for most upgraders—for the full-featured version.

—Yardena Arar

Eudora 6

Qualcomm

★★★★☆

Street: \$50 (Paid mode); free (Sponsored and Light modes)

Powerful antispam technology, but only in the paid version.

find.pcworld.com/38423

Projector Offers Detachable Digicam

PROJECTOR

WITH THE NEW Toshiba TLP-S41U projector, you won't need to hassle with printed handouts or find a chalkboard in order to add last-minute items to your presentation. This versatile unit includes an integrated digital camera that you can use to project images of paper documents or display three-dimensional objects.

TLP-S41U

Toshiba

★★★★☆

Versatile projector includes a unique detachable camera.

Street: \$1799

find.pcworld.com/38420



Previous Toshiba projectors have included onboard cameras, but the \$1799 TLP-S41U is the first model to offer a camera that can be detached, though the camera is still tethered via a 43.5-inch cable. You can use the camera to display large items (such as maps or schematic drawings) or even to show live demonstrations (how to use a PDA, the functions of a scientific calculator,

THE TLP-S41U's camera unhooks to shoot large items.

and so on). Note that the TLP-S41U is a native-SVGA (800-by-600-pixel resolution) projector, so its image quality isn't quite as good as that of higher-resolution models.

I found it a simple affair to set up a shipping TLP-S41U and use it with both PC and

video inputs, although at 6.2 pounds with camera, it's heavier than portables without cameras. Noteworthy features include a zoom lens, a one-click keystone button (which automatically corrects trapezoidal distortion), and a robust brightness of 1600 ANSI lumens. The camera unit includes a sturdy base, an extendable arm, and a small camera head with focus and other controls.

The projector was effective at displaying both documents and objects in a small room with low ambient light. However, in a darker room, you might need to use a small desk lamp to illuminate items placed under the camera.

—Richard Jantz

We improved the view at work.



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For work or play, count on the #1 selling monitor brand in the U.S. to give you the best view in the office.

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Stylish ThinEdge LCDs are equally at home as a solo display with versatile pivot/height/swivel adjustments to enhance productivity and reduce strain.

data display. And pivot/height/swivel adjustments on screen sizes from 17" to 21" deliver the perfect view at the right price. Factor in ViewSonic innovations like ClearMotiv™ fast response video performance and

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Leading stand-alone, branded monitor by sales (CRT and LCDs combined; iSupply/Stanford Resources Monitraz and Flat Panel Monitraz*, 2Q03 report).

Now we're doing



FROM LCD AND PLASMA TVs TO VIDEO PROCESSORS AND MEDIA CENTER PCs,

You've trusted ViewSonic® to give you a better view at work. Now you can improve the view at home, too.

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Beautiful to watch. The N2700w 27" LCD TV is only one of the stunningly versatile HDTV-ready models offered by ViewSonic.

ViewSonic's new N2700w 27" LCD TV is a stunning flat panel display that looks beautiful anywhere in the house. ViewSonic's advanced engineering gives you superb HDTV resolution, color and sharpness. It's truly a new home performance standard for TV and digital multimedia.

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Downtime

the same at home.



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the Internet or answering email. ViewSonic has a complete line of LCD TVs to fit both budget and room size — from family room to kitchen, to study to dorm room. Innovative LCD TV is just one more way that ViewSonic brings experience and innovation to the convergence of PC, TV and entertainment.

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Internet-Accessible Storage

SERVER

FINALLY, AN affordable piece of networking gear that the average PC jockey can use as a file and Web server, a router, a firewall, and a 120GB storage device.

With Tritton Technologies' \$330 **Advanced Server Appliance Product**, I waved good-bye to my Internet service provider's 10MB limit on Web site space. Instead, I enjoyed storing video and audio files on the ASAP, streaming the content across my home network, and accessing it from any PC via Internet Explorer.

With broadband Internet access I was able to use the ASAP as a full-fledged remote-

access server. In geek parlance, the ASAP is a network-attached storage device; businesses have been using larger, much more expensive NAS devices for years.

You can set up password-protected access to the data on the ASAP from any Internet-connected PC. During setup, Tritton steps you through assigning your device a domain name, by way of free services

Advanced Server Appliance Product

Tritton Technologies
Preproduction unit, not rated
Affordable, beefy Web/file server.
Street: \$330
find.pcworld.com/38402

such as those of DynDNS.org. To use the ASAP's file transfer functions, you assign your device a URL that is based on your domain name. Then, by entering that URL, visitors can gain access to the ASAP and any files and documents you care to share. Guests just need to use either IE or a file transfer protocol program.

Using my preproduction ASAP wasn't all good news. The setup process was rough around the edges, with cryptic menus and incomplete direc-

TRITTON'S Advanced Server Appliance Product.

tions (though Tritton does offer free phone-based technical support). And the ASAP's ability to host a Web site was not available for testing.

Nevertheless, the ASAP will likely appeal to tech-savvy users who won't mind some tinkering to get powerful, affordable network storage.

—Tom Spring ■



PHOTOGRAPH: MARC SIMON

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Watch for the Penabled logo to ensure you're getting the natural feel and superior performance of Wacom's patented cordless and battery-free pen technology.

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The Fujifilm FinePix F700 Digital Camera



©2003 Fuji Photo Film U.S.A., Inc.

Mr. Green's view

You won't miss a thing with Fujifilm's FinePix F700 Digital Camera. Just ask Mr. Green. Nothing captures youthful charm like the F700. With 6.2 million effective pixels, it delivers the most brilliant color pictures that challenge film. Fujifilm's patented Super CCD SR technology gives you the ability to capture fine detail in highlights as well as superb shadow detail and texture.

The picture Mr. Green takes is the picture he gets. For those constantly squirming targets, the F700's new continuous auto-focus mode means no shutter lag and the ability to never miss a shot. Which means



The twins' view

that Mr. Green is taking the best pictures of his life. And the F700 comes with a PictureCradle for easy download to the computer. So he'll be able to share his masterpieces with family, friends, his boss....

For more information go to www.fujifilm.com or call 1-800-800-FUJI.



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Get the Picture

4th Generation Super CCD SR • Wide Dynamic Range • Compact Metal Body
Super EBC Fujinon 3x Optical Lens • Lithium-Ion Rechargeable Battery • Manual Shooting Capability

Microsoft's Easy Wi-Fi



MICROSOFT'S Base Station MN-700.

of fiddling with a slew of Properties menus. Now along comes Microsoft's Wireless-G product line, which adheres to the faster 802.11g Wi-Fi standard and is backward-compatible with 802.11b equipment. (The Wireless-G line includes the \$109 **Wireless Base Station MN-700**; the \$85 **Wireless Notebook Adapter MN-720**; the \$85 **Wireless PCI Adapter MN-730**; the \$139 **Xbox Wireless Adapter MN-740**, which connects the pop-

ular game console to the Internet; and the \$179 **Wireless Notebook Kit MN-820**.)

Operating on the assumption that installation hassles have been the major obstacle to mass adoption of Wi-Fi, Microsoft has created an intelligent, take-you-by-the-hand, automated install software setup wizard. Using shipping versions of the base station with the notebook adapter and the associated software that works with Windows 98 or later versions, I set up my own wireless network in less than 10 minutes. Tasks that had stopped me cold in the past—configuring IP addresses, setting up file sharing, or creating a security password—were now seamlessly handled in the background.

On the downside, I found that even with a strong signal, I would lose a connection to the Web periodically. And if you are using another brand of adapter card on one or more PCs, you have to manually insert the Wi-Fi Protected Access security protocol or authentication password (just a cut-and-paste process).

Solid hardware and well-designed software—now *that's* the way Wi-Fi should be.

—Michael S. Lasky ■

WIRELESS
SURE, WI-FI networking is appealing: Being untethered is very convenient. But setting Wi-Fi up is no picnic.

I've tried installing a number of wireless 802.11b base stations and notebook adapter cards with varying success, and sometimes it takes hours

of fiddling with a slew of Properties menus. Now along comes Microsoft's Wireless-G product line, which adheres to the faster 802.11g Wi-Fi standard and is backward-compatible with 802.11b equipment. (The Wireless-G line includes the \$109 **Wireless Base Station MN-700**; the \$85 **Wireless Notebook Adapter MN-720**; the \$85 **Wireless PCI Adapter MN-730**; the \$139 **Xbox Wireless Adapter MN-740**, which connects the pop-

Wireless Base Station MN-700

Microsoft

★★★★★

Well-designed, no-brainer software; solid Wi-Fi hardware.

List: \$109, adapter cards \$85

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PHOTOGRAPH: MARC SIMON

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- Output: High Quality - Up to 1200 x 1200 dpi
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16,700,000 colors

480,000 mirrors

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1,500 lumens

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Fortunately, the smallest number is the price.

BenQ's projectors include a DLP™ Chipset that ensures high quality, digitally based images that won't fade or degrade over time. Made possible by 480,000 hinged mirrors embedded within, designed to display the truest colors with absolute clarity. This state-of-the-art PB6100 projector weighs just 5.6 lbs., features 1,500 lumens for optimum brightness and a contrast ratio of 2000:1 for a crystal clear picture. Built to last, it comes with a 3-year warranty and 2-year XpressXchange. All for only \$999. Smart technology at a smart price. Those numbers add up nicely. To learn more about BenQ's wide range of projectors, visit www.BenQ.com/2003/PCWorld-Proj or call 1-866-700-2367.

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IBM recommends Microsoft® Windows® XP Professional for Business.



(Monitor not included)



(Monitor not included)



(Monitor not included)

IBM ThinkCentre™ A50p

Distinctive IBM Innovations:

- Rapid Restore Ultra – Push-of-a-button data backup and recovery

System Features:

- Intel Pentium 4 Processor with Hyper-Threading Technology 2.40GHz
- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM¹
- 40GB hard drive
- CD-ROM
- Intel Extreme Graphics 2
- Integrated 10/100 Ethernet
- 3-yr parts/1-yr limited onsite service limited warranty²

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#30L9199 '99

IBM ThinkCentre A50p

Distinctive IBM Innovations:

- Rapid Restore Ultra – Push-of-a-button data backup and recovery

System Features:

- Intel Pentium 4 Processor with HT Technology 2.60GHz
- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM
- 40GB hard drive
- CD-RW
- Intel Extreme Graphics 2
- Integrated 10/100 Ethernet
- Norton AntiVirus 2003 OEM Edition
- Lotus® SmartSuite® Millennium license
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\$849

NavCode 843294U-M543

ServicePac® Service Upgrade:
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#41L2732 '229

IBM ThinkCentre M50

Distinctive IBM Innovations:

- Rapid Restore Ultra – Push-of-a-button data backup and recovery

System Features:

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- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM
- 40GB hard drive
- CD-ROM
- Intel Extreme Graphics 2
- Gigabit Ethernet-integrated
- Norton AntiVirus 2003 OEM Edition
- Lotus SmartSuite Millennium license
- 3-yr parts/3-yr limited onsite service limited warranty²

\$1,079

NavCode 8187D9U-M543

ServicePac® Service Upgrade:
4-yr Onsite Repair/9x5/Next Business Day
#69P9191 '89

IBM ThinkCentre M50

Distinctive IBM Innovations:

- Rapid Restore Ultra – Push-of-a-button data backup and recovery

System Features:

- Intel Pentium 4 Processor with HT Technology 2.80GHz
- Microsoft® Windows® XP Professional
- 512MB DDR SDRAM
- 40GB hard drive
- CD-ROM
- Intel Extreme Graphics 2
- Gigabit Ethernet-integrated
- Norton AntiVirus 2003 OEM Edition
- Lotus SmartSuite Millennium license
- 3-yr parts/3-yr limited onsite service limited warranty²

\$1,199

NavCode 8187EJU-M543

ServicePac® Service Upgrade:
3-yr Onsite Repair/24x7/4-hr Response
#41L2740 '159

IBM ThinkCentre S50

Distinctive IBM Innovations:

- Access IBM – IBM help at your fingertips

System Features:

- Intel Pentium 4 Processor with HT Technology 2.40GHz
- Microsoft® Windows® XP Professional
- 256MB DDR SDRAM¹
- 40GB hard drive
- CD-ROM
- Intel Extreme Graphics 2
- Integrated 10/100 Ethernet
- 3-yr parts/3-yr limited onsite service limited warranty²

\$1,029

NavCode 818315U-M543

ServicePac® Service Upgrade:
3-yr Onsite/9x5/4-hr Response
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IBM ThinkCentre S50

Distinctive IBM Innovations:

- Access IBM – IBM help at your fingertips

System Features:

- Intel Pentium 4 Processor with HT Technology 2.80GHz
- Microsoft® Windows® XP Professional
- 512MB DDR SDRAM¹
- 40GB hard drive
- CD-ROM
- Intel Extreme Graphics 2
- Gigabit Ethernet-integrated
- 3-yr parts/3-yr limited onsite service limited warranty²

\$1,259

NavCode 818336U-M543

ServicePac® Service Upgrade:
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Select and purchase IBM Think Express products, designed and priced for small and medium businesses.

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The Best of Everything



We pick today's top products—from desktops and notebooks to digital cameras, DVD burners, and LCD monitors. **By the Editors of PC World**



Though personal technology products have become easier to use in recent years, it's harder than ever to decide what to pick—there are so many choices. We're here to help, especially as this is a season when most everyone is thinking of shopping for personal technology, either for others or for themselves. This special buying guide brings together our best recommendations on what to purchase now, whether you want a digital audio player for your workouts, a multifunction printer for your home office, or a notebook to take on business trips.

We provide this kind of buying advice in our *Top 100* section month after month, but this time we've looked at the products in a different way. Not only have we included more types of technology, but we've also rearranged the charts to reflect how specialized personal technology has become. To help you zero in on the niche that meets your needs, we've segmented the charts more: For example, you'll find the best entertainment, mainstream, and no-frills PCs, and the best advanced, point-and-shoot, and budget cameras. This section also contains another buying tool: our annual report on reliability and service, which includes peripherals for the first time. ▶

Rebecca Freed edited "The Best of Everything." Freelance writers Dan Littman, Mick Lockey, and Carla Thornton, and PC World editors Richard Baguley, Laura Blackwell, Eric Butterfield, Tracey Capen, Seán Captain, Kalpana Ettenson, Alexandra Krasne, Melissa J. Perenson, and Alan Stafford contributed to the section. 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, with logistical support provided by Julian Weatherby.

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Home and Mobile Gadgets

155 These technology products mix computing with entertainment, so they aren't strictly business. But they're definitely smart—and you'll find them in some unusual places, like on the trail, in the living room, and in the kitchen.

Desktops: Fast, Furious, and Affordable



Alienware Aurora Extreme

Pundits predicting the demise of the humble PC should return to their Ouija boards and reconsider their predictions. Computers—especially in the home—are capable of doing more than ever before.

VIDEO EDITING, video conferencing, and home entertainment are now common activities on home-based computers, along with such standbys as e-mailing, printing digital photos, creating MP3 files, connecting to the office, and finishing work at home (a necessary evil these days). PC boxes are also getting more interesting: Styles and shapes vary from the elegant black and silver to candy-apple red, and from small cubes the size of a shoebox to full-size towers that could house a small dog.

For this month's guide to the best hardware products, we've divided desktop PCs into three categories: entertainment, mainstream, and no-frills. Our picks represent the most interesting models that have passed through the PC World Test Center. For the entertainment category, we considered top-of-the-line gaming machines as well as systems that provide a range of multimedia extras, such as a TV tuner and a remote control.

Mainstream PCs are the jacks-of-all-trades. With their balance of perfor-

mance, features, and price, these models can do double or triple duty, deftly handling everything from intensive database work to gaming to working (or playing) with digital photography and video.

A no-frills PC is usually thought of as underpowered, underequipped, and often just plain ugly. But our picks in this category—both of which cost under \$1000—show that you can get a lot more computer than you may have thought.

ENGAGING ENTERTAINERS

THE WORD EXTREME best describes a PC targeted at performance-crazed gamers—typically it's a huge, very stylized tower with the latest proces-

sor, a graphics card that can drive high frame rates on complex games, and a speaker set that delivers loud, powerful, 5.1-channel surround sound. A multitude of cooling fans, colored interior lights, and clear windows showing off the insides of the case are also de rigueur.

Our pick for top entertainment system, the Alienware Aurora Extreme, fits that profile nicely. Its \$4113 price tag will give anyone pause, but the system is outfitted with a list of features that's sure to create hardware envy: AMD's brand-new 64-bit 2.2-GHz Athlon 64 FX-51, 1GB of dual-channel DDR400 SDRAM, ATI's Radeon 9800 Pro graphics board (with 256MB of memory), two RAID-configured 80GB hard drives, and an audio system that includes terrific-sounding Klipsch ProMedia Ultra 5.1 speakers and Creative Labs' Sound Blaster Audigy 2 Platinum sound board and drive (which adds a slew of audio ports accessible via a drive bay). What the Alienware case lacks in colored lights and windows, it makes up for in rad styling: Our test unit came in polished black (blue and lime green are also available), with the company's distinctive, vaguely alien-looking front panel.

We had high expectations for the Aurora Extreme's performance, and we were not disappointed: It generally whipped through our high-end graphics tests, and it churned out some of the fastest frame rates we've seen to date in our tests with the visually demanding *Return to Castle Wolfenstein* displayed at 1280 by 1024 resolution and 32-bit color.

The Aurora earned a score of 141 on our PC WorldBench 4 tests—the top score that we've recorded so far, though only one point better than our previous speed

Slim Style

THE DELL Dimension 4600C's sleek chassis will fit equally well in a home entertainment center or on a desk. The system can stand vertically and has a flip door to cover its DVD+R/RW drive, PC Card slots, and front-accessible ports.



champ, the ABS Ultimate M5 (read on for more on the latter machine).

A dual-format DVD burner and a flash-media reader are not critical for a gaming system, but they're good to have. Our one knock on the Aurora (aside from having to hock the family jewels to pay for it) is that the USB ports are placed inconveniently at the bottom edge of the case.

If your idea of entertainment skews more toward TV and DVD movies, either of our other two picks in this category—Dell's "slimline" Dimension 4600C and

Hewlett-Packard's stylish Pavilion M390n minitower—can serve as an entertainment hub for playing back your digital music, images, and video. Both systems use Microsoft's new Windows XP Media Center 2004 Edition and include a built-in TV tuner and wireless remote control. The new version of Media Center adds improved navigation, one-touch CD-ripping, and a better interface for sorting through recorded TV. The \$1949 Dimension 4600C is notable for its small size—it's about as big as a VCR—and flexible

orientation (it can stand vertically or horizontally). The \$2665 Pavilion M390n earns high marks for its classy-looking, well-designed case (which includes a space on top to accommodate an HP digital camera dock, plus front-accessible analog and S-Video inputs), impressive sound, and easy setup.

Although both systems turned in respectable performance, neither proved a powerhouse. The Dimension 4600C, with a 2.8-GHz Pentium 4 CPU and 512MB of DDR400 SDRAM—scored ▶

TOP DESKTOP PCs

**TEST
Center**

ENTERTAINMENT PC	Basics	Extras	Performance	Comments
Alienware Aurora Extreme ★★★★★ NEW find.pcworld.com/38507	<ul style="list-style-type: none"> • \$4113 • 2.2-GHz AMD Athlon 64 FX-51 • 1GB DDR400 SDRAM • 160GB hard drive (RAID) 	<ul style="list-style-type: none"> • 19-inch CRT monitor • 256MB ATI Radeon 9800 Pro graphics • DVD±R/RW dual-format drive • Sound Blaster Audigy 2 Platinum Drive 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 141 • Graphics: Outstanding • Sound quality: Outstanding • Setup/ease of use: Very good 	Outstanding performer is a great choice for gamers who need a system that can handle complex graphics processing. Its sound is terrific.
Dell Dimension 4600C ★★★★☆ NEW find.pcworld.com/38510	<ul style="list-style-type: none"> • \$1949 • 2.2-GHz Pentium 4 • 512MB DDR400 SDRAM • 120GB hard drive 	<ul style="list-style-type: none"> • 17-inch LCD monitor • 64MB ATI All-in-Wonder 9000 graphics • DVD±R/RW drive • Corel WordPerfect Office 11 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 114 • Graphics: Very good • Sound quality: Fair • Setup/ease of use: Good 	An entertainment system for small spaces, this Media Center unit has a TV tuner and two PC Card slots.
HP Pavilion M390n ★★★★☆ NEW find.pcworld.com/38513	<ul style="list-style-type: none"> • \$2665 • 2.8-GHz Pentium 4 • 512MB DDR400 SDRAM • 200GB hard drive 	<ul style="list-style-type: none"> • 17-inch LCD monitor • 128MB NVIDIA GeForce4 FX 5600 graphics • DVD±R/RW drive • Memory card reader 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 117 • Graphics: Very good • Sound quality: Good • Setup/ease of use: Good 	Well-designed, moderately quick Media Center minitower has plenty of storage, as well as FM and TV tuners.
MAINSTREAM DESKTOP				
ABS Ultimate M5 ★★★★★ find.pcworld.com/36536	<ul style="list-style-type: none"> • \$2299 • 2.2-GHz Athlon XP 3200+ • 1GB DDR400 SDRAM • 160GB hard drive (RAID) 	<ul style="list-style-type: none"> • 19-inch CRT monitor • 128MB ATI Radeon 9800 Pro graphics • DVD±R/RW dual-format drive • Microsoft Works Suite 2003 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 140 • Graphics: Outstanding • Sound quality: Outstanding • Setup/ease of use: Very good 	Powerful PC is the second fastest we've tested and has outstanding gaming scores, great speakers, and a moderately good monitor.
Dell Dimension 8300 ★★★★★ find.pcworld.com/37289	<ul style="list-style-type: none"> • \$3199 • 2.6-GHz Pentium 4 • 1GB DDR400 SDRAM • 250GB hard drive 	<ul style="list-style-type: none"> • 18-inch LCD monitor • 128MB ATI Radeon 9800 Pro graphics • DVD±R/RW drive • Microsoft Office XP SBE 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 127 • Graphics: Outstanding • Sound quality: Outstanding • Setup/ease of use: Good 	Pricey PC offers a beautiful LCD monitor and good speed. The case interior can be accessed easily, sans tools.
Gateway 710XL ★★★★★ NEW find.pcworld.com/38516	<ul style="list-style-type: none"> • \$3579 • 2.13-GHz Pentium 4 • 1GB DDR400 SDRAM • 500GB hard drive (RAID) 	<ul style="list-style-type: none"> • 18-inch LCD monitor • 256MB NVIDIA GeForce FX 5900 Ultra graphics • DVD±R/RW dual-format drive 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 126 • Graphics: Outstanding • Sound quality: Outstanding • Setup/ease of use: Very good 	Tons of storage space, FireWire ports, and a big, bright LCD make this model a good choice for video editing. It also comes with a memory card reader.
HP Pavilion A350n ★★★★☆ find.pcworld.com/37832	<ul style="list-style-type: none"> • \$1329 • 2.6-GHz Pentium 4 • 512MB DDR333 SDRAM • 120GB hard drive 	<ul style="list-style-type: none"> • 15-inch LCD monitor • 64MB NVIDIA GeForce4 MX 440 graphics • DVD±R/RW drive • WordPerfect Productivity Pack 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 116 • Graphics: Good • Sound quality: Poor • Setup/ease of use: Good 	Moderate performer features clear labels and easy-to-access ports. The 15-inch LCD showed crisp text and vibrant graphics.
MPC ClientPro All-in-One ★★★★☆ NEW find.pcworld.com/38519	<ul style="list-style-type: none"> • \$2969 • 2.8-GHz Pentium 4 • 512MB DDR333 SDRAM • 120GB hard drive 	<ul style="list-style-type: none"> • 17-inch LCD monitor • Integrated 64MB ATI Mobility Radeon 9000 graphics • DVD/CD-RW combo drive 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 122 • Graphics: Very good • Sound quality: Very good • Setup/ease of use: Very good 	Sleek but pricey all-in-one saves space and includes a TV tuner card and a PC Card slot; monitor quality is pleasing overall.
NO-FRILLS PC				
HP Business Desktop D325 ★★★★☆ find.pcworld.com/37829	<ul style="list-style-type: none"> • \$828 • 2.13-GHz Athlon XP 2600+ • 256MB DDR233 SDRAM • 40GB hard drive 	<ul style="list-style-type: none"> • 15-inch CRT monitor • Integrated NVIDIA GeForce4 graphics using main memory • CD-ROM drive 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 122 • Graphics: Good • Sound quality: Poor • Setup/ease of use: Very good 	Bare-bones model has room for expansion and dual VGA inputs, but a relatively small hard drive, no CD-RW, and a small monitor.
Polywell Poly 880NF2-2800 ★★★★☆ find.pcworld.com/37334	<ul style="list-style-type: none"> • \$993 • 2.08-GHz Athlon XP 2800+ • 512MB DDR333 SDRAM • 80GB hard drive 	<ul style="list-style-type: none"> • 17-inch CRT monitor • Integrated NVIDIA nForce2 graphics using main memory • DVD-ROM drive and CD-RW drive 	<ul style="list-style-type: none"> • PC WorldBench 4 score: 127 • Graphics: Fair • Sound quality: Good • Setup/ease of use: Good 	A see-through window on the side of this commendable performer's case shows off the interior. And there's room to add more storage.

For expanded charts and product reviews, see find.pcworld.com/38537.

a decent 114 on PC WorldBench 4. The 3.2-GHz Pentium 4–equipped Pavilion M390n, with the same amount of memory, scored only slightly better, earning a 117 on PC WorldBench 4. Both systems' graphics frame rates were mediocre—suitable only for low-end gaming.

MAINSTREAM MARVELS

THIS BROAD-RANGING category offers a diverse mix of price, performance, and configurations. The most powerful systems pair the latest AMD or Intel processor with a gigabyte of fast, dual-channel DDR400 memory. Often, they also include flash-media readers, dual-format DVD+R/RW and DVD-R/RW burners, and dual Serial ATA hard drives configured as a striped-RAID volume (the ABS and Gateway models in this category, for example). Prices for these workhorses hover around \$3000. With lower-priced systems—those under \$2000—you typically get an older, slower processor, a smaller LCD monitor (a 15-incher versus



Gateway 710XL

a 17- or 18-inch unit), and less RAM.

Our top pick, the ABS Ultimate M5, strikes a pleasing balance between performance, components, and price. With an AMD 2.2-GHz Athlon XP 3200+ CPU and 1GB of DDR400 SDRAM, the \$2299 Ultimate M5 delivered a speedy score of 140 on our PC WorldBench 4 tests, the fastest among the systems we considered for this category. Game play was impressive, too: The 128MB ATI Radeon 9800

Pro graphics card, a common choice for many top-flight PCs, delivered fast frame rates in our Unreal Tournament 2003 tests. Game images looked great on the 19-inch CRT monitor (the CRT helps keep the price of this system relatively low), and the sound from the Logitech Z-680 speakers, a 5.1 set, was first-rate.

The well-equipped Dell Dimension 8300 gets a nod for its deft graphics performance on our gaming tests. This ►

Diminutive Systems for Small Spaces

WHETHER YOU'RE TRYING to save real estate on your desk, or you just want a cool-looking conversation piece, there are several styles of ultracompact desktop systems to choose from. Some are barely bigger than an external, full-size optical drive, while others resemble a short stack of textbooks, with a handle on top. The trade-off in using a small-size PC is what you can't stuff in the box. Say so long to multiple optical drives and hard drives (those extras will have to hang outside your PC on USB cables). But given the proliferation of massive hard drives, multifunction optical writers, and ever-improving integrated sound and graphics, you can still get plenty of function in a small form.

The machines in Stealth Computer's Little PC line (www.littlepc.com) are among the smallest we've seen. The LPC-401 is just 10 by 5.8 by 2.9 inches—barely bigger than two external 5.25-inch optical drives on top of one another. We were not greatly impressed with this model when we tested it six months ago: Its performance was hampered by

a relatively slow notebook hard drive and integrated 2D graphics. However, a new model, the LPC-401P, adds a faster CPU (a 2.8-GHz Pentium 4), a PC Card slot, a 120GB hard drive, and an 8X/8X/24X CD-RW drive. Those upgrades bumped the price up nearly a grand to \$2080, but the aluminum chassis's dimensions remain unchanged.

If you're willing to go a little larger—about the size of a two shoe boxes—companies like ABS (www.buyabs.com) and Amax (www.amaxit.com) sell systems with more powerful motherboards and higher-end components (such as a 3-GHz Pentium 4 CPU; a 200GB, 3.5-inch hard drive; and ATI Radeon 9800 Pro-based graphics). Amax also sells partially assembled units that include the heat sink, the motherboard, and the

power supply—you add the hard drive, the optical drive, and the operating system. Like the Stealth PCs, these machines offer little internal expandability, but they're powerful enough for most apps and look very cool sitting on a desktop. —Melissa J. Perenson



Stealth Computer's LPC-401 has a notebook-size DVD/CD-RW drive and PC Card slot up front.

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3.2-GHz Pentium 4 system generated high frame rates using its 128MB ATI Radeon 9800 Pro graphics card. We also liked both the image quality from its 18-inch LCD display and the resplendent sound produced by the Altec Lansing ADA995 speaker set. While this system is no bargain, its \$3199 price tag is about average for such a high-end configuration.

The Dimension 8300 looks almost cheap, though, compared with the Gateway 710XL's \$3579 price. But the 710XL is packed with top-grade components, including a whopping 500GB of storage. The 710XL is a performer, too: It earned a score of 126 on PC WorldBench 4—well above average for the PCs we tested for this review. Equipped with a 256MB NVIDIA GeForce FX 5900G Ultra graphics card, the 710XL produced blazing frame rates and terrific images running Unreal Tournament 2003 at 1280 by 1024 resolution and 32-bit color, the optimal setting for its bundled 18-inch FBD1830 LCD.

The most affordable system in this group, the \$1329 HP Pavilion A350n, is a fine amalgam of moderate performance, modest pricing, and midrange configuration. The price includes a DVD+R/RW drive, a 120GB hard drive, and a memory card reader. Add to that the terrific-looking

Slots, Anyone?

MEMORY CARD readers are an increasingly common sight on desktop PCs. The slots typically support up to seven formats and are either built into a drive bay or, as in the case of this HP Pavilion, part of the chassis's design.



ing images on the HP F1503 15-inch flat-panel LCD monitor, and you have a system well-suited for managing and editing your digital photography.

Office PC no longer equates with boring looking. MPC's stylish ClientPro All-in-One, for example, is both business- and entertainment-focused. This \$2969 system's core components are integrated into a trim 17-inch LCD monitor—which means that the whole package takes up very little space but also that any upgrades are limited to what you can plug into its USB 2.0 or FireWire ports. The unit we received had a VGA-out port to attach a second monitor, as well as a TV tuner card. The LCD produced generally acceptable image quality on our test images, though it looked a tad dark in the corners. Equipped with an Intel 2.8-GHz Pentium 4 and 512MB of DDR333 SDRAM, this ClientPro earned a very respectable PC WorldBench 4 score of 122. The 64MB

ATI Mobility Radeon 9000 integrated graphics will suffice for most business applications, and it performed well in our graphics tests: We didn't spot any stutters in game play, as is sometimes the case with integrated graphics. The LCD has built-in 2.1-channel speakers, but our test system came with Altec Lansing's fine-sounding 5.1-channel 5100 speaker set.

VIABLE, NO-FRILLS VALUES

YOU'LL HAVE TO make some sacrifices if you're buying a no-frills PC—say bye-bye to that sleek 18-inch LCD, for instance. But you can pick and choose between performance and features and still keep the price under a grand. Our top pick in this category, the \$993 Polywell Poly 880NF2-2800, tilts toward performance: Configured with a 2.08-GHz Athlon XP 2800+ CPU and 512MB of DDR333 SDRAM, it earned a solid PC WorldBench 4 score of 127—comparing favorably with pricier systems using Intel's 3.2-GHz CPU. The compromise? You have to settle for a rather mundane 17-inch CRT monitor, CD-RW and DVD-ROM drives instead of a DVD burner, and average graphics.

Despite its name, the \$828 HP Business Desktop D325 Microtower is also a solid general-use system. This 2.13-GHz Athlon XP 2600+ model is a good performer—it scored a 122 on our PC WorldBench 4 tests—with average graphics. However, the D325 configuration we tested is a bare-bones model, with only a 15-inch CRT monitor (and side-mounted speakers); a CD-ROM drive; a 40GB hard drive; and 256MB of DDR233 SDRAM. You can bump up the specs—but you'll bump the price up a few notches, too.

—Mick Lockey ■



HP Business Desktop D325 Microtower

Notebooks: Geared Up to Stay, or Go



Dell Inspiron 5150

No matter how or where you prefer to do your computing, there's a notebook designed to match your style. We've pulled together the best of three types: desktop replacements, ultraportables, and value notebooks.

WITH THEIR BIG screens, keyboards, and hard drives, desktop replacements tend to be heavier than other types of notebooks but remain portable enough for at least occasional forays outside the office. They also have the room to pack the most powerful components into their big cases.

The \$2799 IBM ThinkPad T40 still stands as our pick for the best overall desktop replacement. A perennial power Best Buy on our regular *Top 15 Notebook PCs* chart, the ThinkPad handily earned our top choice here, too, because it has an impressive collection of components in a package you can carry through an airport without needing a wheeled cart.

Though it weighs only 5.4 pounds (without its power adapter), the T40 we tested holds just as much RAM and hard-drive capacity as a standard desktop machine does. Containing 512MB of system memory and an 80GB hard drive, the T40 also earned a very respectable PC WorldBench 4 score of 124.

For expansion, the T40's modular bay

can accommodate anything from the included DVD-ROM/CD-RW combination drive to a second battery. Both long-range (802.11a/b) and short-range (Bluetooth) wireless options were built into our unit.

The \$2389 Gateway 450X is somewhat heavier than the T40, but is still easy to carry at 8.1 pounds. It has more legacy connections and takes almost as many add-ins via its modular bay, among them an optional six-in-one memory card reader module. It's the first 1.7-GHz/600-MHz Pentium M-equipped notebook we've tested, and it scored 125 on our PC

WorldBench 4 suite, ranking among the fastest notebooks we've seen to date. Its battery life is also excellent, at 5 hours.

The \$2025 HP Compaq Business Notebook Nx7000 is the only model among the desktop replacements here that has a wide-screen display, and it also boasts the best built-in stereo sound. The unit's extrawide case gives the keyboard room for a separate cursor keypad, as well as a touchpad with a separate scroll zone. Its native resolution of 1680 by 1050 makes icons a bit tiny, but it would make a good presentation or graphics machine.

Small-business users who don't travel much could be happy with Dell's Inspiron 5150. At 8.5 pounds (10.5 pounds with the AC adapter), this heavy-duty performer also includes a DVD burner. However, Dell does not sell a docking station for this notebook.

ONE FOR THE ROAD

SPEND MOST OF your computing time on the go? Then it might be worth trading some features for an easier-to-tote ultraportable notebook. Though their screen size tops out at 12.1 inches, the models here have plenty of features. Some of the latest units weigh half as much as the typical desktop replacement while wielding almost as much power.

Dell's \$2316 Latitude X300 was an easy pick for our top choice in this category. It

Docking Stations Give Ultraportables More Flexibility

DELL'S LATITUDE X300 snaps into a docking station for a host of extra connections, including serial, parallel, and PS/2 ports, plus two USB 2.0 ports. The MediaBase (shown under the laptop in the photos) has a bay that can house a second battery, an optical drive, or a floppy drive.





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your needs. You can find some attractive deals in portables that occupy the middle ground between the lightest and the most loaded.

Walking away with the Editor's Pick in the value category is the IBM ThinkPad R40, a junior version of the T40. For a little over half the T40's price, this 6.6-pound notebook (without the AC adapter) offers many of the same features, including dual pointing devices and a ThinkLight, which is a small LED embedded in the lid that can illuminate the keyboard in dark rooms or in a dimly lit aircraft cabin.

The DVD burner-equipped Acer TravelMate 290LMi is a good bet for those who need to work with or distribute large

multimedia files while on the road. The 290LMi turned in impressive battery life in our tests, running almost 5 hours.

The Toshiba Satellite A15-S127, which carries a 2-GHz Celeron processor, is the second-slowest notebook on the chart (after the ultraportable Averatec model), but you can't beat the \$949 price for a laptop that comes with a DVD-ROM/CD-

RW combination drive. Though the A15-S127's integrated graphics processor uses main memory, the portable still played our DVD movie smoothly. The A15-S127 also has a 15-inch screen and big-sounding stereo speakers, nice perks for the budget-conscious buyer who's looking for a little pizzazz in their first notebook.

—Carla Thornton ■



Gateway 450X (left) and
HP Compaq Business
Notebook Nx7000

Today's Tablets Are Turning in New Directions

THE FIRST SYSTEMS using Microsoft Windows XP Tablet PC Edition, designed to let you write on the screen as you would on a paper notepad, were introduced a year ago. This year, their processing power has been beefed up, with Intel's Centrino currently predominant as the CPU and wireless component. But tablets have changed on the outside as well—and in some new and interesting ways.

Gateway now sells a \$130 "hard-top keyboard"—a hard screen cover for its Tablet PC (manufactured by Motion Computing) that has a keyboard and an eraserhead pointer built into it. Gateway's latest Tablet PC model comes with a 1-GHz Pentium M processor, 256MB of RAM, a 40GB hard drive, and an external USB keyboard, for \$2300.

Acer has taken a different approach than Gateway by putting the tablet version of the Windows OS in a classic-style notebook, the TravelMate 250PE. Though you can write and draw directly on the screen with the provided digitizer pen, the screen doesn't fold down flat against the keyboard, as it does on convertible-style tablet notebooks. Instead, the 250PE's screen has a fold-out support that holds the screen steady while you are writ-

ing on it. And with an estimated street price of \$1599, this notebook actually costs less than most true tablet models do.

In addition, Acer has also released a convertible-style tablet, the \$2299 TravelMate C300. It has a 14.1-inch screen, and uses Centrino mobile technology including a 1.5-GHz Pentium M processor, 512MB of RAM, a DVD-ROM/CD-RW combination drive, and a 40GB hard drive.

Fujitsu, too, now offers a convertible-style tablet to complement its slate-style models. The LifeBook T3000 Tablet PC also uses Intel's Centrino mobile technology, including a 1.4-GHz Pentium M processor. It has a 12.1-inch display, 256MB of RAM, and a 40GB or 60GB hard drive. With the T3000D model, buyers can opt for 802.11g Wi-Fi or omit the wireless networking option altogether. Both tablets can be configured and ordered via Fujitsu's Web site. Pricing starts at \$1799.

On the software side, Corel has released version 2 of its \$99 Grafigo drawing application for tablets. In addition, version 3 of FranklinCovey's \$130 Tablet Planner is available through its Web site, and after November 24 the application can be purchased at retail.

—Rebecca Freed



INNOVATIVE: You can buy a hard screen cover for Gateway's Tablet PC that has a keyboard and pointer built in.

was by far the lightest at 3 pounds (without its media slice and power cord), and also the fastest. Thanks to a 1.2-GHz Pentium M processor and 640MB of RAM, it pulled down a PC WorldBench 4 score of 116, only 8 percent behind current top performers with 1.6-MHz and 1.7-MHz Pentium M CPUs. The X300's battery life was somewhat less impressive, at 2.1 hours.

The X300's keyboard is small, as is typical for this class of notebooks, but more comfortable than most. To use an optical drive with the X300, you can buy an ex-

ternal unit or spring for the 1.9-pound MediaBase, which has a modular bay and a full set of notebook connections, plus an SD (Secure Digital) media slot. (It also has a separate bay for another battery.)

The 4.5-pound Averatec 3150P and the 3.8-pound Sharp PC-MV14 are good, basic ultraportables. They're a little slower and heavier than the X300, but their built-in DVD-ROM/CD-RW drives mean you don't have to keep track of an external drive. Like the X300, the Averatec also has a comfortable, easy-to-use keyboard; the

PC-MV14's keyboard is slightly larger than the X300's but isn't quite as nice, and feels shallower. However, the two portables have longer-lasting primary batteries than the Latitude X300, and at \$1049 and \$1999, respectively, the Averatec and the Sharp are more affordable.

SMALL PRICE, ESSENTIAL FEATURES

IF A GOOD PRICE is more important to you than a laptop's size or computing power, a value notebook should suit ►

TOP NOTEBOOK PCs

**TEST
Center**

DESKTOP REPLACEMENT	Basics	Extras	Performance	Comments
Dell Inspiron 5150 ★★★★☆ find.pcworld.com/38525	NEW • \$1799 • 3.06-GHz Pentium 4 • 15-inch display • 10.5 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device • FireWire port • 802.11b/g wireless	• PC WorldBench 4 score: 121 • Overall design: Fair • Battery life: 5.3 hours	This bulky portable has a hard drive and memory slots that are easy to access, and it boasts great battery life.
Gateway 450X ★★★★☆ find.pcworld.com/38528	NEW • \$2389 • 1.7-GHz Pentium M • 15.1-inch display • 8.1 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device • FireWire port • 802.11g wireless	• PC WorldBench 4 score: 125 • Overall design: Very good • Battery life: 5.0 hours	An unremarkable exterior belies this notebook's built-in Wi-Fi, extensive set of connections, very good battery life, and upgradability.
HP Compaq Business Notebook Nx7000 ★★★★☆ find.pcworld.com/37664	• \$2025 • 1.6-GHz Pentium M • 15.4-inch display • 7.6 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device • FireWire port • Bluetooth wireless	• PC WorldBench 4 score: 123 • Overall design: Good • Battery life: 3.0 hours	This portable offers many attractive design touches, not the least of which is its wide screen, ideal for watching movies or displaying presentations.
Editor's PICK IBM ThinkPad T40 ★★★★☆ find.pcworld.com/34817	• \$2799 • 1.6-GHz Pentium M • 14.1-inch display • 6.2 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad and eraserhead pointing devices • 802.11a/b and Bluetooth wireless	• PC WorldBench 4 score: 124 • Overall design: Outstanding • Battery life: 6.2 hours	Lightweight laptop provides numerous wireless networking options, a big hard drive, and very long battery life.
ULTRAPORTABLE				
Averatec 3150P ★★★★☆ find.pcworld.com/36197	• \$1049 • 1.4-GHz Mobile Athlon XP-M 1600+ • 12.1-inch display • 5.3 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device • 802.11b wireless	• PC WorldBench 4 score: 94 • Overall design: Good • Battery life: 2.5 hours	This bargain wireless laptop is relatively slow but good for Web surfing and sending e-mail from the road.
Editor's PICK Dell Latitude X300 ★★★★☆ find.pcworld.com/38531	NEW • \$2316 • 1.2-GHz Pentium M • 12.1-inch display • 6 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device • FireWire port • 802.11b/g wireless	• PC WorldBench 4 score: 116 • Overall design: Very good • Battery life: 2.1 hours	On its own, this portable is just 3 pounds; its 1.9-pound media slice adds a full set of connections and great sound.
Sharp PC-MV14 ★★★★☆ find.pcworld.com/38534	NEW • \$1999 • 1.2-GHz Pentium III-M • 12.1-inch display • 5 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device • FireWire port	• PC WorldBench 4 score: 104 • Overall design: Good • Battery life: 3.1 hours	Ready for travel with the lightest weight here, this laptop lacks the bells and whistles of other ultraportables, but handles general computing tasks.
VALUE NOTEBOOK				
Acer TravelMate 290LMi ★★★★☆ find.pcworld.com/37661	• \$1499 • 1.3-GHz Pentium III-M • 15-inch display • 7.2 pounds with all parts	• DVD-RW drive • Touchpad pointing device • FireWire port	• PC WorldBench 4 score: 121 • Overall design: Very good • Battery life: 4.5 hours	This fast, reasonably priced model has long battery life and includes a rewritable DVD drive.
Editor's PICK IBM ThinkPad R40 ★★★★☆ find.pcworld.com/37667	• \$1539 • 1.3-GHz Pentium M • 15-inch display • 7.3 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad and eraserhead pointing devices • FireWire port	• PC WorldBench 4 score: 118 • Overall design: Outstanding • Battery life: 4.0 hours	Basic, midweight ThinkPad packs plenty of useful features into an easy-to-configure unit via its modular bay.
Toshiba Satellite A15-S127 ★★★★☆ find.pcworld.com/37658	• \$949 • 2-GHz Celeron • 15-inch display • 7.1 pounds with all parts	• DVD-ROM/CD-RW combo drive • Touchpad pointing device	• PC WorldBench 4 score: 99 • Overall design: Good • Battery life: 2.5 hours	Solid performance, a big screen, and high-quality sound make this model an excellent choice for first-time notebook buyers.

For expanded charts and product reviews, see find.pcworld.com/38537.

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C7300n
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C5000/C7000/
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Ink Jet Printers: More Than Pretty Pics



HP Business Inkjet 1100d

Affordable and versatile, ink jet printers offer plenty for the money. You can be your own photo lab, print lots of office documents, or put a multifunction printer on your desk and avoid trips to the copy shop.

THE \$199 HP BUSINESS Inkjet 1100d comes standard with a built-in duplexer, and the vendor optimistically estimates it can handle a monthly duty cycle (workload) of 6250 pages—impressive for an ink jet. Similarly productive, despite a price of under \$100, the Epson Stylus C84 boasts a monthly duty cycle of 5000 pages.

Multifunction printers keep getting better. The Canon MultiPass MP730 and the Lexmark X6170 performed best overall in our tests. For more-attractive photos, however, you should select a dedicated photo printer. The Epson Stylus Photo 900 and the Canon i9100 Photo Printer may equal your local print shop in output quality; plus, the Epson can print onto coated discs, and the Canon makes big prints—up to 13 by 19 inches.

—Eric Butterfield ■

TOP INK JET PRINTERS

**TEST
Center**

ALL-PURPOSE PRINTER	Basics	Extras	Performance	Comments
Epson Stylus C84 ★★★★★ find.pcworld.com/38171	• \$99 • 5760 by 1440 dpi • 120 sheets input, 50 output • USB 1.1 and parallel ports	• Maximum paper size: banner • Three one-color ink cartridges • Optional Bluetooth adapter (\$129) • Duty cycle: 5000 pages/month	• 6.3 ppm text/1.7 ppm graphics • Photo quality: Very good • Text quality: Good • Graphics quality: Good	The C84 printed sharp text quickly and attractive color photos, but line art showed banding. Optional high-capacity black ink cartridge (\$35) lasts for about 1350 pages.
Editor's PICK HP Business Inkjet 1100d ★★★★★ find.pcworld.com/38177	• \$199 • 5760 by 1200 dpi • 150 sheets input, 80 output • USB 2.0 and parallel ports	• Maximum paper size: legal • Three one-color ink cartridges • Duplexer standard • Duty cycle: 6250 pages/month	• 4.3 ppm text/1.7 ppm graphics • Photo quality: Good • Text quality: Good • Graphics quality: Good	The 1100d printed sharp text and crisp line art. Color photos had fine detail, though shadows looked a bit dark. Ink cartridges (\$34 each; one black, three color) last for about 1750 pages.
PHOTO PRINTER				
Canon i9100 Photo Printer ★★★★★ find.pcworld.com/36230	• \$500 • 4800 by 1200 dpi • 100 sheets input, 50 output • USB 1.1 port	• Maximum paper size: 13 by 19 inches • Five one-color ink cartridges • Photo stitching software	• 3.9 ppm text/1.3 ppm graphics • Photo quality: Very good • Text quality: Good • Graphics quality: Good	Colors were vibrant, but gradations looked a bit pixelated. Color and gray-scale photos had sharp detail. Photos emerged twice as quickly as with the next fastest model.
Editor's PICK Epson Stylus Photo 900 ★★★★★ find.pcworld.com/35444	• \$199 • 5760 by 720 dpi • 100 sheets input, 30 output • USB 1.1 and parallel ports	• Maximum paper size: banner • One six-color ink cartridge • Prints onto coated CD/DVDs • Bluetooth print adapter (\$129)	• 2.3 ppm text/1.4 ppm graphics • Photo quality: Outstanding • Text quality: Good • Graphics quality: Good	Color photos exhibited smooth gradations and sharp detail, but banding made photos printed on plain paper less appealing. Text appeared crisp.
MULTIFUNCTION PRINTER				
Editor's PICK Canon MultiPass MP730 ★★★★★ find.pcworld.com/35018	• \$399 • 4800 by 1200 dpi • 150 sheets input and output • USB 1.1 port	• Maximum paper size: legal • Three one-color ink cartridges • 1200 by 2400 dpi (scan, optical) • Flash memory card readers	• 6.6 ppm text/1.3 ppm graphics • Photo quality: Outstanding • Text quality: Very good • Graphics quality: Very good	Of the MFPs we've tested, the MP730 was the fastest printer and copier, but monochrome scans were the least attractive. It printed sharp line art and can handle stand-alone faxing.
Lexmark X6170 ★★★★★ find.pcworld.com/36935	• \$250 • 4800 by 1200 dpi • 100 sheets input, 50 output • USB 1.1 port	• Maximum paper size: banner • One three-color ink cartridge • 1200 by 4800 dpi (scan, optical)	• 6.5 ppm text/0.4 ppm graphics • Photo quality: Good • Text quality: Good • Graphics quality: Fair	The X6170 scanned quickly with attractive results, though printouts of line art exhibited obvious banding. Text output looked sharp. Unit performs stand-alone faxing.

For expanded charts and product reviews, see find.pcworld.com/38252.

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Digital Cameras: Impress With Pixels



Canon PowerShot G5 and Nikon Coolpix 5700

Even if you put money before megapixels, you can find a digital camera that takes great shots. But if you really care how your pictures come out, invest in the best digital camera you can afford.

FROM A BIRD'S-EYE VIEW, all digital cameras do the same thing: When you press a button, they capture a picture. Look closer, however, and you'll find that cameras vary tremendously in the quality of images they take. If you're not at all fussy about image quality, you can get a digital camera for less than \$80—no coupon necessary. Or if you're extraordinarily picky, you can spend thousands on a high-end SLR and optional lenses. Fortunately for photographers, both casual and serious, many digital models fall between those two extremes, all of which can make pleasing photos. Our list of hot digital cameras offers something for the budget-minded buyer, the point-and-shooter, and the advanced photographer looking for a model with a full range of creative controls. (We tested a dozen cameras for this roundup, using our new digital camera test suite.)

We certainly understand that not everyone wants to drop many hundreds of dollars on a digital camera, especially if it's their first one. If price is more important than quality to you, consider the three models we tested that cost less than \$300—relatively expensive by film camera standards, but a bargain for a digital cam-



Twist and Shoot

A NEW TWIST on the old spy camera format: Sony's tiny Cyber-shot DSC-U50 has a rotating lens on a camera that's only 4 inches long; just spin it 180 degrees, hold it at arm's length, and snap a self-portrait. However, the camera's 1-inch screen makes framing shots a challenge, and the 2-megapixel resolution makes it best for snapshots.

era that is more than simply a toy.

For those shoppers with bigger budgets and more discriminating tastes, advanced cameras offer high resolutions, accessory lenses, and extensive creative controls—and high prices to go with them. Mid-range point-and-shoot models, on the other hand, emphasize simplicity over sophistication, making them the best value for taking quality snapshots.

ADVANCED MODELS

PHOTOS THAT INSPIRE emotion aren't necessarily rare, but you're more likely to produce inspiring shots if you're using a camera that can adapt to a challenging setting. Exquisite details and colors require a camera with a great lens, sophisticated image processing, and a full selection of advanced controls, such as exposure and flash bracketing, advanced white-balance management, and high-level image enhancement settings.

- Canon's PowerShot G5 is the kind of camera you use to get those lush, vibrant, razor-sharp images, in nearly any conditions. In our tests the G5 took some superb shots. You can put it, like all digital cameras, on full automatic and use it as a snapshot camera. But if full auto doesn't give you the image you're after, you can often find another way to take the shot—and end up getting a good one.

We like the G5 not only because it has many advanced features, but also because it's easy to use. It has a low-light illuminator (to help the camera focus and set exposure in dim settings) and a powerful

flash that you can easily adjust manually so that you don't blow out a shot.

Though the G5's 4X zoom lens is pretty slow at focusing with macro (close-up) shots, it's very accurate. You can take pictures in RAW format, which captures 36 bits of color instead of the usual 30 bits, for a wider range of color. Not sure you've uncovered all of the camera's capabilities? Canon provides awesome manuals that cover everything in great detail.

- The Coolpix 5700 is Nikon's premier advanced model for consumers. Its 8X zoom lens is the longest you can find on a 5-megapixel camera, and it provides more ways to take a shot than almost any other

non-SLR camera; you can tweak even its automatic mode. In full-auto mode, you can turn a dial to choose different combinations of aperture and shutter speed settings for the same exposure. The Coolpix 5700 did very well in our imaging tests, producing shots that were sharp and nicely exposed. (We take our test shots in full-auto mode, with no tweaking.)

Mastering the Coolpix 5700 requires some effort at the beginning; its deeply layered menus aren't nearly as friendly as those on the PowerShot G5. And for \$900 we would expect to get an LCD that's larger than the 5700's 1.5-inch screen.

The 10X zoom lens on the Olympus C-

750 Ultra Zoom more than makes up for the camera's having "only" 4 megapixels of resolution. With the C-750, you're getting the 35mm equivalent of a 38mm to 380mm lens, enough to cover a wide range of situations. The camera feels like it has a powerful engine inside—it operates quickly and surely, and its batteries seem to last forever. Whether at paparazzi distance or wide-angle, this camera takes wonderful images with great color reproduction. It doesn't offer the same breadth of advanced controls as the G5 and the Coolpix 5700, but it has all of the essentials, plus an intuitive panoramic mode. The menus take some getting used ▶

TOP DIGITAL CAMERAS

**TEST
Center**

ADVANCED	Basics	Extras	Performance	Comments
Canon PowerShot G5 ★★★★★ find.pcworld.com/37358	<ul style="list-style-type: none"> • \$799 • 5 megapixels • 32MB CompactFlash • 18 ounces 	<ul style="list-style-type: none"> • 4X optical zoom • 3 scene modes • Aperture-priority, shutter-priority, and manual modes 	<ul style="list-style-type: none"> • Image quality: Very good • Battery life: 438 shots • Ease of use: Good • Features: Outstanding 	The big, solidly constructed G5 scored near the top in our image-quality tests. Despite its many controls, it's easy to learn and use.
Nikon Coolpix 5700 ★★★★☆ find.pcworld.com/31118	<ul style="list-style-type: none"> • \$900 • 5 megapixels • 16MB CompactFlash • 19 ounces 	<ul style="list-style-type: none"> • 8X optical zoom • No scene modes • Aperture-priority, shutter-priority, and manual modes 	<ul style="list-style-type: none"> • Image quality: Very good • Battery life: 336 shots • Ease of use: Fair • Features: Very good 	Features the longest zoom lens available on a 5-megapixel camera and extensive controls, but a better menu layout and a larger LCD would make the unit easier to use.
Olympus C-750 Ultra Zoom ★★★★☆ find.pcworld.com/37364	<ul style="list-style-type: none"> • \$599 • 4 megapixels • 16MB XD-Picture Card • 13.9 ounces 	<ul style="list-style-type: none"> • 10X optical zoom • 6 scene modes • Aperture-priority, shutter-priority, and manual modes 	<ul style="list-style-type: none"> • Image quality: Very good • Battery life: 544 shots • Ease of use: Good • Features: Very good 	The C-750's best feature is its very long zoom lens. It narrowly beat out the G5 for best image-quality results, and it has great battery life.
POINT-AND-SHOOT				
Canon PowerShot A70 ★★★★★ find.pcworld.com/36512	<ul style="list-style-type: none"> • \$300 • 3.2 megapixels • 16MB CompactFlash • 11.1 ounces 	<ul style="list-style-type: none"> • 3X optical zoom • Video and audio recording • Scene, aperture-priority, shutter-priority, and manual modes 	<ul style="list-style-type: none"> • Image quality: Good • Battery life: 319 shots • Ease of use: Good • Features: Very good 	This camera is more sophisticated than its modest price would indicate. It has manual exposure modes—rare on a model in this price range.
Nikon Coolpix 3100 ★★★★☆ find.pcworld.com/36065	<ul style="list-style-type: none"> • \$300 • 3.2 megapixels • 16MB CompactFlash • 6.9 ounces 	<ul style="list-style-type: none"> • 3X optical zoom • Video recording without audio • 14 scene modes 	<ul style="list-style-type: none"> • Image quality: Good • Battery life: 480 shots • Ease of use: Very good • Features: Good 	Tiny even for a point-and-shoot model, the Coolpix 3100 is easy to hold. It relies on extensive scene modes, rather than manual controls, to manage exposure.
Sony Cyber-shot DSC-P10 ★★★★☆ find.pcworld.com/38468	<ul style="list-style-type: none"> • \$500 • 5 megapixels • 32MB Memory Stick • 6.9 ounces 	<ul style="list-style-type: none"> • 3X optical zoom • Video and audio recording • 6 scene modes • Autofocus illuminator 	<ul style="list-style-type: none"> • Image quality: Good • Battery life: 239 shots • Ease of use: Very good • Features: Good 	This model pairs high resolution with full-automatic-only shooting and a few scene modes; like many Sony digital cameras, it has clear menus and is very easy to use.
BUDGET				
Fujifilm FinePix A310 ★★★★☆ find.pcworld.com/38471	<ul style="list-style-type: none"> • \$280 • 3.1 megapixels • 16MB XD-Picture Card • 7 ounces 	<ul style="list-style-type: none"> • 3X optical zoom • Video recording without audio • 4 scene modes 	<ul style="list-style-type: none"> • Image quality: Good • Battery life: 207 shots • Ease of use: Very good • Features: Good 	This simple camera is inexpensive for a model with a zoom lens and 3.1-megapixel resolution. But its design isn't nearly as elegant as more expensive Fujifilm models.
HP Photosmart 435 ★★★★☆ find.pcworld.com/38477	<ul style="list-style-type: none"> • \$150 • 3.1 megapixels • 16MB internal RAM, SD Card slot • 6.8 ounces 	<ul style="list-style-type: none"> • Fixed-focus lens, no optical zoom • Video and audio recording • No scene modes 	<ul style="list-style-type: none"> • Image quality: Fair • Battery life: 186 shots • Ease of use: Good • Features: Limited 	Pitted against pricier cameras, this unit didn't fare well in our output tests, but few cameras come close to its price. An \$80 dock comes with rechargeable batteries and a remote.
Sony Cyber-shot DSC-U50 ★★★★☆ find.pcworld.com/38480	<ul style="list-style-type: none"> • \$250 • 2 megapixels • 16MB Memory Stick Duo • 4.2 ounces 	<ul style="list-style-type: none"> • Fixed-focus lens, no optical zoom • Video recording without audio • 5 scene modes 	<ul style="list-style-type: none"> • Image quality: Fair • Battery life: 200 shots • Ease of use: Good • Features: Good 	The truly tiny U50 has a rotating lens for self-portraits and comes with a neck lanyard. Its 1-inch LCD makes framing shots a little difficult.

For expanded charts and product reviews, see find.pcworld.com/38504.

to—you may have to figure out what some icons mean—and you must pop the flash up manually, but overall the controls are easy to use. And compared with its competitors in the advanced camera category, the C-750 is a bargain at \$599.

POINT-AND-SHOOT MODELS

A POINT-AND-SHOOT digital camera should appeal to those buyers who don't want to take a photography class prior to purchase. Typically smaller and lighter, and with fewer controls than advanced cameras, point-and-shoots are often easier to use for snapshot photography and easier to pack along.

- Canon's PowerShot A70 has some of the same features as the PowerShot G5, yet it's much smaller and lighter. Like the G5, the A70 has manual exposure modes and accommodates accessory lens adapters. But its compactness and much lower resolution (3.2 megapixels) make it a better fit in the point-and-shoot category.

The PowerShot A70 has a terrific LCD, provides a low-light illuminator, shoots high-resolution (640-by-480) movies, and includes Canon's easy-to-use panorama-assist mode. In our output tests, the A70 did a bang-up job reproducing color, but

some shots showed image noise. It's easy to hold, thanks to its moderate size and a large compartment holding four AA batteries that makes a nice grip.

- Nikon's Coolpix 3100 is a true snapshotter's camera. This tiny yet easy-to-hold model fits in a shirt pocket. It scored mid-pack on most of our tests, but it did very well at our cropped-and-magnified shot despite its relatively low 3.2-megapixel resolution. Though it has no manual exposure controls, it does have an incredible 14 scene modes—a wealth of presets that approximate common photo settings and help you compose your shots. For example, choose its "museum" setting, and the camera will select a wide aperture and prevent the flash from firing.



Nikon Coolpix 3100

have is what you need in a fine point-and-shoot: friendly menus and easy-to-use controls. Additionally, it has a low-light illuminator that helps the camera focus when you're shooting in dark rooms or at night. A quiet, accurate zoom lens makes

The inexpensive Canon A70 includes an easy-to-use panorama-assist mode.

- Given its 5-megapixel maximum resolution, you might assume Sony's Cyber-shot DSC-P10 belongs in the advanced category. But its resolution is really the extent of its high-end capabilities—it has no manual exposure modes. What it does

the camera feel well constructed.

The Sony's image scores were above average, for the most part. It performed well in our outdoor test shots, but trailed the Nikon Coolpix 5700 in color and exposure accuracy and in image sharpness ▶

Upcoming Digital Models: Ones to Wait For?

SEVERAL PROMISING NEW CAMERAS hadn't begun shipping in time for our review, but they should appear just as we publish this issue, including some successors to former Best Buy models.

(1) Canon gave the EOS Digital Rebel breakthrough pricing for a digital SLR—just under \$1000 for the body and a Canon EF auto-focus zoom lens with a 35mm equivalent range of 28mm to 90mm. Canon's EF lens is also used in film versions of the EOS

line. (2) Fujifilm's \$800, SLR-shaped FinePix S7000 boasts 6.3-megapixel resolution and a 6X optical zoom. (3) An upgrade to a PC World Best Buy (the Olympus C-5050), the redesigned \$700 C-5060 has a 4X zoom that starts at a wide 27mm (35mm equivalent). (4) Another upgrade of a PC World Best Buy, the Olympus C-4000, the \$500 C-5000 is more stylish than its predecessor and adds 5-megapixel resolution and a flash shoe.



1 Canon EOS Digital Rebel



2 Fujifilm FinePix S7000



3 Olympus C-5060 Wide Zoom



4 Olympus C-5000 Zoom



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Photo Perfect

HIGH RESOLUTION is good, but perfect color is better:

(1) **CANON POWERSHOT G5**

Top-notch color, exposure, and details. (2) **SONY CYBERSHOT DSC-P10** Fine exposures, but a greenish cast.

(3) **HP PHOTOSMART 435**

Bright colors, but very grainy and fuzzy in enlargements.



(especially in our cropped and enlarged test image). The P10 doesn't allow very close macro shots, but we don't think that's a big issue with a point-and-shoot model.

BUDGET MODELS

YOU HAVE TO accept some limitations with an inexpensive digital camera—you can't expect the same image quality and performance as you would from more expensive models. However, that doesn't mean you can't get a camera with usable resolution (3 megapixels or higher), adequate storage, and the other basic features that will let you capture pretty snapshots.

- An optical zoom lens adds substantially to the cost of a digital camera, which explains why the Fujifilm FinePix A310 is the most expensive model in this category. A relatively simple 3.1-megapixel camera, the A310's scores hovered near

the average in our output tests. It captured attractive colors, but its images weren't quite as sharp as we'd expect of a camera with its level of resolution.

The A310 has a somewhat pocketable design, made better by a sliding lens cover. It's also easy to use, though picking scene modes seems more convoluted

other concessions to economy include a fixed-focus lens and no optical zoom. The 435 produced images with good exposures and bright colors, but cropped and enlarged shots looked very grainy. The quality is suitable for 4-by-6-inch snapshots. Add HP's \$80 Photosmart 8886 camera dock, and you get rechargeable

Sony's compact Cyber-shot DSC-P10 performed well in our outdoor test shots.

than necessary. The LCD looked grainy compared with those of most of the competing cameras we've looked at recently, but it still was sharp enough to take acceptable macro shots. The A310 is a good candidate if you want a camera with a zoom

lens at a bargain price, but for a few more dollars Canon's PowerShot A70, with its greater number of creative controls, can get you better shots.

- HP's Photosmart 435 costs only \$150, but it has a 3.1-megapixel resolution and 16MB of internal memory (plus a card slot), so even if you forget your memory card, you can always get a shot. It's reasonably attractive, with a silver-colored body and a sliding lens cover, and it feels more substantial than you'd expect of a camera in this price range. Helpful on-screen text explains some settings—a nice touch for beginners. We found the 1.5-inch LCD somewhat fuzzy and slow;

batteries and a remote control. Attach the dock to a TV, and you can control a slide show of your photos with the remote.

- We were willing to cut the Sony Cyber-shot DSC-U50 some slack on image quality just because of its extremely cool spy-camera looks and selection of colors. Not surprisingly, it scored near the bottom of the pack in output quality; but the camera is capable of producing some pleasing shots in less-challenging settings than in our lab tests. Despite its diminutive size, it feels solid and well made; and Sony managed to give it a rotating lens, making it good for shooting self-portraits. The Cyber-shot DSC-U50 uses Memory Stick Duo media, a new small-format card with an adapter for use in card readers. At \$250, it's relatively expensive for its 2-megapixel class—you're paying more for looks and size than performance. And like the HP, it offers only digital zoom. But it looks a heck of a lot snazzier.

—Alan Stafford ■



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Digital Audio Players: Tote Your Tunes



Apple iPod 20GB (left)
and Iriver IFP-195T

Whether you're just carrying a few songs to the gym or hauling your entire music collection with you on vacation, there's a player that has the capacity, price, and features to meet your audio needs.

TODAY'S DIGITAL audio players hold more—music, that is—and do more. Creative's Nomad Jukebox Zen NX stores up to 30GB of songs, Apple offers a 40GB version of its iPod (we reviewed the 20GB version), and the Frontier Labs Nex Ia can use a 1GB Microdrive. Or, if you don't buy the Nex Ia with the Microdrive card, it can instead take Type I and II CompactFlash cards.

Flash players hold fewer tunes than hard drive-based devices do, but they can better withstand jostling. And the flash memory-based models have somewhat lower prices going for them. Hard drive-based players, on the other hand, can store an entire music collection. Two hard-drive models here create playlists on the fly, meaning you can cue up your tracks on the device and set them to play in any order, rather than creating the playlist on your PC. —Alexandra Krasne ■

TOP DIGITAL AUDIO PLAYERS

HARD DRIVE-BASED PLAYER	Basics	Extras	Comments
Editor's PICK Apple iPod 20GB ★★★★★ find.pcworld.com/38453	<ul style="list-style-type: none"> • \$400 • 20GB capacity • FireWire interface • MP3, AAC, .wav audio formats 	<ul style="list-style-type: none"> • Remote control, carrying case, dock, FireWire cable • Creates playlists on the fly • Musicmatch software 	Sleek and pricey iPod sports streamlined, easy-to-use controls. It sounded great, and transferred music quickly over its FireWire/USB 2.0 interface.
Creative Nomad Jukebox Zen NX ★★★★★ find.pcworld.com/38450	<ul style="list-style-type: none"> • \$275 • 30GB capacity • USB 2.0 interface • MP3, WMA, .wav audio formats 	<ul style="list-style-type: none"> • Carrying case, USB cable • Creates playlists on the fly • Creative MediaSource software 	Full-featured, terrific-sounding, powerful device is bulkier than the other hard-drive models but offers a host of settings to fine-tune.
Rio Nitrus ★★★★★ find.pcworld.com/38456	<ul style="list-style-type: none"> • \$250 • 1.5GB capacity • USB 2.0 interface • MP3, .wav audio formats 	<ul style="list-style-type: none"> • USB cable • Rio Music Manager software 	Simple, lightweight player offered clear, true sound, but couldn't pump out much volume; lacks some of the extras found on the higher-capacity players.
FLASH MEMORY-BASED PLAYER	Basics	Extras	Comments
Frontier Labs Nex Ia ★★★★★ find.pcworld.com/38462	<ul style="list-style-type: none"> • \$119 (\$279 with Hitachi 1GB Microdrive) • Up to 1GB capacity • USB 1.1 interface • MP3, .wav audio formats 	<ul style="list-style-type: none"> • Case with belt holder, USB cable • Voice recorder, FM tuner/recorder • Media Jukebox and Windows Media 7 software 	Transfer speeds were slow, but songs and voice recordings sounded clear. A four-directional button and a large display make the player easy to operate. This is the only memory-upgradable unit here.
Gateway 256MB Digital Music Player ★★★★★ find.pcworld.com/38465	<ul style="list-style-type: none"> • \$170 • 256MB capacity • USB 1.1 interface • MP3, WMA, .wav audio formats 	<ul style="list-style-type: none"> • Armband, USB cable • Voice recorder, FM tuner/recorder • One AAA battery • No software needed 	Plugs directly into your USB port. Controls were easy to use, but the buttons could have been bigger. While MP3 sound quality was good, voice recordings were less clear.
Editor's PICK IRiver IFP-195T ★★★★★ find.pcworld.com/38459	<ul style="list-style-type: none"> • \$260 • 512MB capacity • USB 1.1 interface • MP3, WMA, ASF audio formats 	<ul style="list-style-type: none"> • Armband, case, neck strap, USB cable • Voice recorder, FM tuner/recorder • One AA battery • Iriver Manager software 	With an easy-to-read interface and a four-way toggle button, the 195T is ideal for toting along to the gym or on a walk. Overall sound quality was superb.

For expanded charts and product reviews, see find.pcworld.com/38549.

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DVD Burners: The New Optical Choice



Plextor PX-708A

ALL OF THE DRIVES that we recommend here can record to 4X write-once media, taking around 4 to 6 minutes to write the two 10-minute videos we use in our tests to disc. But the Plextor PX-708A is the first drive to support 8X DVD+R burning, and Plextor claims that the drive can even write to certain brands of 4X disc at 8X speed. Most drives are limited to writing at the maximum rated speed of the media; we tested the 708A writing at 4X speed. (Plextor lists on its Web site the brands of 4X media it has tested writing at 8X.) In general, the times that we see in our tests for DVD-RW burning are typically longer than those for DVD+RW. This is because DVD-RW drives usually have to for- ➤

Rewritable DVD drives are fast replacing CD-RW models as the optical drives of choice. They offer a fast, cheap, and convenient way to store large amounts of data, and they let you burn your own movies or recorded TV programs to DVD to be watched on a standard DVD player.

TOP REWRITABLE DVD DRIVES

**TEST
Center**

MULTIFORMAT INTERNAL DRIVE	Basics	Write speed/rewrite speed (min:sec)	Comments
Memorex Dual Format DVD Recorder Editor's Pick ★★★★★ find.pcworld.com/36671	<ul style="list-style-type: none"> • \$220 • 4X DVD-R, 2X DVD-RW, 4X DVD+R, 2.4X DVD+RW • Roxio Easy CD & DVD Creator 6.1 software 	<ul style="list-style-type: none"> • DVD+R/RW 4:39/7:14 • DVD-R/RW 4:48/8:47 	This dual-format model turns in fast burn times for both DVD media formats and is attractively priced.
Plextor PX-708A ★★★★★ NEW find.pcworld.com/38396	<ul style="list-style-type: none"> • \$240 • 4X DVD-R, 2X DVD-RW, 8X DVD+R, 4X DVD+RW • Roxio Easy CD & DVD Creator 6.1 software 	<ul style="list-style-type: none"> • DVD+R/RW 4:38/5:34 • DVD-R/RW 5:16/8:24 	This drive can write at 8X—even to some brands of 4X DVD+R media. It's the quickest at reading from DVD discs.
TDK Indi DVD 440N ★★★★★ find.pcworld.com/36668	<ul style="list-style-type: none"> • \$250 • 4X DVD-R, 2X DVD-RW, 4X DVD+R, 2.4X DVD+RW • Roxio Easy CD & DVD Creator 6.1 software 	<ul style="list-style-type: none"> • DVD+R/RW 4:04/7:56 • DVD-R/RW 4:20/13:00 	Strong performance, excellent documentation, and solid support policies highlight this dual-format drive.
SINGLE-FORMAT INTERNAL DRIVE			
Hewlett-Packard DVD Writer Dvd300i Editor's Pick ★★★★★ find.pcworld.com/34454	<ul style="list-style-type: none"> • \$190 • 4X DVD+R, 2.4X DVD+RW • ArcSoft ShowBiz DVD 1.3 	<ul style="list-style-type: none"> • DVD+R/RW 3:59/8:44 	Still one of the speediest we've seen at authoring a DVD movie, and one of the few drives to include backup software.
Pioneer DVR-A05 ★★★★★ find.pcworld.com/32642	<ul style="list-style-type: none"> • \$190 • 4X DVD-R, 2X DVD-RW • Roxio Easy CD Creator Basic 5.3 	<ul style="list-style-type: none"> • DVD-R/RW 6:43/36:27 	Inexpensive single-format model's bundled packet-writing software requires you to do a time-consuming full-disc format before burning to DVD-RW.
EXTERNAL DRIVE			
Hewlett-Packard DVD Movie Writer Dc3000 ★★★★★ find.pcworld.com/37526	<ul style="list-style-type: none"> • \$400 • 4X DVD+R, 2.4X DVD+RW • USB 2.0 interface 	<ul style="list-style-type: none"> • DVD+R 3:41 	The fastest drive we've tested for writing video to DVD; includes a built-in analog video capture card and software to burn video to DVD, but no packet-writing software.
Plextor PX-504UF Editor's Pick ★★★★★ find.pcworld.com/37448	<ul style="list-style-type: none"> • \$275 • 4X DVD+R, 2.4X DVD+RW • FireWire 400 and USB 2.0 interfaces 	<ul style="list-style-type: none"> • DVD+R/RW 4:03/8:13 	Sleek, silver chassis gives this external model an appealing look, while dual interfaces make it flexible.

For expanded charts and product reviews, see find.pcworld.com/38447.

mat the entire disc before they can start writing data, while DVD+RW drives must only partially format discs first.

In addition to a drive's speed, its rewritable format is another key issue to consider. The two main formats—DVD+RW and DVD-RW—are not compatible: If you buy a drive that supports only the DVD+RW format, you can't write to DVD-RW discs, and vice versa.

MULTIFORMAT DRIVES

DRIVES LIKE THE Memorex Dual Format DVD Recorder and the Plextor PX-708A can write to both DVD-RW and DVD+RW discs, while others—such as the Iomega Super DVD Writer or the LG GSA-4040B (find.pcworld.com/38705)—support DVD-RAM as well. The advantage of multiformat drives is that you can use whichever format of disc is most convenient or has the best price.

SINGLE-FORMAT DRIVES

SEVERAL DRIVE MAKERS are sticking to one write format, either because they've thrown their corporate weight behind one

standard or because they're trying to appeal to bargain shoppers. The Hewlett-Packard DVD Writer Dvd300i supports only the DVD+RW format, but at \$190 it is cheaper than the dual-format models.

MEDIA MATTERS

WHICHEVER TYPE OF DRIVE you pick, make sure to get the right format of media. You'll also need to choose the correct speed. Although all of the drives we review here support burning at 4X to write-once discs, 4X media is not yet

The slower 2X discs are cheaper than the 4X ones, especially if you buy them in bulk. At the other speed extreme, 8X DVD-R media should become available soon, but the discs are likely to be expensive at first, and they will require a drive that supports the 8X write speed. The only one available at present is the Plextor PX-708A, though the other major manufacturers plan to release their versions of 8X drives in the near future.

Finally, 4X DVD+RW rewritable discs are now becoming available, but these

To obtain the fastest write speeds possible from your DVD drive, buy the fastest rated media that it supports.

widely available, with many places still selling 2X media. A 2X disc will work fine in a 4X drive, but will be burned at only 2X speed. Many retailers don't mention the speed of the media: Always check the manufacturer's specs before you buy.

discs are supported by only a limited number of drives (such as the PX-708A). Again, to obtain the fastest write speeds possible from your DVD drive, buy the fastest rated media that it supports.

—Richard Baguley ■

Rewritable DVD to Go: The External Option

EXTERNAL DRIVES CONNECT to your PC via either a USB 2.0 or a FireWire connection. As a result, modern external drives are as fast as their internal cousins: The Plextor PX-504UF (our external-drive Editor's Pick) achieved the same speed in our tests as the internal version, the Plextor PX-504A. External drives are more expensive, though—the PX-504UF costs \$80 more. The PX-504UF comes with both USB 2.0 and FireWire interfaces, while other external drives (such as the HP DVD Movie Writer Dc3000) have only a USB 2.0 interface.

REMOVABLE MEDIA

THE ADVANTAGE of an external drive is that it can easily be shared between several systems. You can plug in and remove drives using a USB 2.0 or FireWire connection without having to reboot the system. This is also an advantage for security in that you can safely lock the drive away until it is needed. USB 2.0 drives can be connected to a slower USB 1.1 port,

but in that setup the burning process is very slow. Fortunately, most modern PCs come with several USB 2.0 ports. If your system has both types of USB port, or if you have added a USB 2.0 upgrade card, make sure you plug your drive into a USB 2.0 port.



The HP DVD Movie Writer Dc3000 external drive includes an analog video-capture card.

DVD AND VIDEO IN ONE

THE HP DVD Movie Writer Dc3000 combines a DVD+RW drive and an analog video capture card. Paired with the bundled video transfer software, it can capture video and write it to DVD, but at \$400 the unit is more expensive than a single-function external drive. Though the drive burns to rewritable DVD+RW discs, HP bundles no packet-writing software with it; if you want to be able to drag and drop files from Windows Ex-

plorer onto DVD+RW discs, you'll need to buy a DVD mastering suite that includes a packet-writing program, such as Nero Burning ROM (\$99) or Roxio Easy CD & DVD Creator (\$99).

—R. B.

You won't be able to get your hands on one fast enough. Life moves quickly. So does the Kyocera SL300R digital camera. Push the power button, it starts right up. Squeeze the shutter, the picture's captured immediately. Shoot again quickly, with the world's fastest image processing. Even shoot 3.5 pictures a second until your card is full.* It's all thanks to our exclusive RTUNE™ Rapid Tuning technology. And our desire to make sure you never miss a single picture.



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Large LCDs: When Image Matters



Dell UltraSharp 1901FP (left) and Eizo Nanao CG18

People with discriminating eyes and some extra cash should consider an 18- or 19-inch LCD. Along with size, such monitors often deliver better color and features than smaller models do.

PRIce competition is driving vendors to favor low-cost panels and other compromises on 15-inch and some 17-inch models. In contrast, they reserve top-shelf components for larger displays. Due to now-obscure tradition, 18-inch LCDs have been considered the more prestigious, professional model type. Eizo Nanao's ColorEdge CG18, our 18-inch pick, produced the richest colors in our tests. But the far-less-expensive 19-inch Sharp LL-T19D1H was nearly as good. All of the LCDs on our chart have digital inputs for the best image quality, and analog inputs for older graphics cards. Other extras you are more likely to find on large LCDs include height adjustment, pivoting screens, USB hubs, and speakers. Of this group the best-equipped displays are Sony's SDM-X93 and our 19-inch pick, Dell's UltraSharp 1901FP.

—Seán Captain ■

TOP LARGE LCD MONITORS

**TEST
Center**

18-INCH PROFESSIONAL LCD	Basics	Extras	Performance	Comments
Eizo Nanao ColorEdge CG18 Editor's PICK ★★★★★ find.pcworld.com/38282	<ul style="list-style-type: none"> • \$1640 • Two combo digital/analog inputs • 40ms pixel redraw time (vendor spec) • 250 candelas/m² luminance (vendor spec) 	<ul style="list-style-type: none"> • Tilt, swivel, pivot, height adjustment • Four-port USB 1.1 hub • Color-adjustment software 	<ul style="list-style-type: none"> • Text: Very good • Graphics: Outstanding • Measured horizontal viewing angle: 180 degrees 	Pricey monitor for graphics pros displayed wonderfully rich and saturated colors. The bundled Color Navigator software allows the user to adjust settings via a USB connection.
Sharp LL-T1820B ★★★★★ find.pcworld.com/38288	<ul style="list-style-type: none"> • \$1099 • Two combo digital/analog inputs • 25ms pixel redraw time (vendor spec) • 220 candelas/m² luminance (vendor spec) 	<ul style="list-style-type: none"> • Tilt, swivel, pivot, height adjustment • Two-port USB 1.1 hub 	<ul style="list-style-type: none"> • Text: Good • Graphics: Very good • Measured horizontal viewing angle: 158 degrees 	The LL-T1820B produced rich colors similar to those on Eizo's CG18, but we found screens to be somewhat dark, especially for text.
19-INCH MAINSTREAM LCD				
Cornea Systems CT1904 ★★★★★ find.pcworld.com/35774	<ul style="list-style-type: none"> • \$650 • One digital and one analog input • 25ms pixel redraw time (vendor spec) • 250 candelas/m² luminance (vendor spec) 	<ul style="list-style-type: none"> • Tilt adjustment • Built-in speakers 	<ul style="list-style-type: none"> • Text: Very good • Graphics: Outstanding • Measured horizontal viewing angle: 173 degrees 	Stellar graphics quality and a low price produce a compelling package. But the panel has minimal adjustability, and the company's tech support is a bit limited.
Dell UltraSharp 1901FP Editor's PICK ★★★★★ find.pcworld.com/35777	<ul style="list-style-type: none"> • \$584 • One digital and one analog input • 25ms pixel redraw time (vendor spec) • 250 candelas/m² luminance (vendor spec) 	<ul style="list-style-type: none"> • Tilt, swivel, pivot, height adjustment • Four-port USB 2.0 hub • Optional speaker attachment 	<ul style="list-style-type: none"> • Text: Very good • Graphics: Very good • Measured horizontal viewing angle: 130 degrees 	Fully—and very easily—adjustable LCD provided fine image quality. Optional speakers sounded exceptionally good compared with those on other monitors.
Sharp LL-T19D1H ★★★★★ find.pcworld.com/35765	<ul style="list-style-type: none"> • \$705 • One digital and two analog inputs • 20ms pixel redraw time (vendor spec) • 300 candelas/m² luminance (vendor spec) 	<ul style="list-style-type: none"> • Tilt, height adjustment 	<ul style="list-style-type: none"> • Text: Outstanding • Graphics: Outstanding • Measured horizontal viewing angle: 148 degrees 	No-frills LCD was a top performer for overall image quality, and is an economical alternative to Sharp's high-end 18-inch model.
Sony SDM-X93 ★★★★★ find.pcworld.com/38303	<ul style="list-style-type: none"> • \$800 • One digital and two analog inputs • 25ms pixel redraw time (vendor spec) • 450 candelas/m² luminance (vendor spec) 	<ul style="list-style-type: none"> • Tilt, swivel, height adjustment • Built-in speakers • Three audio inputs 	<ul style="list-style-type: none"> • Text: Very good • Graphics: Very good • Measured horizontal viewing angle: 122 degrees 	Sony's high-end LCD generated impressive color quality. It has intuitive controls, good adjustment options, and relatively powerful integrated speakers.

For expanded charts and product reviews, see find.pcworld.com/38384.



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PDAs: Top-Rated Wireless Models



Sony Ericsson P800

WI-FI DEVICE	Basics	Comments
Palm Tungsten C Editor's PICK ★★★★★ find.pcworld.com/36887	<ul style="list-style-type: none"> • \$499 • Palm OS 5.2.1 • 64MB RAM, 6.3 ounces • 802.11b 	Easy-to-use setup utility sniffs out available networks; data entry with small but workable keyboard, or with stylus and Graffiti 2.
Sony Clie PEG-NZ90 ★★★★★ find.pcworld.com/36329	<ul style="list-style-type: none"> • \$800 • Palm OS 5 • 16MB RAM, 10.4 ounces • Bluetooth, 802.11b optional 	Big, bright color screen nicely complements the built-in 2-megapixel camera and flash. Wi-Fi card adds \$150 to an already pricey unit.
Toshiba E755 ★★★★★ find.pcworld.com/36890	<ul style="list-style-type: none"> • \$499 • Windows Mobile 2003 for Pocket PC • 64MB RAM, 6.7 ounces • 802.11b 	Large transreflective screen is easy to read in sunlight, but Wi-Fi setup and connections seemed clunky with the Windows OS.
PHONE-BASED DEVICE		
Sony Ericsson P800 Editor's PICK ★★★★★ find.pcworld.com/36878	<ul style="list-style-type: none"> • \$600 • Symbian OS 7 • 32MB RAM, 5.5 ounces • AT&T data/voice service (plans vary) 	Makes a better phone than PDA, but has a good-sized screen. Though the interface is workable, it is too complex for some tasks.
T-Mobile Pocket PC Phone Edition ★★★★★ find.pcworld.com/36881	<ul style="list-style-type: none"> • \$400 • Pocket PC Phone Edition • 32MB RAM, 7.1 ounces • T-Mobile GPRS data/voice service 	PDA-shaped phone works equally well for communicating or organizing. Battery is not removable, but offers up to 5 hours of talk time.

From the September 2003 issue. See find.pcworld.com/38411 for the full story.

THESE DAYS the most cutting-edge handhelds have some kind of wireless communications capability, whether it's from Bluetooth, an integrated cell phone, or 802.11b networking. Bluetooth works best when used to send small amounts of information over a short distance, as in syncing phone numbers or appointments. For Web browsing and sending and receiving e-mail, phone or Wi-Fi is the way to go. We found plenty of wireless-enabled PDAs that are fairly usable and reliable, though none is perfect. At an average price of about \$500, these devices are rather expensive—and that's just for the hardware. Investigate the fees for the wireless services you want; they vary by region and provider. ■



BFG Technologies
Asylum GeForce FX
5900 Ultra

WITH GRAPHICS BOARDS, faster has always been better, but lately we've been seeing that versatility is a virtue as well. In last month's spotlight on graphics cards, we created a category for multimedia boards, which do more than just push pixels to your screen as fast as possible—they also have TV tuners, and they import and export video and sound. Most have remote controls and interface software to make using the multimedia functions easier. But because they're built on the same chips as game-oriented boards, multimedia cards can deliver high frame rates, too. The latest boards improve the rendering of textures, with less of a performance hit than in the past. ■

Graphics: Top-Rated Boards

TEST Center		
POWER GRAPHICS BOARD	Basics	Comments
BFG Technologies Asylum GeForce FX 5900 Ultra Editor's PICK ★★★★★ find.pcworld.com/38084	<ul style="list-style-type: none"> • \$500 • NVidia GeForce FX 5900 Ultra chip • 256MB of DDR SDRAM • DVI-out, S-Video-in/-out 	Easy installation, 24-hour daily support, and a heap of extra features help this card win our nod as Editor's Pick in the power graphics board category.
Crucial Technology Radeon 9800 Pro ★★★★★ find.pcworld.com/38075	<ul style="list-style-type: none"> • \$370 • ATI Radeon 9800 Pro chip • 128MB of DDR SDRAM • DVI-out, S-Video-out 	Light on the extras but also relatively low-priced, this card tied the other two Radeon-based cards in our speed tests. Supports dual displays.
MSI Nbox N5900 Ultra-VTD256 ★★★★★ find.pcworld.com/38078	<ul style="list-style-type: none"> • \$570 • NVidia GeForce FX 5900 Ultra chip • 256MB of DDR SDRAM • DVI-out, S-Video-in/-out 	Pricey but feature-packed, this is the fastest NVidia-based model we've reviewed to date. Speed was impressive, even with antialiasing turned on. Supports dual displays.
MULTIMEDIA GRAPHICS BOARD		
ATI All-in-Wonder Radeon 9800 Pro Editor's PICK ★★★★★ find.pcworld.com/37157	<ul style="list-style-type: none"> • \$449 • ATI Radeon 9800 Pro chip • 128MB of DDR SDRAM • TV and FM radio tuner 	A board for all reasons: Has outstanding gaming performance and extensive multimedia features. Can output to a high-definition TV and comes with a remote control.
EVGA Personal Cinema E-GeForce FX 5200 ★★★★★ find.pcworld.com/38087	<ul style="list-style-type: none"> • \$200 • NVidia GeForce FX 5200 chip • 128MB of DDR SDRAM • S-Video-in/-out, audio-in/-out 	This budget home theater card has a TV tuner and wireless remote, plus dual-display support. Its interface is easy to use but has some minor flaws.

From the November 2003 issue. See find.pcworld.com/38408 for the full story.



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Windows PCs
with most
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passwords and
Address Book
on PDA



Keep your
passwords
on USB key for
extra security
and portability

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- Logs you into online accounts automatically
- Fills long registration and checkout forms
- Stores secret text notes in Safenotes
- Generates Random Secure Passwords
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Digital Video: Top-Rated Cameras



Canon Elura 50

CAMCORDER	Basics	Comments
Canon Elura 50 Editor's PICK ★★★★★ find.pcworld.com/37061	<ul style="list-style-type: none"> • \$650 • MiniDV media • 10X optical zoom • SD (Secure Digital)/MultiMediaCard slot 	Supercompact camera took impressive movies. Has generous features, but navigating menus was more cumbersome than necessary.
Hitachi DZMV350A ★★★★★ find.pcworld.com/36965	<ul style="list-style-type: none"> • \$840 • DVD disc storage • 10X optical zoom • SD card slot 	Extensive special controls; one of the few camcorders that record directly to 8cm DVD discs, which can be harder to find and more expensive than tape.
Samsung SCD33 ★★★★★ find.pcworld.com/37058	<ul style="list-style-type: none"> • \$499 • MiniDV media • 10X optical zoom • Memory Stick slot 	Great price for a small, light camcorder; digital image stabilization worked well, but autofocus seemed slow to lock in.
Sharp Viewcam VL-27U ★★★★★ find.pcworld.com/37004	<ul style="list-style-type: none"> • \$570 • MiniDV media • 10X optical zoom • SD card slot 	Moderately priced, pint-size camcorder takes 1.3-megapixel still images and has easy-to-use controls. Pivoting grip lets you shoot high or low.
Sony DCR-TRV70 MiniDV Handycam ★★★★★ find.pcworld.com/36998	<ul style="list-style-type: none"> • \$1299 • MiniDV media • 10X optical zoom • Memory Stick Pro slot 	Takes 2-megapixel stills; pop-up flash and night mode make it especially adept in low light. Changing settings on the touch-screen controls was somewhat slow.

From the October 2003 issue. See find.pcworld.com/38438 for the full story.

I F YOU'VE EVER done any video editing, you know that digital is the only way to go—and that shooting digital from the start is the simplest way to acquire digital video. Not only that, by using a DV camera you'll end up with better image and sound quality than you would get by importing analog video into your PC. The five cameras here are compact yet full-featured, and most can capture still images as well as movies (all have some type of flash memory card for storing stills). One model records video directly to miniature writable DVD discs; other features we're seeing include night-shooting and special-effects modes, as well as image stabilization.



Netgear PC Card, PCI adapter, and router

Wireless Networking: Top 802.11g Kits

THE ROLLOUT of 802.11g products is the biggest news in wireless networking now. To find the best, most reliable performers, we created kits from gateways and add-in cards of the same brand and tested them. The 802.11g products worked noticeably faster than those based on the older 802.11b standard. And the newer products use a stronger data security scheme, called Wi-Fi Protected Access. Because setting up a wireless network can be baffling and products can be balky, we gave high marks to kits with good documentation and support.

TEST CENTER	NETWORKING KIT	Basics	Comments
	Belkin F5D line ★★★★★ find.pcworld.com/37874	<ul style="list-style-type: none"> • 802.11g-compliant • F5D7230-4 gateway, \$120 • F5D7010 PC Card, \$75 • F5D7000 PCI card, \$75 	Components come with handy installation CDs and generous printed documentation. Company received below-average reliability score in reader survey.
	Buffalo Technology AirStation line ★★★★★ find.pcworld.com/37877	<ul style="list-style-type: none"> • 802.11g-compliant • WBR-G54 gateway, \$100 • WLI-CB-G54A PC Card, \$70 • WLI-PCI-G54 PCI card, \$80 	Good performer with full Wi-Fi certification is hindered by weak documentation and confusing HTML-based configuration screens.
	D-Link AirPlus Xtreme G line ★★★★★ find.pcworld.com/37883	<ul style="list-style-type: none"> • 802.11g-compliant • DI-624 gateway, \$110 • DWL-G650 PC Card, \$65 • DWL-G520 PCI card, \$70 	An adequate performer among the 11g kits. The gateway's HTML-based configuration instructions may be a bit intimidating for novices. Both the gateway and the PC Card support WPA.
	Linksys Wireless-G line ★★★★★ find.pcworld.com/37886	<ul style="list-style-type: none"> • 802.11g-compliant • WRT54G gateway, \$115 • WPC54G PC Card, \$70 • WMP54G PCI card, \$70 	Though only a middling performer, this Linksys kit gets kudos for being one of the few product lines certified for 802.11g and WPA compatibility at the time of our review.
Editor's PICK	Netgear WG line ★★★★★ find.pcworld.com/37895	<ul style="list-style-type: none"> • 802.11g-compliant • WGR614 gateway, \$110 • WG511 PC Card, \$70 • WG311 PCI card, \$75 	Takes top honors for great performance, an intuitive interface, and bulletproof reliability in our tests. Pending WPA capability and full Wi-Fi certification will complete the picture.

From the November 2003 issue. See find.pcworld.com/38405 for the full story.

Monitors: Top-Rated 19-Inch CRTs



NEC MultiSync FP912SB

MONITOR	Basics	Comments
Compaq S9500 ★★★★☆ find.pcworld.com/35171	<ul style="list-style-type: none"> • \$210 • .26mm dot pitch tube • 1600 by 1200 resolution at 70 Hz 	Display offered vivid and accurate photographic screens, plus easy-to-use on-screen controls. Does not include an image-adjustment utility.
Hansol 920A ★★★★☆ find.pcworld.com/37865	<ul style="list-style-type: none"> • \$170 • .26mm dot pitch tube • 1280 by 1024 resolution at 70 Hz 	Turned in strong performance on both text and graphics, but it lacks the high-resolution capabilities of competing monitors.
IBM C190 ★★★★☆ find.pcworld.com/37868	<ul style="list-style-type: none"> • \$250 • .25mm dot pitch tube • 1600 by 1200 resolution at 70 Hz 	Has easy-to-use controls. Displayed photos and graphics nicely, but text at smaller font sizes looked a little fuzzy.
Editor's PICK NEC MultiSync FP912SB ★★★★★ find.pcworld.com/37856	<ul style="list-style-type: none"> • \$290 • .24mm stripe pitch tube • 1920 by 1440 resolution at 70 Hz 	The top performer in our graphics tests displayed sharp, easy-to-read text, too. Super-bright mode brought out detail in movies, pictures, and games.
Samsung SyncMaster 957mb ★★★★☆ find.pcworld.com/35177	<ul style="list-style-type: none"> • \$319 • .24mm dot pitch tube • 1756 by 1317 resolution at 70 Hz 	Model with a midrange price displayed sharp text and vivid graphics. One button offers three color-temperature settings.

From the November 2003 issue. See find.pcworld.com/37904 for the full story.

CRT MONITORS may not have the cachet of thin LCDs, but they still have a useful place in offices and homes. Most gamers prefer CRTs' quicker response times, and many graphic artists choose them because calibrating color is still easier on a CRT than on an LCD. CRTs continue to beat LCDs in price, too: It's easy to contemplate moving to a bigger screen size when the median price for a 19-incher is \$250 or so, about half the price of an LCD of comparable size. The latest trend in CRT monitors is preset color and brightness modes for different activities, such as watching movies, playing games, or viewing images. ■



HP ScanJet 8200

THE RACE FOR ever-higher optical resolutions shows up in this chart in the form of two corporate models: The HP ScanJet 8200 has 4800-dpi optical resolution, and the Epson Perfection 3200 Photo has 3200-dpi optical resolution. This capability to pick up minute details makes both models suitable for scanning very small images or very fine line art. The 8200, with a legal-size scan bed and a fast engine, is designed for high-volume document scanning, but its automatic document feeder costs another \$500. On the small-office side, one-click correction of dust, scratches, and color is becoming common, appearing in the Canon models' ScanGear CS driver. ■

Scanners: Top-Rated Flatbeds

SMALL-OFFICE SCANNER	Basics	Comments
Editor's PICK Canon CanoScan 5000F ★★★★★ find.pcworld.com/34409	<ul style="list-style-type: none"> • \$170 • USB 2.0 connection • 2400-by-4800-dpi optical resolution • Includes transparency adapter, no ADF 	Delivered fine image quality, dazzling color fidelity, and good detail, plus fairly quick scans.
Canon CanoScan Lide 50 ★★★★☆ find.pcworld.com/37376	<ul style="list-style-type: none"> • \$100 • USB 2.0 connection • 1200-by-2400-dpi optical resolution • No transparency adapter or ADF 	An impressive overall performer at a nice price, but it lacks a transparency adapter. Has Canon's trademark light, slim design.
Epson Perfection 1670 Photo ★★★★☆ find.pcworld.com/37379	<ul style="list-style-type: none"> • \$129 • USB 2.0 connection • 1600-by-1600-dpi optical resolution • Includes transparency adapter, no ADF 	Epson's updated driver includes one-click photo restoration, but we've seen better image quality.
CORPORATE SCANNER		
Epson Perfection 3200 Photo ★★★★★ find.pcworld.com/33827	<ul style="list-style-type: none"> • \$399 • USB 2.0, FireWire connections • 3200-by-6400-dpi optical resolution • Includes transparency adapter, no ADF 	The Perfection 3200 completed our tests fairly quickly. Photos lacked the clarity and sharp contrast we've come to expect from Epson.
Editor's PICK HP ScanJet 8200 ★★★★★ find.pcworld.com/37382	<ul style="list-style-type: none"> • \$500 • USB 2.0 connection • 4800-by-4800-dpi optical resolution • Includes transparency adapter, ADF optional 	The quickest scanner of gray-scale images here, the ScanJet 8200 has six shortcut buttons and plenty of powerful software.

From the October 2003 issue. See find.pcworld.com/37391 for the full story.

tools that cool



fig. 1 - GAME FLO

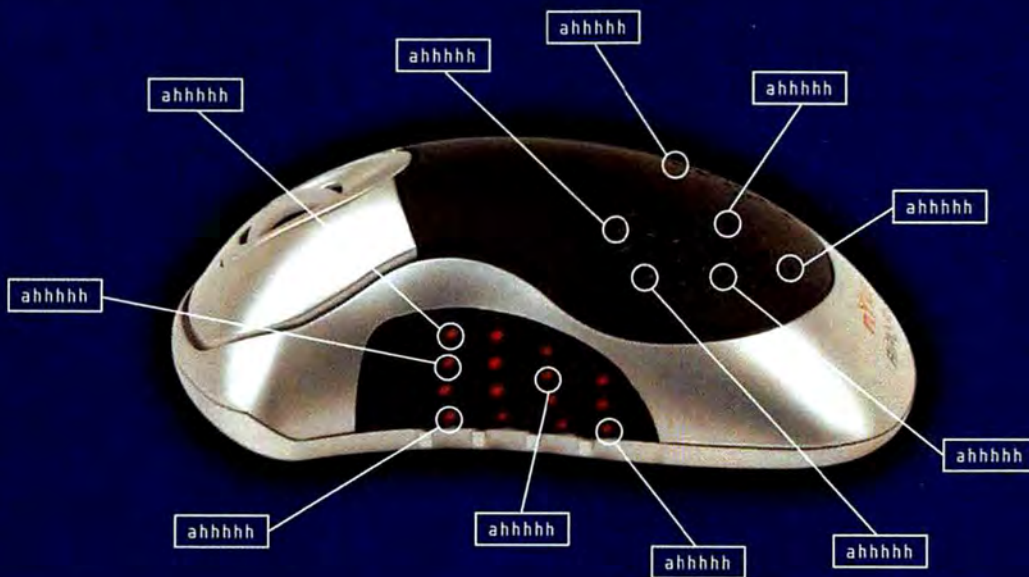


fig. 2 - GAME and WORK FLO

Introducing anti-perspirants for your PC, the AirFlo Mouse and the AirFlo Controller. They're ergonomically designed with a built-in fan that filters air through pores on the outer shell. The mouse has a precision, 850 dpi optical sensor for your most intense work or play and like the state of the art controller it comes with rubberized grips. Both run on power from your computer, so there's no need for batteries. It's simple, let your PC breathe and you'll breathe easier. Available at most major retailers. www.nyko.com



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Reliability & Service Report Card

A woman with reddish-brown hair, wearing a blue button-down shirt, is leaning on a wooden fence. She is smiling and looking towards the camera. The background is a bright blue sky with scattered white clouds. Some dark, leafless branches are visible in the lower right corner.

“After nine months, my EMachines system has exceeded my expectations.”

—Andrea Jaffrey,
graphics designer/office
manager, EMachines user

Which manufacturers can you trust? More than 32,000 readers sound off about their PCs, cameras, printers, gateways, and PDAs.

By Laurianne McLaughlin

Fred Zagurski never worries about running into hardware glitches with his Olympus C-700 Ultra Zoom digital camera. "It has performed flawlessly," says Zagurski, who runs his own company out of Edmonds, Washington, planning and designing physical security systems for large businesses. He has owned his C-700 for almost two years and uses it for both work and play. "The reliability of my camera is much better than that of my home PCs," he says, noting that he owns a Dell Dimension and a custom-built PC from a local company.

Zagurski says that he has also had problems with one of his printers, an HP LaserJet III. But with the digital camera, "I've had no problem. On a scale of 1 to 10 for reliability, I'd give [my Olympus camera] a 10."

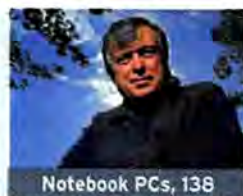
THE SURVEY RESULTS ARE IN

ZAGURSKI IS ONE OF THE LUCKY ONES. We surveyed more than 32,000 *PC World* subscribers about the computer products they use at work and at home—from trouble-free products to complete lemons. For the tenth straight year, we asked subscribers about their desktop and notebook PCs. But for the first time, we also polled a separate group of our readers about other popular devices: printers, digital cameras, wireless gateways, and PDAs. We collected both sets of respondents' surveys from April 1 through June 30, 2003 (for more details about our numbers, turn to "Survey Methodology" on page 134).

Zagurski's tale highlights several important findings from our survey. Participants in our survey on peripherals typically gave them higher marks for reliability than did participants in our survey on desktop and notebook PCs. Because users tend to have fewer hardware problems with peripherals, they're less likely to contact tech support for assistance. When subscribers did call for

Readers Rate the Makers

Desktops 136 | Notebooks 138 |
Printers 141 | Digital Cameras
144 | Gateways 148 | PDAs 152
| Survey Methodology 134 | PC
Ratings Guide 137



help, they had a more-positive support experience with the peripherals companies than with PC manufacturers.

Even though PC vendors fell behind peripherals makers overall, some good news did emerge from the PC camp. This time around, many desktop and notebook reliability and service scores headed north instead of south, reversing the trend we've seen over the past few years. And some manufacturers, most notably EMachines, have made great strides in our survey measures.

One happy EMachines customer is Andrea Jaffrey, an office manager and graphics designer based in the suburbs of Washington, D.C. Before Jaffrey bought her home PC, she wondered whether an EMachines system would cost her more in long-term grief than she'd save in greenbacks. Some salespeople were equally skeptical. "When we went to [purchase] the PC, the salesman was really down on EMachines," Jaffrey recalls. "But we went ahead and bought an EMachines T2200+, and it worked out." Jaffrey reports that she's had zero reliability issues. "Looking back over the nine months we've owned the EMachines PC, it has exceeded my expectations," she concludes.

PCs VS. PERIPHERALS

OF THE SIX PRODUCT CATEGORIES covered in this year's survey report, PCs still cause the most headaches. Among desktop users who participated, 46 percent reported at least one significant problem within the previous three years; notebook users followed closely behind, at 41 percent. Digital cameras have the best record: A mere 15 percent of camera owners reported hardware hassles. Meanwhile, 27 percent of printer owners, 28 percent of PDA owners, and 36 percent of wireless gateway owners reported that they had experienced product reliability snafus.

As for setting up a new product, camera owners had the best out-of-the-box experience. Only 2 percent of respondents said that their digital cameras didn't work properly from the get-go. Similarly, only 3 percent of printer and PDA users encountered initial problems. In contrast, 4 percent of notebook owners, 5 percent of desktop PC owners, and a whopping 9 percent of gateway owners said they ran into problems early on.

We also asked subscribers how easy their peripherals are to use—a question that's unique to those categories in our survey. How easy a PC is to use probably has more to do with ▶

Microsoft than with the hardware maker. But things are different with most peripherals: Customers expect the products to be intuitive, and the onus is on the manufacturer to make devices uncomplicated to use. Of the peripherals, gateways rely the most heavily on getting the settings right within Windows.

PRAISE FOR PRINTERS AND PDAs

SURVEY RESPONDENTS SAY that printers are the easiest to use, followed by PDAs, digital cameras, and gateways. In fact, three-quarters of printer respondents gave their unit high marks for ease of use. PDA users followed at 64 percent and digital cameras at 59 percent. Readers identified gateways as the hardest to deal with; only 53 percent of users rated their routers as easy to use.

Our survey respondents with peripherals were more satisfied with product reliability than PC owners were. For example, 79 percent of printer owners expressed high satisfaction with reliability, and PDA owners came in at 72 percent on this measure. But just 67 percent of desktop PC owners and 72 percent of notebook users said they were similarly satisfied.

In the service area, peripherals companies do some jobs well. On the perennial gripe of tech-support hold times, digital camera owners were the least frustrated—again. A solid 65 percent of camera owners reported hold times of 5 minutes or less. Notebook owners fared worst, with just 55 percent getting through to a support rep quickly. Nevertheless, desktop, notebook, and printer owners expressed slightly more satisfaction with the service they received: 54 percent said they were very satisfied, compared with 46 to 52 percent of the other peripherals owners.

REPORT CARD

Bottom Line: The Best and Worst Manufacturers

IN PC RATINGS, EMACHINES makes an impressive leap from last year's Fair to this year's Good overall. Compaq and HP, however, continue to lag behind the pack, rating Fair in both desktops and notebooks categories. Among printer makers, Samsung stands head and shoulders above its peers as the only company to earn an Outstanding reliability rating. Sony follows suit in the digital cameras category. But be warned: Respondents had a miserable time with Sony's service. With gateways, Belkin finishes at the bottom of the stack.

BOTTOM-LINE SCORE ¹	Desktops	Notebooks	RELIABILITY RATING ONLY ²	Printers	Digital cameras	Wireless gateways	PDAs
	see page 136	see page 138		see page 141	see page 144	see page 148	see page 152
Outstanding	None	None	Outstanding	Samsung	Sony	None	None
Good	Dell, EMachines, Gateway, IBM, independent shops, Sony	Dell, Gateway, IBM, Toshiba	Good	Brother, Canon, Epson, HP	Canon, Fujifilm, HP, Kodak, Minolta, Nikon, Olympus	Netgear	Handspring, Palm, Sony
Fair	Compaq, HP	Compaq, HP, Sony	Fair	Dell, Lexmark, Minolta	Casio, Panasonic, Toshiba	D-Link, Linksys, Microsoft, SMC	Casio, Compaq, Dell, HP, Toshiba
Poor	None	None	Poor	Xerox/Tektronix	Logitech, Polaroid	Belkin	None

¹This score combines each company's overall reliability score and overall service score.

²For peripherals, we publish a reliability-only score because we didn't receive enough service responses for every peripherals maker to determine a bottom-line score. We did receive enough responses about service experiences for some peripherals companies, and you'll see these service ratings reflected in the charts on pages 142 through 152.

Survey Methodology

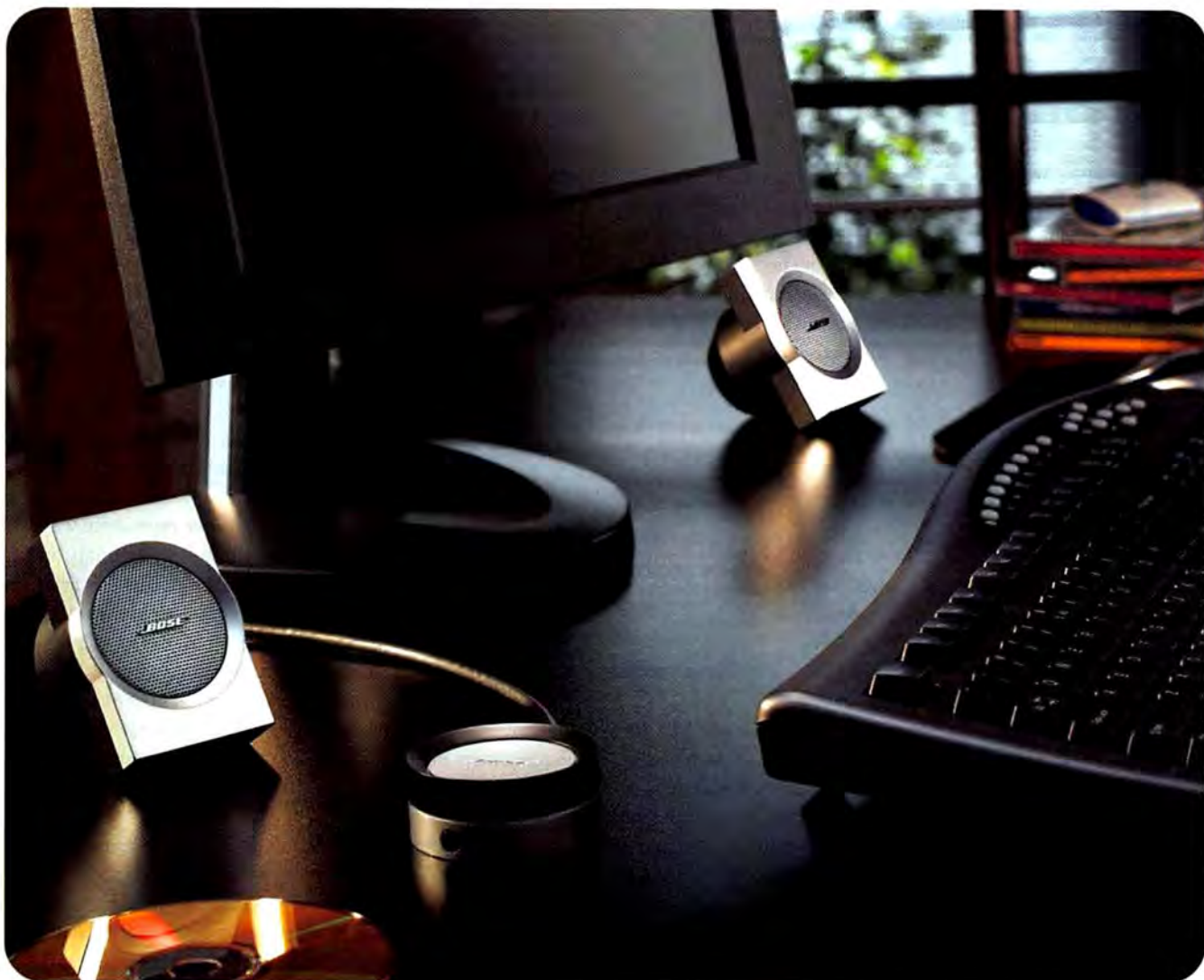
A WORD ABOUT OUR SCORES

OUR SURVEY was conducted in conjunction with Research Results of Fitchburg, Massachusetts. We invited subscribers to take the Web-based survey from April 1 through June 30, 2003. We received 32,051 responses. We asked subscribers about six different categories of products: desktop PCs, notebook PCs, printers, digital cameras, PDAs, and wireless gateways. Survey respondents told us about the reliability of their hardware and their experiences (if any) in getting service. We limited reports to products that were three years old or younger.

PC World editors and research experts analyzed the reliability and service performance of each company in the six different categories. In the case of desktop and notebook PCs, we rated each company's performance on 12 weighted measures, and then used those results to determine the company's overall ranking. In the case of the other four product categories, we rated each company's performance on 8 weighted measures, 5 relating to reliability and 3 to service. Go to find.pcworld.com/38681 for a detailed breakdown of our scores.

In general, fewer people contacted tech support for help with peripherals—and this affected our survey: We received too few reports about users' service experiences to tabulate a combined reliability and service rating for many peripherals makers. ▶

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Desktops

There's nothing quite like a pleasant surprise. And this year, we're happy to report that things are looking up for desktop owners: According to our survey, PC reliability has improved and manufacturers are delivering better support than they did last year. For example, on average, participants in our survey reported fewer instances of component failure and of problems when they first switched on their machines. On the service front, the improvements in the desktop PCs category are not as pronounced. But even there, hold times have gotten slightly better, and fewer survey respondents said that their PC troubles remained unresolved.

Of course, some PC makers fared better than others. Dell, EMachines, and IBM stand out on most reliability measures, while HP and Compaq often lag their peers. We're treating HP and Compaq as separate brands despite HP's purchase of Compaq in May 2002: Since we received reports about PCs that are three years old or newer, more respondents' experiences were associated with the separate companies than with the merged one. (Today, though, HP is aiming to make the HP and Compaq support experiences indistinguishable.) Big Blue, EMachines, and independent retailers (also known as mom-and-pop shops or white-box makers) received impressive service marks, while Compaq, HP, Dell, and Sony trailed in a few support measures.

One of the most notable improvements relates to the percentage of PCs with problems: 46 percent of respondents reported at least one major problem, down from 53 percent last December (visit find.pcworld.com/38285 for the full story of last year's results). Every company listed in our chart showed progress here—but none more dramatically than EMachines, which captured top marks on this measure.

EMACHINES STEALS THE SHOW

TALK ABOUT A TURNAROUND: In previous surveys, asking EMachines owners about their PCs' reliability usually elicited tales of woe from respondents. In our latest report, its overall rating is Good. In fact, the company grabs the number one spot on several reliability and service measures. For instance, EMachines respondents experienced the lowest percentage of problems when they first turned on their PCs—just over 2 percent (our survey

average was almost 5 percent). On the service side, 77 percent of EMachines customers reported their service issues being resolved within five days—a sharp uptick from its score of 58 percent the last time around. (Note: In this story, all results for EMachines relate to its desktop PCs. The company began selling notebooks again at around the time our survey was fielded.)

What has changed at EMachines? Greg Memo, the company's executive vice president, reports that in the past year it introduced a new chassis design that enables users to replace parts themselves

more easily. EMachines also beefed up its Web-based support, by adding new content to answer customers' questions. The company has introduced interactive chat capabilities with technical support reps, too.

Like Andrea Jaffrey, Glen Ashman has had a generally positive experience with his EMachines computer. Ashman, an attorney based in Atlanta, owns PCs from several different companies, including ones from Compaq and HP. "This is probably the most trouble-free PC I've owned," says Ashman of his EMachines

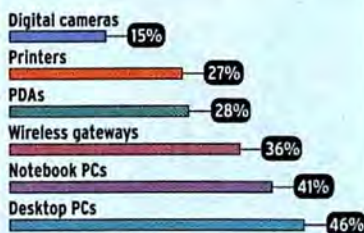
Etower 500is. The downside to his story? He can't say similarly complimentary things about his non-EMachines computers.

HP AND COMPAQ WOES

ASHMAN'S HP PAVILION 512C has suffered from an ongoing graphics problem for more than six months. The display locks up, Ashman has to reboot his PC, and then he encounters XP "fatal error" messages after he reboots. The problem is sporadic; it goes away for a few days but then shows up twice in one day. "I think everyone [in tech support] knows that there's a driver problem, but no one knows what it is," says Ashman. For now, he's living with the problem. His family's Compaq Presario 5000

Most Trouble-Free Device

Percentage of devices (by category) that had at least one significant malfunction.



SURVEY RESULTS

Readers Rate Desktop PC

EMACHINES IMPROVES ALL AROUND, and it shines especially on reliability measures;

COMPANY	Bottom-line score	Overall reliability score	RELIABILITY SCORE BREAKDOWN		
			Desktop PCs with problems	Problems per year	Problems on arrival
Dell	Good	Good	Good	Good	Good
EMachines	Good	Good	Outstanding	Good	Outstanding
Gateway	Good	Good	Good	Good	Good
IBM	Good	Good	Outstanding	Good	Good
Independent shops	Good	Fair	Fair	Fair	Fair
Sony	Good	Good	Good	Good	Good
Compaq	Fair	Fair	Good	Good	Good
HP	Fair	Fair	Fair	Fair	Good

PC Ratings Guide

DESKTOP PCs AND NOTEBOOK PCs

RELIABILITY MEASURES

Percent of PCs with problems: Outstanding indicates a small percentage of PCs with at least one problem needing repair.

Problems per year: Outstanding indicates a small average number of problems per PC per year of age.

Problems on arrival: Outstanding indicates a small percentage of PCs that did not work properly when first turned on.

Dead on arrival: Outstanding indicates a small percentage of PCs that were nonfunctional when first turned on.

Component failure: Outstanding indicates a small percentage of PCs that have had at least one faulty component replaced.

Satisfaction with reliability: Outstanding indicates a large percentage of respondents highly satisfied with their PC's reliability.

SERVICE MEASURES

Short hold time: Outstanding indicates a large percentage of service recipients who waited on hold for 5 minutes or less for telephone technical support.

Quick resolution: Outstanding indicates a large percentage of users whose most recent problem was resolved in five days or less.

No resolution: Outstanding indicates a small percentage of service recipients whose problem was never resolved.

Knowledgeable tech support: Outstanding indicates a large percentage of users who highly rated the tech rep's knowledge.

Sincere effort by tech support: Outstanding indicates a large percentage of users who highly rated the tech rep's sincere effort.

Satisfaction with service: Outstanding indicates a large percentage of service recipients highly satisfied with their service.

US required a motherboard replacement under warranty within the last year, and the machine ended up in a local CompUSA, where it sat for more than a week before finally getting fixed.

Like Ashman, other HP and Compaq owners have had their share of problems. The HP and Compaq brands rank in the cellar for users' overall satisfaction with product reliability. Some HP and Compaq customers also reported being disappointed at shortcomings in the knowledge and sincere effort of technicians.

HP acknowledges a difficult transition period following the HP-Compaq merger, but customers will soon see changes, it says. "During the first 12 months [after the merger], we were trying to consolidate and eliminate redundancies," says Chris Shea, HP's vice president of consumer services and support. "Now we're putting probably 80 percent of the effort into improving the customer experience and 20 percent of the effort into efficiency." Previously, the reverse was true, Shea says.

The company recently combined the internal systems it uses when HP Pavilion and Compaq Presario customers call, but it will keep product specialists on staff. Soon, more Pavilion users will be able to request parts they can replace themselves instead of having to ship their PCs to HP or visit an authorized repair center. The company also introduced a pilot program to solve Internet connection problems faster, using three-way phone calls between HP, customers, and several large ISPs.

Given the age of the systems included in our survey, we wanted to find out whether the scores from HP's newer machines were better. So we isolated our data relating to PCs that were one year old or younger. In general, HP's and Compaq's numbers did improve for one-year-old PCs, but so did most of the scores for the other manufacturers with PCs of this age, both for desktops and notebook PCs. (A few measures for a handful of manufacturers were actually lower.) Why? By their nature, younger PCs should be more reliable anyway—and Windows XP machines are easier to service than Windows Me systems. ▶

Manufacturers

Gateway's and IBM's scores are solid overall. Meanwhile, HP/Compaq struggles with service.

	Dead on arrival	Component failure	Satisfaction with reliability	Overall service score	SERVICE SCORE BREAKDOWN					
					Short hold time	Quick resolution	Problems never resolved	Knowledgeable tech support	Sincere effort by tech support	Satisfaction with service
	Outstanding	Good	Good	Fair	Poor	Fair	Fair	Good	Good	Fair
	Outstanding	Good	Fair	Good	Good	Good	Fair	Good	Outstanding	Fair
	Good	Good	Fair	Fair	Good	Fair	Fair	Good	Good	Fair
	Outstanding	Good	Fair	Good	Outstanding	Good	Outstanding	Good	Outstanding	Fair
	Fair	Fair	Fair	Good	Outstanding	Good	Good	Outstanding	Good	Good
	Outstanding	Outstanding	Good	Fair	Poor	Fair	Fair	Good	Good	Fair
	Good	Good	Poor	Poor	Poor	Poor	Poor	Fair	Good	Poor
	Outstanding	Good	Poor	Fair	Fair	Fair	Fair	Good	Good	Poor

Despite HP's new initiatives, the company faces a huge service task, analysts believe. Even before the merger, HP and Compaq offered a wider range of different models across their product lines than competing brands did. "I think it would be helpful for the company to focus more energy on fewer products," says Roger Kay, vice president of client computing at market research firm IDC. He advises culling more models from HP's product lines.

MORE SERVICE SNAGS

HP AND COMPAQ aren't the only companies with iffy service scores. Dell, Gateway, and Sony received ratings of Fair for service. Dell and Sony (and Compaq) markedly trail their competitors on hold times. Just 45 percent of Sony customers and 48 percent of Dell customers reported waiting on hold for 5 minutes or less. Independent retailers easily top the class on this measure: Over 86 percent of their customers said they waited on hold for 5 minutes or less.

The Dell phone experience leaves some longtime fans steaming. "It's ridiculous," says Steve Heck, a technology manager for an industrial firm in Blairsville, Pennsylvania. Heck owns a Dell desktop and two Dell laptop PCs. "I try to avoid calling [Dell] at all, because the automated telephone system is so bad," he says. Heck reports that a customer can spend hours trying to get to the right person.

Todd Penner, Dell's director of technical support for U.S. consumer business, says that the company's own data indicates that hold times have improved this year. But he pointed to general trends that have affected hold times. Widespread viruses bring a deluge of calls at one time. Plus, people hold onto their PCs longer and buy new peripherals, prompting more calls. Dell continues to add call center reps and to refine training. Penner declines to specify how many reps it has added, however, or how many of them work offshore in locales like India. Though offshore techs got their share of complaints in our survey, Dell plans to keep using them. In particular, some respondents said that they had a hard time understanding techs with heavy accents.

One tip for frustrated Dell devotees: Dell recently standardized the process for routing callers to upper-level technicians. If you're getting nowhere with your first tech rep, ask immediately to speak with an "escalation expert," who will schedule a time for a follow-up call with a higher-level rep.

Despite the changes that companies like Dell are making, users shouldn't expect to see a turnaround in hold times anytime soon, says IDC's Kay. PC makers don't want to relinquish any more of their slim profit margin to pay for support costs.



▶ "I sent my HP Pavilion N5430 notebook in for repair, and the unit stayed fixed for [just] six months."

—Allen Dietz, consultant to nonprofit agencies, HP notebook owner

Notebooks

Every notebook owner wishes for the kind of experience Vic Heltzer has enjoyed with his two IBM ThinkPads. Heltzer, who runs his own consulting firm in Old Bridge, New Jersey, calls IBM's hardware quality and service record for his one- and two-year-old notebooks "outstanding." Even after the warranty expired on one model, the ThinkPad T21, IBM helped him solve a disappearing files problem in one phone call. And IBM handled another glitch with his T23—the only hiccup he's seen—in three days. "The wireless network adapter died," says Heltzer. "A technician came the next day, stayed for 2 hours, then came back in two days and fixed [the T23]."

Overall this year, notebook users tended to have more positive experiences than in previous years. Following the trends in ▶

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desktops, most notebook makers showed some improvement—albeit small steps in some instances. Most notably, Gateway and Toshiba improved their reliability scores.

One plausible reason for the positive side of our reliability results: Notebook vendors continue to demand more from the companies that specialize in notebook design, as well as from the companies that supply parts, says Randy Giusto, vice president of personal technology and services at IDC. (Note: Most companies do not actually make their own notebooks from scratch; other companies overseas handle a lot of the manufacturing.) In IBM's case, refinement of its once-massive line of ThinkPads also helped improve quality. "IBM used to have a tremendous amount of models," Giusto says, and like other vendors, it would buy parts from many different component suppliers. But now, he says, "IBM has taken a lot of the variables out of the equation."

SERVICE WITH A SMILE

SOME NOTEBOOK OWNERS saw dramatic improvements in support. IBM and Gateway made huge strides on several survey measures. For starters, 69 percent of Gateway notebook customers said that the company solved their problems in five days or less, compared with 57 percent on our most recent previous survey. IBM ties at 69 percent, and Dell finishes right behind at 67 percent, bettering their scores from last time.

Among IBM notebook owners, 66 percent reported hold times of 5 minutes or less, up from 57 percent last year, making Big Blue the survey leader on this measure. IBM desktop customers reported great hold time results, too. It's no accident, IBM says.

IBM used to maintain multiple call center locations; but earlier this year, it consolidated notebook and desktop reps in one

center in Atlanta to handle support for all of its U.S. products. According to Bill Owens, IBM's vice president of service and support, having one call center handle all inquiries trims hold times and improves training. It also enables IBM to keep closer tabs on its reps—something that would be a lot more difficult to manage if the company depended on offshore call centers to field tech support questions from customers with uncooperative notebooks.

SOME UNHAPPY CAMPERS

IBM AND GATEWAY owners may have reasons to smile, but not all notebook owners do. In particular, Sony and HP continue to struggle. HP customers experienced the highest number of unresolved problems (12 percent), while Gateway had

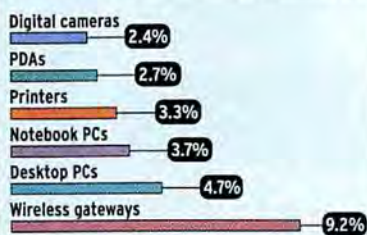
only 5 percent—the best in this measure.

Allen Dietz of Bellingham, Washington, is one HP customer who feels he's been left in limbo. His two-year-old HP Pavilion N5430 notebook has a recurring hardware problem. "Within the first year it would overheat," says Dietz, a consultant to nonprofit agencies. "Sometimes it would run for 45 minutes; then it would shut off." In addition, some keys stopped working. When Dietz called HP about the situation, he reached helpful and polite service reps. But the outcome disappointed him. "I sent my notebook in for repair, and it stayed fixed for six months." Then the problem resurfaced, and it continues to this day. Dietz's HP warranty has run out. He says that he won't be going back to HP for his next notebook. "When you fix it, it should last," Dietz says.

HP says that it has made some changes to prevent problems like Dietz's—and to enhance users' service experience. For example, it has tried to work more closely with its notebooks suppliers, says HP's Chris Shea. And this summer, the company standardized its diagnostic tools for notebooks and for desktops:

Problems on Arrival

Percentage of devices (by category) that didn't work properly when first turned on.



SURVEY RESULTS

Readers Rate Notebook PC Manufacturers

BIG BLUE AND GATEWAY lead the pack overall, thanks to improvements in many of their reliability and service scores; Sony and HP

COMPANY	Bottom-line score	Overall reliability score	RELIABILITY SCORE BREAKDOWN						Overall service score	
			Notebook PCs with problems	Problems per year	Problems on arrival	Dead on arrival	Component failure	Satisfaction with reliability		
Dell	Good	Good	Fair	Good	Good	Outstanding	Fair	Good	Fair	
Gateway	Good	Good	Outstanding	Good	Good	Outstanding	Good	Good	Good	
IBM	Good	Good	Good	Good	Good	Good	Good	Good	Good	
Toshiba	Good	Good	Outstanding	Outstanding	Good	Good	Good	Good	Fair	
Compaq	Fair	Fair	Good	Good	Fair	Good	Fair	Poor	Fair	
HP	Fair	Good	Good	Fair	Fair	Outstanding	Good	Fair	Poor	
Sony	Fair	Good	Good	Good	Good	Outstanding	Outstanding	Fair	Poor	

Printers

Most printers today are fairly reliable. Among the three types of printers—ink jets, color lasers, and monochrome lasers—our survey respondents say that ink jets are the least troublesome. Just 19 percent of ink jet owners reported that they encountered at least one significant problem with their printer, compared with 25 percent of monochrome laser owners and a whopping 40 percent of color laser users.

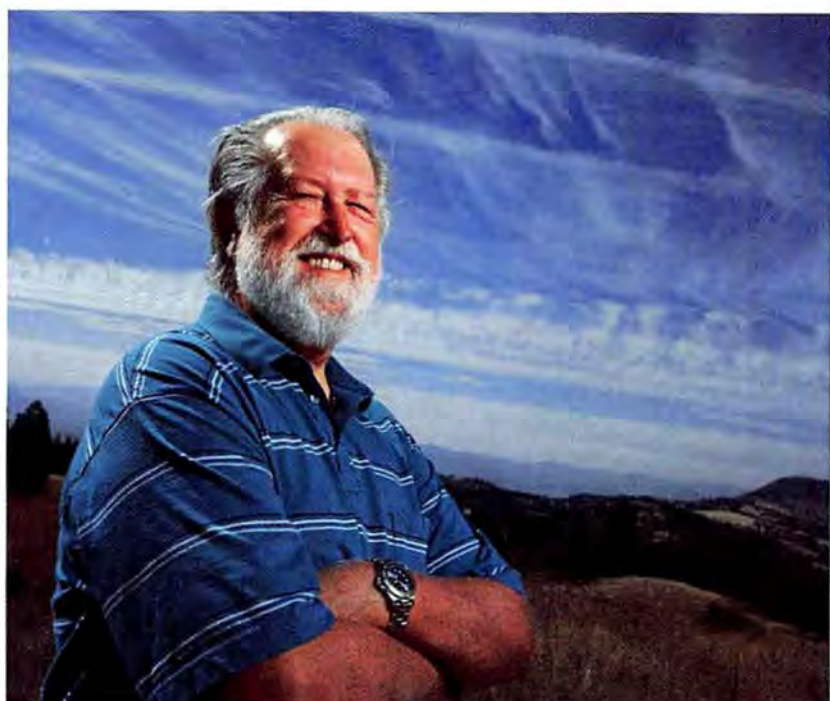
But if you run into trouble with an inexpensive ink jet printer, watch out. Survey respondents say that service can be spotty, and 28 percent of ink jet users were left with unresolved printer problems, compared to 22 percent of color laser owners.

Howard Grisso, a recently retired meteorologist in Medford, Oregon, is a member of the unlucky ink jet club. Grisso, who liked his previous Lexmark ink jet, again chose Lexmark last February, buying a Z65p Photo Jet printer. But shortly after his 30-day, money-back period expired, the printer began to smear ink. He called Lexmark's 800-number for sup-

port, only to find that the Z65p model requires a toll call. He placed one call, during which he said he had trouble understanding the representatives (because of their thick accents) and did not make much progress. So Grisso decided to try a different approach: He started e-mailing Lexmark technical support.

"I ran through a series of tests and even went out and bought new paper," Grisso says, but nothing changed. Lexmark sent him a replacement printer to try with his existing cartridges and cables. The second unit also smeared text. Grisso, tired of the hassle, asked Lexmark for a refund for the \$100 printer—without success.

Finally, in May, the company sent Grisso a third printer. "I hooked it all up," he says, "and the same thing happened." He again asked for a refund via e-mail but heard no more from Lexmark. At that point, Lexmark didn't even send him the promised prepaid mailing labels to return the defective units. "I've given up on



"[We] tried so many options. In the end, I just wanted my money back."

—Howard Grisso, meteorologist, Lexmark ink jet printer user

Now workers on the HP manufacturing line, retail repair centers, and customers can use the same diagnostic tools, which are installed on each PC. The idea is that you'll get to the root of the problems faster, says Shea. We'll have to wait to see whether these moves pay off for HP desktop and notebook owners.

trail in support.

SERVICE SCORE BREAKDOWN						
	Short hold time	Quick resolution	Problems never resolved	Knowledgeable tech support	Sincere effort by tech support	Satisfaction with service
	Poor	Good	Fair	Good	Good	Fair
	Good	Good	Good	Good	Good	Fair
	Good	Good	Good	Outstanding	Outstanding	Good
	Fair	Fair	Fair	Good	Outstanding	Fair
	Fair	Poor	Fair	Good	Good	Poor
	Fair	Poor	Poor	Fair	Good	Poor
	Poor	Poor	Poor	Fair	Fair	Poor

Lexmark at this point," he says. "I tried, and they tried, so many options. I just wanted my money back after all the fiddling around." He subsequently purchased a new printer from HP that has been trouble-free. (After we contacted Lexmark, the company promised to send Grisso a full refund, along with labels for returning the defective printers.)

While not every ink jet owner will have an experience quite this frustrating, our survey results show some differences among major printer vendors. Among Lexmark's ink jet printer lines, it struggled slightly compared with its peers, earning a Fair mark on reliability and service. Likely fueling this trend: Lexmark has a higher percentage of sub-\$100 models than other vendors, says Robert Palmer, a printer industry analyst with Lyra Research. A dirt-cheap printer doesn't bring a company much profit, so the vendor must try hard to control its support and parts costs.

Sub-\$100 ink jets are "typically less reliable," Palmer says, "compared to pricier ink jets." Some Lexmark ink cartridge shortages in retail stores last year also may have left customers with residual gripes, though Lexmark corrected that situation by year's end, says Palmer.

Lexmark has also implemented tools to help users. The company's vice president of total quality and customer satisfaction, Kent Jackson, says Lexmark has expanded its call centers and added software to improve the accuracy of its recommendations.

TOP DOGS

SAMSUNG, known for personal laser printers, received the category's only Outstanding mark for reliability. (Unfortunately, we didn't receive enough responses from survey participants to rate Samsung's service.) Reliability scores for other key players—including Canon, Epson, and HP—were good across the board. But HP's service rating slid to Fair, primarily due to long hold

Ratings Guide: Devices

PRINTERS, CAMERAS, GATEWAYS AND PDAS

RELIABILITY MEASURES

Problems on arrival: Outstanding indicates a small percentage of devices that were nonfunctional when first turned on.

Ease of use: Outstanding indicates a large percentage of respondents who rated the product's ease of use as very good.

Percentage of units with problems: Outstanding indicates a small percentage of devices with at least one problem requiring a tech support call or limiting the device's usefulness.

Problems per year: Outstanding indicates a small average number of problems per year.

Satisfaction with reliability: Outstanding indicates a large percentage of users highly satisfied with their device's reliability.

SERVICE MEASURES

Short hold time: Outstanding indicates a large percentage of users who waited 5 minutes or less for telephone tech support.

Satisfactory resolution: Outstanding indicates a large percentage of users whose problem was satisfactorily resolved.

Satisfaction with service: Outstanding indicates a large percentage of users highly satisfied with the company's service.

times: 41 percent of HP printer owners reported hold times of longer than 5 minutes. The company says that it is expanding customer service across all product lines and strengthening call-center procedures. Meanwhile, only 31 percent of Canon owners waited on hold for 5 minutes or longer. Readers gave Canon top-of-the-class marks for overall satisfaction with service, ▶

SURVEY RESULTS

Readers Rate Printer Manufacturers

SAMSUNG TAKES THE LEAD in printer reliability. Xerox/Tektronix receives disappointing reliability scores, yet bounces back in service.

COMPANY	Reliability rating	RELIABILITY SCORE BREAKDOWN					Service rating	SERVICE SCORE BREAKDOWN		
		Problems on arrival	Ease of use	Printers with problems	Problems per year	Satisfaction with reliability		Short hold time	Satisfactory resolution	Satisfaction with service
Samsung	Outstanding	Good	Outstanding	Outstanding	Outstanding	Outstanding	n/a	n/a	n/a	n/a
Brother	Good	Fair	Fair	Fair	Good	Good	Fair	Good	Fair	Fair
Canon	Good	Good	Good	Good	Good	Good	Good	Good	Fair	Good
Epson	Good	Good	Good	Good	Good	Good	Good	Good	Fair	Good
HP	Good	Good	Good	Good	Good	Good	Fair	Fair	Fair	Fair
Dell	Fair	Fair	Fair	Good	Fair	Fair	n/a	n/a	n/a	n/a
Lexmark	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Good	Fair	Fair
Minolta	Fair	Fair	Poor	Fair	Poor	Good	n/a	n/a	n/a	n/a
Xerox/Tektronix	Poor	Poor	Poor	Unacceptable	Unacceptable	Poor	Good	Outstanding	Good	Good

n/a = Not available.

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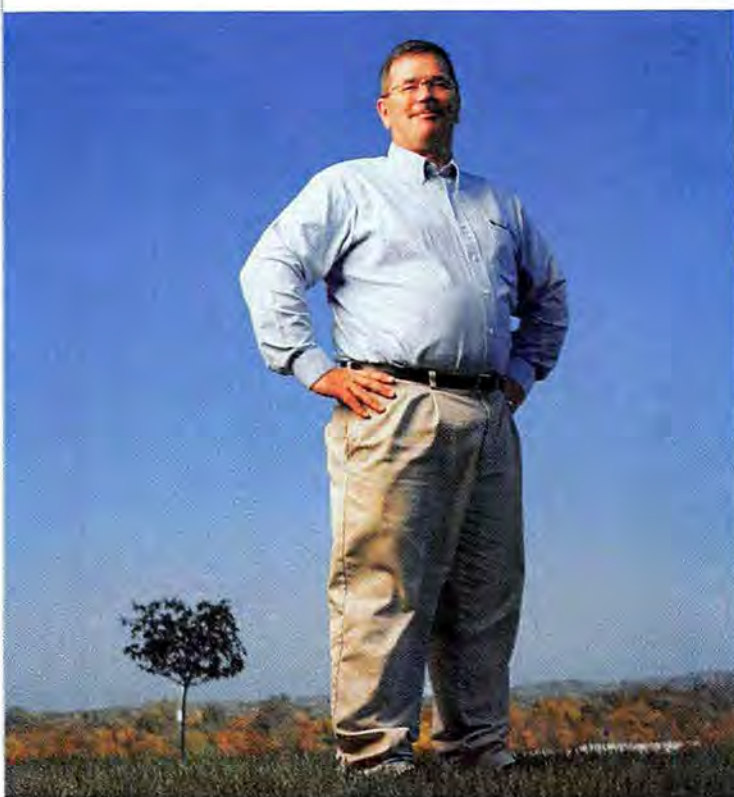
too. Six out of ten Canon respondents rated their satisfaction with the company's service as high. Xerox/Tektronix's and Epson's scores are about the same. Lexmark customers are somewhat less happy with their service experiences: Roughly 45 percent of respondents gave the company a high rating.

Dennis Wright of Columbus, Ohio, echoes the consensus assessment of Canon. When his one-year-old Canon S750 Color Bubble Jet wouldn't print, he telephoned Canon's technical support line and got through to a staffer right away. The helpful representative recommended that he take the printer to a local Canon dealer. "The shop replaced the printer within a week," says Wright, a case manager in the Mid-Ohio Regional Planning Commission's Energy Conservation Department. "Canon took care of me. I can't think of anything it could improve—except to drop the price of ink in half."

XEROX/TEKTRONIX'S MIXED RESULTS

MANY OF OUR SURVEY respondents raved about Xerox/Tektronix's good service. The company topped the charts for short hold time: 77 percent of Xerox/Tektronix customers who participated in our survey said that they waited on hold for 5 minutes or less (our survey average was just over 66 percent), and 83 percent said their hardware problems were fixed to their satisfaction. However, its printers can be prone to problems. Fully 62 percent of Xerox/Tektronix owners said they had run into at least one significant printer malfunction that either required a call to tech support or limited their printer's usefulness—the worst score of the bunch. By comparison, only 10 percent of Samsung owners, 16 percent of Canon owners, and 17 percent of Epson owners reported that they had encountered printer problems. As a result of its poor showing, Xerox/Tektronix is rated Unacceptable on this measure. So it's no surprise to find that respondents did not give the company a high rating for satisfaction with reliability: It finishes next to last on this measure, with a Poor rating.

Xerox/Tektronix, along with Brother and Samsung, checked in with the highest percentage of laser owners among the printer brands in our survey. The distribution between owners of Xerox/Tektronix ink jets and Xerox/Tektronix lasers was nearly equal: 41 percent of the company's customers reported about ink jets and 48 percent responded about lasers. Bear in mind, however, that Xerox/Tektronix stopped producing ink jet printers more than two years ago, so the products mentioned by survey respondents are at least that old. The company does provide supplies and full tech support for its older printers, says Rob Stewart, vice president of marketing for Xerox Channels Group.



“I’ve had no problems with [my Fujifilm FinePix 3800] camera—or the software that came with it.”

—Steve Zaleski, review superintendent, Fujifilm camera owner

Digital Cameras

Although ratings in this category are all over the map, users were generally happy with their digital cameras. Overall, these devices had the lowest percentage of units with problems of any product category in our survey. But service for cameras is considerably less positive across the board: Sony and Fujifilm users have complaints.

In reliability, Sony outdid the competition and posted the only top-tier score. It fared well on such measures of reliability as number of cameras with problems on arrival and number of problems per year. Most of the big players, including Nikon, Canon, and Fujifilm, earned strong marks in reliability as well.

Steve Zaleski is one happy Fujifilm camera customer. He has owned a Fujifilm FinePix 3800 for almost a year and uses it ▶

There is no emotion,
there is peace.
There is no ignorance,
there is knowledge.
There is no passion,
there is serenity.
There is no death,
there is only the Force.
Jedi seek to improve
themselves through
knowledge and training.
Jedi respect all life,
in any form.

Power leads to Anger.
Anger leads to Hate.
Hate leads to Power.
Power leads to Victory.
The dark side is
stronger than the light.
True Power is only achieved
through testing the limits
of one's power, and
passing through unscathed.
You have
will make you strong.



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for personal projects. "I've had no problems with the camera—or the software that came with it," says Zaleski, a construction review supervisor with a civil engineering firm based in Waukesha, Wisconsin. "I have never needed to contact Fujifilm technical support for any help with my FinePix," continues Zaleski. "The camera has been bulletproof."

SO-SO SERVICE

WHILE SONY'S AND FUJIFILM'S reliability ratings are high, their service scores are disappointing. About 35 percent of Sony camera owners reported that the company did not resolve problems satisfactorily. Respondents also griped about Sony's hold times: 44 percent of Sony customers waited on hold for more than 5 minutes to reach a tech support rep. (The average number of excessive holds for camera vendors was 35 percent.)

"Our customers did complain about the cumbersome tech-support phone tree we used to have," says Maureen Read, vice president of Sony Electronics' customer information services center. "But over the past year, we've installed an automated voice-recognition system to quickly route calls to technicians." According to Read, Sony has also expanded the tutorials and knowledgebase on its Web site.

Phone support wasn't the only thing that Sony users complained about. Jerome Gaeta of Kew Gardens in Queens, New York, says that his Sony Cyber-shot DSC-S85 was past its 90-day

labor warranty period when the flash stopped working. He had owned the camera for less than 6 months—still well within the 12-month parts warranty period. So he wasn't thrilled when a

Sony service rep told him that he would have to send in and insure the Cyber-shot for repairs at his own expense and pay a repair fee of at least \$200. He was warned that he'd have to wait several weeks for the repaired camera's return. "I was very disappointed," says Gaeta, a contractor and property manager for AC Renovation.

Most camera makers—including Canon, Fujifilm, Nikon, and Olympus—cover labor costs for one year, versus Sony's scant 90 days. Still, Sony redeemed itself

somewhat by suggesting an alternative to Gaeta: taking the camera to a local shop, which in this instance did the job for \$135.

As for Fujifilm, customers specifically complained about hold times: 44 percent of survey respondents had to wait on hold for more than 5 minutes before reaching a technical support rep—second from the bottom, and just a hair ahead of Sony. Though Fujifilm did not offer any encouragement on its tech-support hold times, it recently revamped the support pages on its digital camera Web site. Previously, customers seeking online help were encouraged to e-mail questions; now Fujifilm provides more information on issues such as drivers and camera features, and it displays the data in FAQ lists, says Marianne Salimbene, director of Fujifilm's consumer information center. ▶

Easiest-to-Use Peripheral

Percentage of respondents who were highly satisfied with their device's user-friendliness.



SURVEY RESULTS

Readers Rate Digital Camera Manufacturers

SONY CAMERAS ARE RELIABLE, but the company's service is lousy. Logitech and Polaroid cameras rate worst for reliability.

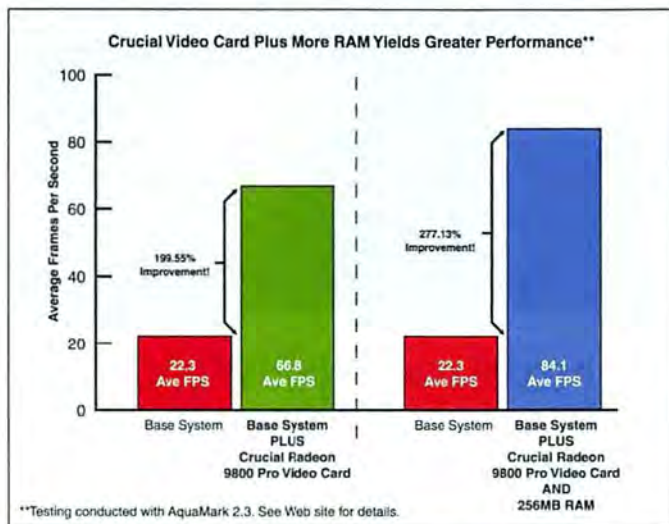
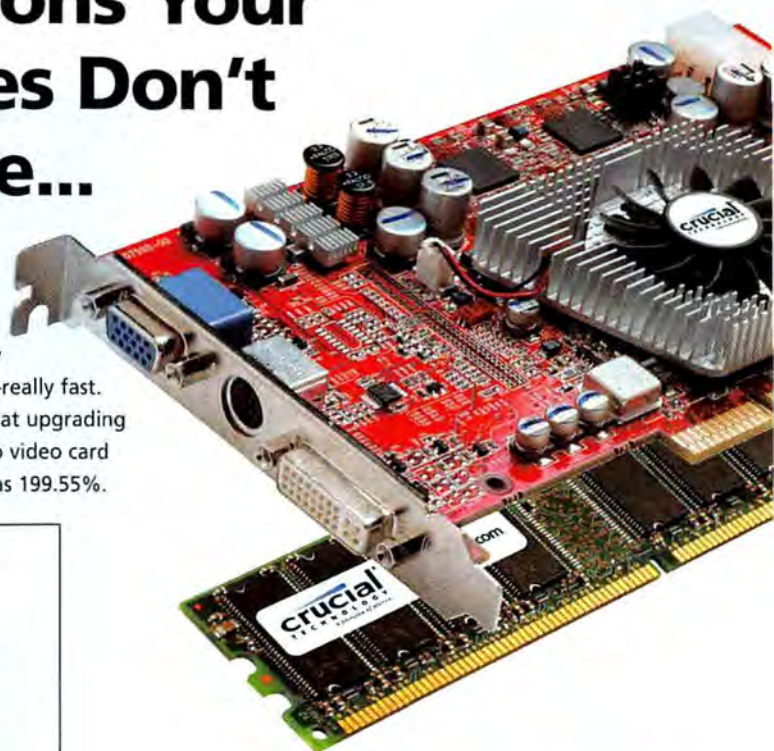
COMPANY	Reliability rating	RELIABILITY SCORE BREAKDOWN					Service rating	SERVICE SCORE BREAKDOWN		
		Problems on arrival	Ease of use	Cameras with problems	Problems per year	Satisfaction with reliability		Short hold time	Satisfactory resolution	Satisfaction with service
Sony	Outstanding	Outstanding	Outstanding	Good	Outstanding	Good	Poor	Poor	Poor	Fair
Canon	Good	Outstanding	Good	Good	Good	Good	Fair	Fair	Fair	Fair
Fujifilm	Good	Outstanding	Outstanding	Good	Good	Good	Poor	Poor	Fair	Poor
HP	Good	Outstanding	Outstanding	Fair	Good	Fair	Fair	Good	Poor	Fair
Kodak	Good	Good	Outstanding	Poor	Fair	Fair	Fair	Good	Fair	Fair
Minolta	Good	Good	Fair	Good	Good	Good	n/a	n/a	n/a	n/a
Nikon	Good	Outstanding	Poor	Fair	Good	Good	Good	Good	Good	Good
Olympus	Good	Outstanding	Fair	Good	Good	Good	Fair	Fair	Fair	Fair
Casio	Fair	Good	Good	Poor	Poor	Fair	n/a	n/a	n/a	n/a
Panasonic	Fair	Fair	Fair	Fair	Good	Fair	n/a	n/a	n/a	n/a
Toshiba	Fair	Good	Fair	Poor	Fair	Fair	n/a	n/a	n/a	n/a
Logitech	Poor	Poor	Outstanding	Fair	Unacceptable	Poor	n/a	n/a	n/a	n/a
Polaroid	Poor	Good	Poor	Poor	Fair	Poor	n/a	n/a	n/a	n/a

n/a = Not available.

Two Secret Weapons Your LAN Party Buddies Don't Want You To Have...

New tests reveal the power of this killer combo!

Okay, the first "secret" isn't really so secret. You probably know very well that the Crucial Radeon™ 9800 Pro video card is fast—really fast. In fact, tests conducted by the Crucial Performance Lab show that upgrading from a GeForce2 GTS 32MB card to the Crucial Radeon 9800 Pro video card can improve average frame rate benchmark scores by as much as 199.55%.



The second secret revealed!

But the tests showed something else. Something so subtle, we're embarrassed to say we almost missed it. According to the tests, maximum performance can be achieved by upgrading *two components at the same time*—the video card and the RAM. With the Crucial Radeon 9800 Pro video card and an additional 256MB of RAM, our test system showed a 277.13% improvement over the base system in average frame rate benchmark scores.

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UNCLEAR PICTURE

SOMETIMES EVEN RELIABLE CAMERAS can be difficult to use. For example: while Nikon pleased its customers on service and reliability, it received a Poor score on ease of use. Even Nikon knows that some customers have usability problems. Most frequently, these relate to the complex menu structure of older cameras, including the Coolpix 880 and 990, according to Michael Rubin, a senior product manager for Nikon. Nikon listened to users' complaints and revamped the menu on newer models like the Coolpix 2100 and 3100, says Rubin. The company also provides a Get Started videotape to guide first-time users.

But Michelle Slaughter, director of digital photography trends at InfoTrends Research Group, says that digital cameras' ease of use should continue to improve for an entirely different reason, and one that camera makers' don't control: the growing use of Microsoft Windows XP.

"The newer OSs—Windows XP and Mac OS 10—definitely improved the experience for digital camera users," Slaughter says. "The OS recognizes the camera right away and helps the users through the process of transferring photos. The PC is still a big factor in the digital photography experience."

GET WHAT YOU PAY FOR

MORE KODAK, CASIO, TOSHIBA, and Polaroid users (19 percent, 21 percent, 21 percent, and 24 percent, respectively) than other brands' customers reported encountering at least one significant problem. Logitech also posted so-so marks: Respondents to our survey cited Logitech cameras as having the most problems per year—an average of 3.6 glitches. That's more than double the average of the other camera brands for which we had meaningful data.

Admittedly, some of these companies build inexpensive, barebones cameras not meant for serious photography. For instance, Logitech, a big name in Webcams, makes few digital still cameras, including a simple combination Webcam and digital still camera, and a basic credit-card-style digital camera with no LCD.

Polaroid doesn't make digital cameras anymore; it has licensed its brand to a Hong Kong manufacturer (World Wide Licenses, Ltd.) that works with a distributor (Spectra Merchandising International) in the United States to sell inexpensive, Polaroid-branded cameras in chains like RadioShack and Wal-Mart.

Overall, camera owners seemed to find that they got what they paid for: According to our survey results, satisfaction increased among owners of more-expensive, higher-megapixel cameras in comparison with owners of basic units.



“It would have helped if Linksys had shared basic Windows info.”

— Stephen Swift, director of sales, Linksys gateway user

Wireless Gateways

Go wireless, but go patiently. That's the advice we gleaned from readers who told us about their experiences with gateways for wireless home networking. Gateways can be persnickety devices, and they fail more often than any other peripheral. Complicated software and security issues sometimes foul up installations and make troubleshooting difficult. Moreover, vendors don't always give sparkling service.

The nature of wireless networking and the potential for unstable drivers ensure that everyone will have a unique experience. Your colleague's great results with a gateway from a particular company does not guarantee that you'll have a similar experience. Everything from your 2.4-GHz cordless phone to the layout of your home or office to the other wireless gateways in your neighborhood can cause trouble with connections and quality.

In our survey, Netgear topped the gateways chart, with users judging its overall reliability as Good. A fair number of read- ▶

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ers struggled with home networking kits right out of the box and during setup. Among the six types of devices that we asked readers about, wireless gateways rated worst on this measure.

FINICKY DEVICE

MANY WIRELESS GATEWAY OWNERS who encountered an initial problem or one significant problem were able to enjoy the benefits of networking once they got beyond the original sticking point. This holds true for Stephen Swift of Alpharetta, Georgia, who had a tricky setup experience and a reliability problem with the Linksys BEFW11S4 wireless gateway that he purchased in the past year to connect several home PCs and a laptop.

Installation instructions were far from straightforward, says Swift, a director of sales for The Ramsey Company, a manufacturing firm. "Certain cues that were supposed to come up never did." He eventually managed to muddle through setup, but then he had to call for help when he couldn't get two PCs on the network to talk to each other. Linksys referred him to Microsoft, but instead he consulted a friend in the IT business, who helped him fix the problem. "It would have made my life easier if Linksys had shared some basic Windows networking information," Swift says.

But the real trouble came just two weeks later, when the gateway died. "The replacement process could have been easier, too," Swift says. "Linksys acknowledged immediately that the product was defective, but it took them a couple of weeks to send the new one." That said, he is now more pleased than you might expect.

Linksys has made some changes. Over the past two years, the company expanded its call center facility and trained technicians to provide both basic and advanced levels of support.

Belkin received the worst reliability marks among gateway vendors in our survey, earning the only Poor overall reliability score.

About 40 percent of respondents said they felt either neutral about or dissatisfied with the reliability of Belkin's gateways.

Dale Cabell of Irvine, California, a network designer for the county of Los Angeles, had bad luck with the Belkin F506130 Access Points he used at home. He noticed that the product case got very hot during operation, and the device gave out within the first month of use. Belkin replaced it under warranty without much fuss, says Cabell. But after three months the replacement unit failed. "So I quit using Belkin."

Belkin says that it has made a number of changes recently. Since 2003, the company has been more closely tracking the reasons for tech support calls and returns, says senior product manager Gary Hansen. In March 2003, the company began shipping an Easy

Install application with gateways; this software analyzes the PC and Internet connection and fills in much of the ISP-related information for the user during installation.

SIMPLE FIX?

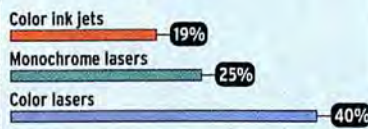
ON THE SERVICE FRONT, our readers gave just Fair ratings across the board for Netgear, D-Link, and Linksys (the only vendors for which we had enough

responses to calculate an overall service score). What can vendors do better? Make setting up wireless networks easier, thereby cutting the number of service complaints, says Kurt Scherf, vice president of research at market research firm Parks Associates.

One of the top issues: Most manufacturers have yet to create a truly easy-to-use wizard for configuring security settings on a wireless network. "That's been one of the biggest complaints about wireless networking products," Scherf says. The new WPA (Wi-Fi protected access) security protocol, available on some newer home networking products, may improve the situation. Meanwhile, people planning to install a wireless gateway must brace themselves for potential problems. ▶

Troublesome Laser Printers

Percentage of printers that had at least one significant problem.



SURVEY RESULTS

Readers Rate Wireless Gateway Manufacturers

NETGEAR EARNS SOLID RELIABILITY SCORES THROUGHOUT while Belkin sinks to the bottom.

COMPANY	Reliability rating	RELIABILITY SCORE BREAKDOWN					Service rating	SERVICE SCORE BREAKDOWN		
		Problems on arrival	Ease of use	Gateways with problems	Problems per year	Satisfaction with reliability		Short hold time	Satisfactory resolution	Satisfaction with service
NetGear	Good	Good	Good	Good	Good	Fair	Fair	Fair	Good	Fair
D-Link	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Linksys	Fair	Good	Fair	Fair	Fair	Fair	Fair	Fair	Fair	Fair
Microsoft	Fair	Poor	Fair	Fair	Poor	Good	n/a	n/a	n/a	n/a
SMC	Fair	Fair	Fair	Poor	Fair	Poor	n/a	n/a	n/a	n/a
Belkin	Poor	Poor	Poor	Fair	Fair	Poor	n/a	n/a	n/a	n/a

n/a = Not available.

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PDAs

There's a clear consensus in our survey of handheld owners: Respondents with PDAs that run the Palm operating system had a better time than those running PocketPC-based PDAs. The three companies at the top of the reliability class, Handspring, Palm, and Sony, all use the Palm OS. Meanwhile, companies including HP, Dell, and Toshiba—all of whose PDAs run the PocketPC operating system—lag behind this group. Like owners of other peripherals covered in this survey, handheld owners weren't rushing to their PDA's manufacturers for help. Indeed, they usually didn't need it, thanks to sturdy hardware.

Nevertheless, Dell customers reported a higher percentage of problems when they first started using their devices than owners of other PDAs, along with a higher number of problems per year. Dell's Axim product line is young, however—less than a year old at the time of our survey—and some users' initial problems were due to syncing-software snags.

"The majority of PDA problems out of the box are software-related," says IDC's Randy Giusto. "Synchronization is usually one of the top problems for users." The good news? Syncing software is not rocket science. "Syncing generally improves with every revision of the sync software," Giusto says.

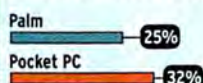
Despite Dell's setbacks, a whopping 82 percent of respondents claimed high overall satisfaction with the reliability of the vendor's PDAs, putting Dell at the top in this category.

When troubles do arise, according to our survey results, Compaq, Handspring, and Palm (the only PDA manufacturers that drew enough responses to permit us to calculate a service score) leave customers satisfied with the resolution of their problems.

Kathleen Fuller, a human resources manager at an investment firm in Minneapolis, ran into a stubborn syncing problem with

Palm vs. Pocket PC

Percentage of PDAs with problems that required calling tech support or that limited the device's usefulness.



Percentage of respondents who were highly satisfied with their PDA's user-friendliness.



her Handspring Visor Edge handheld when it first arrived two years ago. After looking around the company's Web site for answers without success, she submitted a query to the site electronically. Within a day or two, "tech support e-mailed me some steps to take,

and I had no trouble after that," she recalls. Since then, Fuller has submitted a handful of questions about her PDA's features electronically, and she has always received a quick response.

PDA users say that Handspring provides the fullest online support, but it's clear that all companies could do better. Palm is already looking at ways to improve its site. It recently analyzed users' search terms and rewrote the site's language to generate more-accurate search results more quickly, reports Dan Gilbert, Palm's senior director of global customer service and logistics. Of course, Palm and Handspring owners are watching to see how the upcoming merger of the two PDA giants affects service. Gilbert says that the combined company will employ separate sets of experts to support the different product lines.

Laurianne McLaughlin is a freelance writer based in Massachusetts. PC World's Edward N. Albro, Grace Aquino, Tracey Capen, Lisa Huck, Jeff Kuta, David Lake, Harry McCracken, and Aoife M. McEvoy also contributed to this article.

SURVEY RESULTS

Readers Rate PDA Manufacturers

HANDSPRING, PALM, AND SONY make the most reliable handhelds. Devices by these three companies all run the Palm OS.

COMPANY	Reliability rating	RELIABILITY SCORE BREAKDOWN					Service rating	SERVICE SCORE BREAKDOWN		
		Problems on arrival	Ease of use	PDAs with problems	Problems per year	Satisfaction with reliability		Short hold time	Satisfactory resolution	Satisfaction with service
Handspring	Good	Good	Good	Good	Good	Good	Fair	Fair	Good	Fair
Palm	Good	Fair	Good	Good	Good	Good	Fair	Fair	Good	Fair
Sony	Good	Good	Good	Good	Good	Good	n/a	n/a	n/a	n/a
Casio	Fair	Good	Poor	Good	Good	Fair	n/a	n/a	n/a	n/a
Compaq	Fair	Fair	Fair	Fair	Fair	Fair	Good	Fair	Good	Good
Dell	Fair	Poor	Good	Good	Poor	Good	n/a	n/a	n/a	n/a
HP	Fair	Fair	Fair	Fair	Good	Fair	n/a	n/a	n/a	n/a
Toshiba	Fair	Fair	Fair	Fair	Fair	Fair	n/a	n/a	n/a	n/a

n/a = Not available.

What consumers want is available at



If there were a universal consumer wish list, it would probably go something like this: "Give me a wide selection of brand-name products from a broad array of sellers competing for my attention, and make the buying process easy and safe." As it turns out, this is the heart and soul of the eBay experience (www.ebay.com).

While most people know the product selection available on eBay is enormous—witness the 2,000 digital televisions available on any given day—it is also true that many of the electronics products available on eBay.com are brand-new, in-box, completely unused goods. In fact, most consumer electronics available on eBay.com are a mere three to six months past their initial product launch. About 40% of the items available on eBay at any time are new; another 14% are factory-refurbished. You can even find the first feature-rich Asian cell phones to hit the market.

Big-Name Online Storefronts at eBay

Moreover, consumer product giants like Dell, Olympus, and Sharper Image are among the many top-flight sellers that have set up their own online stores on eBay. These sellers use eBay to move both new and factory-refurbished quality goods. IBM, for example, sells a full line of new and refurbished personal computer products on its minisite on eBay. These big-brand sellers are the perfect complement to the legions of individual sellers long familiar to eBay buyers. And when you consider that scores of smaller businesses and regional retailers such as Cameta Camera are selling on eBay, it's clear that eBay covers the sellers' universe in a uniquely comprehensive way.

But it's not just brand that attracts eBay buyers. Consumers finding the right item are encouraged to check out the seller's "feedback" information, which

gives buyers instantaneous access to the seller's reputation and business practices as listed by previous buyers. So buyers end up shopping confidently for brand and reputation at the same time, gaining peace of mind through the sales histories of individual sellers.

The actual bidding on items starts with a simple,

one-time registration process that requires no credit card to begin browsing and bidding. That's when buyers discover the unparalleled breadth of products available on eBay, including Nikon digital and film cameras, Motorola and Nokia cellular phones, and Panasonic and Philips plasma TVs.

And you don't have to wait days for an auction to close. eBay's Buy It Now feature allows consumers to purchase an item im-

mediately at a preset price. In fact, about half of the items sold on eBay are bought with this Buy It Now option.



Once a buyer is ready to make a purchase on eBay, checking out is simple, fast, and safe. Most sellers allow buyers to pay through PayPal or accept credit cards. PayPal, a safe way to make online transactions, keeps the credit-card number from the seller and facilitates payment at no cost to the buyer. Moreover, PayPal now offers eBay buyers a \$500 buyer-protection plan on qualified sellers' listings.

Unquestionably, eBay is the answer to the consumer desire for the broadest possible product and seller selection, and a buying process that is safe and secure.

Seller information

eBaySeller (128 ★) Power Seller
Feedback rating: 128
Positive feedback reviews: 98.3%
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*When referring to storage capacity, GB stands for one billion bytes. Total user-accessible capacity may vary depending on operating environments.

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Fun Tech

Twelve innovative products that keep you entertained and connected—on the couch and on the road. **By Michael S. Lasky and Andrew Brandt**

Maybe you've noticed the trend: New PCs come loaded with extras better suited for the living room than for the office, and consumer electronics have new features that previously were exclusive to the computer. We found a dozen genre-bending products worthy of your attention. They're perfect for use at home or on the road. ►

INSIDE THIS FEATURE

► Home & Mobile Gadgets

Portable DVD Viewer | GPS-Enabled PDA | Internet-Connected Refrigerator | Networked DVD Player | MP3 Jukebox | 5.1 Speaker System | Theater Projector | Plasma TV | Laptops | Video Recorders



The Couch Potato's Portable PC

Toshiba's 17-inch-wide **Satellite P25-S609** notebook with Microsoft Windows XP Media Center Edition 2004 is a 9-pound, 9-ounce home entertainment behemoth: It's a television, a radio, a DVD player/recorder, and a monster gaming system. Armed with a powerful 3-GHz Intel Pentium 4 desktop processor, 1GB of RAM, an NVidia 3D graphics chip, and an 80GB hard drive, the Satellite also packs a modular-bay TV tuner, surprisingly full-sounding Harman/Kardon speakers, Wi-Fi networking, a FireWire port (handy for digital camcorder mavens), and a DVD Multi drive for DVD-R recording and playback. It's nice to know you can compute on this notebook, but with all the media goodies, who has time to crunch numbers in a spreadsheet? (★★★★☆, \$2799 list, find.pcworld.com/38345)

Good Sound at a Great Price

With a street price under \$200 and a variety of high-end features, Onkyo's **Digital Theater Station GXW-5.1** speakers are almost a sure bet. The hub of the six-speaker set is the sub-woofer, which contains its own amplifier, Dolby Digital DTS processing (to provide digital surround sound), and analog and digital inputs that can hook either to a PC or directly to a home theater component, such as a DVD player or a game box. When you use the speakers in conjunction with digital audio output from a game console, the surround-sound effects can be dramatic. And while this set might seem slightly underpowered at 75 watts in comparison to 5.1-speaker packages from Creative, Klipsch, and Logitech, those higher-powered sets don't include a built-in amplifier, and they cost a lot more. We love the rich, true bass and crisp surround sound—not to mention the price. A simple remote control rounds out the package. (★★★★☆, \$150 to \$199 street, find.pcworld.com/38150)



Giving TiVo a Run for Its Money

Three new broadband-savvy ReplayTV models (one offers 40 hours of recording at high quality; the others, 80 and 160) deliver some interesting new features to digital video recording. We looked at the 40-hour **ReplayTV 5504**, which, if it detects a schedule conflict, will ask you which show is more important, and can assign one or more conflicting recording tasks to idle ReplayTVs (if any) on your home network. Setup out of the box is a snap, with just a few cables to connect between the unit, a television, and your sound system. Because we conveniently had a network port located directly

behind the TV cabinet, the ReplayTV 5504 downloaded the on-screen program guide—a service very similar to those delivered to digital cable and satellite subscribers—in a fraction of the time it would have taken using the other option, a phone line. Soon after that, we were searching for and recording shows, pausing live TV, and skipping merrily past ads. The price of the device includes three years of the on-screen program guide. Our one unfulfilled wish: a wireless keyboard, so we wouldn't have to scroll through on-screen menus to pick out each letter in the name of a show we're

searching for. (★★★★☆, \$500 list, find.pcworld.com/38213)





Movies and a Whole Lot More

With DVD players called upon to do so much more than play movies these days—most play MP3 and WMA audio and display slide shows of images saved to CDs—it was only a matter of time before the family DVD player became a networked device. The **Go-Video Networked DVD Player D2730** offers many of the connectors you'd find on the rear of a typical high-end DVD player, including component video and digital audio output jacks. But the unit includes a port for networking, too. Once on our home LAN, the D2730 quickly found a PC running Go-Video's multimedia server software. Though we enjoyed the

convenience of being able to play every song on our hard drive through stereo speakers in the living room, as well as to browse family photos from the PC on a 27-inch TV, we sometimes forgot about having to boot the PC first. You can even set up a slide show to run automatically, while you stream your own soundtrack music for simultaneous accompaniment. A computer that's less than two years old won't be slowed down noticeably by streaming files to the TV, so one person can listen to tunes on the family room TV while another gets work done on the office PC. (★★★★☆, \$300 list, find.pcworld.com/38153)



Wireless Laptop Alternative

When you don't need the power, weight, and expense of a notebook but you do want something more than what a pocket-size PDA can provide, AlphaSmart's **Dana Wireless** may be the answer. The 2-pound Palm OS device, about the size of a sub-notebook, sports a backlit 560-by-160-pixel gray-scale LCD touch screen, a full-size keyboard, and Wi-Fi networking. While the Dana can handle all Palm apps in a cropped window, many have been tweaked to exploit the extra-wide display—great for the bundled Office-compatible apps that handle Word, Excel, and PowerPoint files. With Palm Remote software and its built-in infrared port, the Dana becomes a home-theater universal remote control as well. If you don't need the power of a full notebook, the instant start-up, easy Internet access, and full-size keyboard for Office docs make this Dana a wise choice. (★★★★☆, \$429 list, find.pcworld.com/38342)

PC Tool Simplifies TV Viewing

Sure, digital video recorders like TiVo and ReplayTV are a great convenience: You'll never miss a favorite show, and you'll never find yourself surfing 125 channels without finding anything on. But a DVR device is nothing more than a hard drive and a user interface. Sound like something you might already have? **SnapStream Personal Video Station 3** turns any PC under two years old into a DVR. The package includes a TV tuner (either an internal PCI card or an external USB box), a remote, and SnapStream's sleek software. We love how the SnapStream software lets you create or change scheduled recordings from anywhere, through SnapStream's Web site, if your SnapStream-enabled PC has a broadband connection. The software even lets you stream live TV to any computer over the Internet. Try doing that with a fancy-pants DVR box. (★★★★☆, \$80 list, find.pcworld.com/38156) ▶



Internet for Your Bacon & Eggs

It had to happen: LG Appliances merged a refrigerator with a PC, gave it an LCD touch screen and camera, slapped an \$8000 price tag on it, and labeled it the **Internet Refrigerator**—a swanky, roomy, moderately energy-efficient refrigerator with a date book, photo album, electronic whiteboard, Web browser, music jukebox, and TV. To make the TV or Internet functions work, you'll need a cable TV and ethernet port convenient to the back of the fridge. The computer, which inexplicably runs

Windows 98, isn't tied in with the refrigerator's temperature controls (a separate panel above the ice and water dispenser handles that), so your ice won't melt if Windows freezes. The included food-tracking program could have been engineered a little better—as it is, entering each grocery item into the database is a tedious data entry chore involving the touch screen's keyboard. Another missed opportunity: You can't set the built-in, door-front camera to snap a photo of the late-night Haagen-Dazs thief who invades your kitchen. (★★☆☆☆, \$8000 list, find.pcworld.com/38255)



Bigger Than Some Big Screens

Power on the **NEC Showcase HT1000** projector, fire up a DVD movie, and the home theater experience is so complete you might catch a whiff of popcorn in the air. The first in NEC's series of home-oriented projectors, the 7.1-pound HT1000 delivers superior image quality compared with other projectors. While pricier than most models, this unit offers a home user several features that are more important in the living room than in the boardroom: the entire spectrum of high-end video input options, from composite to HDTV; support for console video games as well as for PCs; an automatic setup mode that compensates for the projection angle to display a rectangle even if you can't aim dead-center at a screen or wall; and a mode in which the fan runs whisper-quiet—an important consideration when you'd rather hear the alien sneaking up on the hero than the fan droning inside the projector. If you have the cash to spend on a 60-inch plasma-display television, you should seriously consider this projector and a good-quality screen as a lighter, sturdier alternative. For more on the benefits and drawbacks of large display technologies, see page 167. (★★★★☆, \$5500 list, find.pcworld.com/38210)

A PDA That Knows Where You're Going

A sleek and powerful, high-resolution color Palm OS PDA, Garmin's **iQue 3600** also delivers a built-in Global Positioning System receiver. With the included mapping software, it can show you (within 120 feet) where you are and tell you how to get where you want to go. Ah, the promise of never having to ask a gas station attendant for directions again! It's also loaded with a voice recorder, an SD memory card expansion slot, office software, an MP3 player, and a headphone jack. An optional \$80 Auto Navigation Kit is, in reality, necessary: The kit provides juice from the car's cigarette lighter to supplement the iQue's painfully short battery life. We like that you can set an array of preferences—from showing wayside stops to suggesting alternate roads that avoid tolls—but best of all is the versatility of the iQue, which hap-

pens to be a handy PDA when it's not guiding you to your next destination. (★★★★☆, \$589

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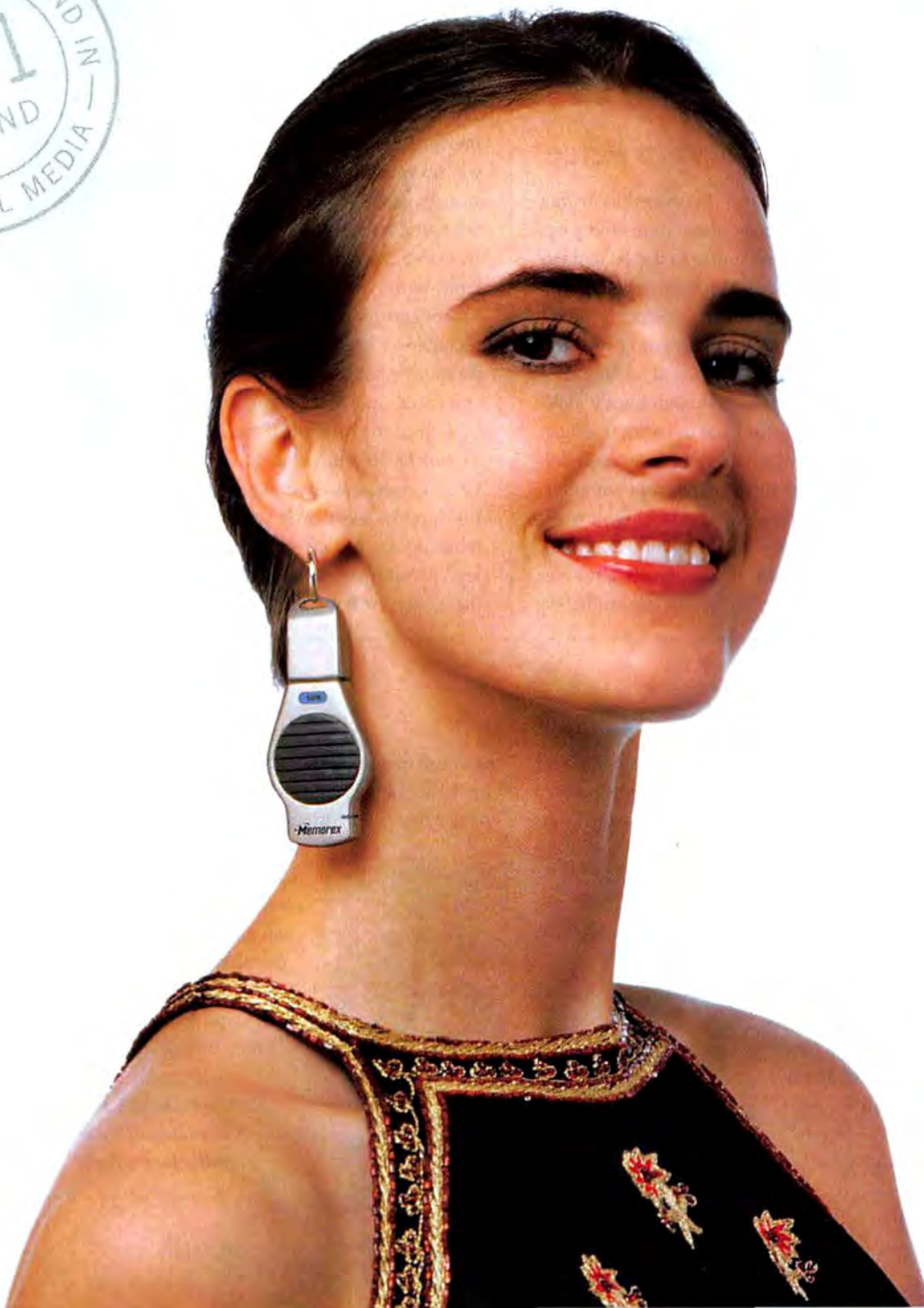
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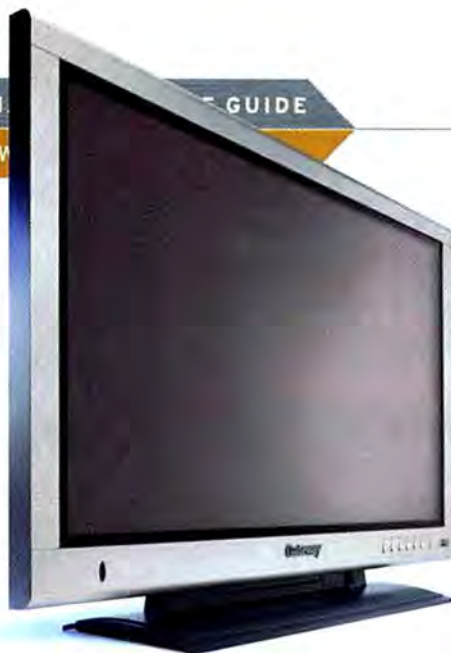
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Big Video Bliss at a Bargain Price

Gateway's 46-inch **P46M103 Plasma TV** wooed us with a sharp, bright picture and a smorgasbord of connectivity options. You can hook almost any video source to the set and virtually be assured of a pretty darn good picture. Whether you mount the TV on the wall (the bracket costs another \$280) or use the tabletop stand (an additional \$150), the power cord and A/V connectors are readily accessible, positioned so the cables hang unobtrusively. But be warned: Even though the TV looks stylishly thin (less than 4 inches from front to back), it weighs in at around 100 pounds (including the stand), so setup is definitely a two-person job. You can also use it as a PC monitor, with screen resolutions up to 1280 by 1024 pixels. There are certainly plasma TVs with much better picture quality to be had, but you'd be hard pressed to find one of this size at such a reasonable price. (★★★★☆, \$3800 list, find.pcworld.com/38249)

A Do-It-All Music Machine

TDK's **DA-9000 CD-RW Jukebox**

combines a 20GB hard drive with a CD-RW drive to produce a hybrid stereo component that plays, rips, and burns music CDs and organizes digital music files. The Jukebox rips music tracks to its hard drive, from which you can burn the tunes to music (not data) CD-R or CD-RW media, or just play them back. The built-in GraceNote database of more than 14,000 commercial CDs adds a nice touch: As you rip your music, GraceNote associates each song with the album, artist, and track name—without an Internet connection. A six-line front-panel LCD displays song names and album titles. Using the included software and USB cable, we transferred MP3s from our PC, and could update the album database from the Web. Rear audio connectors let you make digital copies of an LP- or cassette-based music collection. As much as we like the Jukebox, the less-than-invigorating speed (about 8X) at which it burns CDs and saves files puts us off somewhat. Nevertheless, its ultimate convenience in the living room overcomes that peeve. (★★★★☆, \$400 list, find.pcworld.com/38333)



Movies on Demand

Is it just us, or are movies on airplanes getting worse and worse? The best solution is to bring your own, but DVD viewing on a laptop depends on two factors: Will you have room to open your notebook, and how long will the battery last? Most portable DVD players we've seen have batteries that could get you through all 171 minutes of *The Godfather*, but they're also saddled with ridiculously small, playing card-size screens. That's why we particularly like the bright and crisp, 10-inch wide-screen display of Samsung's diminutive **DVD-L200 Portable DVD Player**. Its 3-hour battery let us view

the entire movie without a snag, and at just 3 pounds, the player is light enough for easy carrying. A pair of headphone jacks enables two people to watch a movie at the same time, and an S-Video port lets you hook the player to some televisions. A remote the size of a credit card matches the controls on the top panel of the unit. Want to mount the player in your van instead? At the touch of a button, you can turn the picture upside-down. (★★★★☆, \$600 street, find.pcworld.com/38339) ■



Michael S. Lasky is a senior editor and Andrew Brandt is a senior associate editor for PC World.



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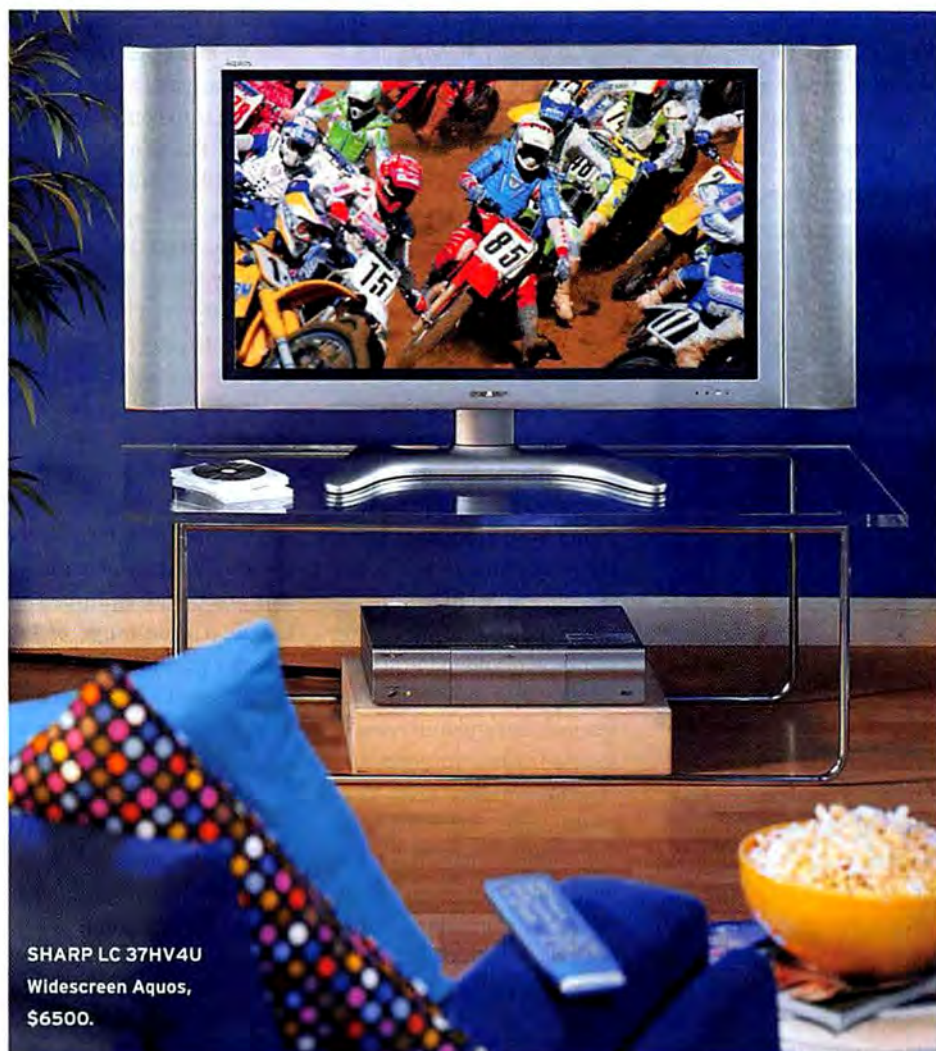
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NEXT GEAR

EDITED BY ALAN STAFFORD

REALLY BIG SHOWS

GOT YOUR EYE ON A SUPERSIZE DIGITAL TV? SHOULD YOU SPRING FOR PLASMA, LCD, OR DLP? WHAT ABOUT HDTV? THE CHOICES CAN BE DAUNTING, BUT WE CAN HELP. BY MICHAEL RIGGS

YOU HAVE 800 DIGITAL TV channels, a Media Center PC, and a DVD player, but you're still using 50-year-old display technology? If so, chances are you're ready for something bigger—and maybe sleeker—than the bulky cathode-ray tube that has brought video into your life for so long.

Once-exotic alternatives based on plasma, LCD, and DLP (Digital Light Processing) technology are becoming both more common and more affordable—and in the realm of big, wide-screen TV sets and monitors, they're threatening to push CRT-based designs aside. Economy of size

drives these displays' appeal. Large rear-projection CRTs, which once were the only remotely affordable big-screen displays, weigh hundreds of pounds and dwarf most other living-room furniture.

Big-screen alternatives such as plasma panels, direct-view and rear-projection LCD sets,

rear-projection DLP displays, and even digital projectors are much more compact; a flat-panel TV can be mounted on a wall like a painting.

Prices for these newer-tech displays are dropping rapidly. You can pay as little as \$1000 for a digital projector or as little as \$3000 for a 42-inch ►

plasma panel. Nevertheless, the newer display devices generally cost more than their CRT cousins. But David Mentley of display research firm ISuppli/Stanford Resources

loss of image quality, they are extremely versatile. Although the big downside to plasma has been price, some 42-inch plasma models now cost only about \$3000—but for that bar-



PIONEER PUREVISION PDP-5030HD 50-inch plasma TV, \$13,000.

says that within just a year or two, rear-projection DLP sets may become cheaper than CRTs of comparable size.

PLASMA

Price range: \$3000 to \$30,000 for screen sizes ranging from 42 to 61 inches.

Overview: Best if you want a wall-hanging or a relatively inconspicuous display for television and movie viewing that can perform well in strong room lighting—especially if cost is not a great concern. Heavy PC users and gamers should look elsewhere.

Details: Sleek and sexy, these wall-mountable panels are the embodiment of futuristic television. Top-of-the-line plasma screens can deliver gorgeous high-definition pictures. And because they are only a few inches thick and (unlike some LCDs) can be viewed from well off to the sides without

gain price you don't get HDTV resolution (see "Getting Set for HDTV" on page 169).

With plasma screens, you tend to get what you pay for. Plasma displays in general struggle to produce deep black tones, and the images in some inexpensive plasma displays look washed out. You'll pay more for higher contrast and resolution, but if you can't

afford to splurge for both, a high-contrast, low-resolution picture will usually appear to have more detail and better color saturation than a low-contrast, high-resolution image. Look for a contrast ratio of 1500:1 rather than 800:1. Contrast-ratio specifications are often exaggerated, however, so try to look at a display

before you buy it, bearing in mind that display controls and signal quality strongly influence the quality of the image.

Almost all plasma displays are wide-screen units with a 16:9 aspect ratio. Like CRTs, they use phosphors to generate light, which means that phosphor burn-in can be an issue if you watch a lot of TV or play games in a narrower 4:3 aspect ratio. (Burn-in produces lingering, permanent or semipermanent ghosts of static images that have been displayed for long periods of time.) Stretch modes, which allow any image to fill the screen, can help (at the expense of distorting the picture somewhat); and many plasma displays now come with other features designed to prevent burn-in. Also, you can substantially reduce the risk of burn-in (and extend display life) by using moderate brightness and contrast control settings; you don't have to max out today's high-contrast panels to obtain vivid pictures.

LCD

Price range: Direct-view LCD, \$4000 to \$6000 for 30- to 40-inch screens; rear-projection LCD, \$3000 to \$5000 for 40- to

currently top out at 40 inches diagonal (larger screens are coming in the next few years). Since plasmas start at 37 inches, LCD is the only choice for smaller flat-panel displays. LCDs with screens measuring 30 inches and up are almost all wide-screen, 16:9 displays, and they are costly compared with rear-projection alternatives. But again, prices are expected to drop as the supply of larger LCD panels grows.

Direct-view LCDs are generally more suitable than other big-screen options for dual PC-TV use; they frequently come with stands for desktops and are better equipped to handle a wide range of PC monitor resolutions than are plasmas and rear-projection TVs. Because they don't use phosphors, LCDs are immune to burn-in. Although poor response time on older LCDs made them undesirable choices for viewing action films or for playing fast-moving games, newer models tout faster response times, so you'll see the difference only in high-end games—if at all. The contrast ratio on LCDs tends to be low compared with that of other display technologies—500:1 is typical—so images may look washed out on some.

Several companies are also using LCD technology for big (up to 60-inch), wide-screen, rear-projection HDTV sets. These are tabletop models: A typical 52-inch set will weigh a little over 100 pounds and will measure less than 40 inches tall and 18 inches deep; that's shallower than most 27-inch CRT sets but much deeper than direct-view LCD panels or plasma screens. Like direct-view LCD sets, rear-projection

Images in some inexpensive plasma displays can look washed out.

60-inch screens.

Overview: Direct-view LCDs are excellent as combination TV/PC monitors, but slow response times on some older models may frustrate users who play fast-action games. Good for flat-panel TVs in screen sizes smaller than the available plasma models.

Details: Direct-view LCD units

LCD models tend to be somewhat weak on contrast. Their viewing angle is in most cases wider than that of CRT rear-projection TVs but narrower than that of direct-view CRTs or plasmas. Prices now almost match the cost of CRT rear-projection TVs of similar size (which will likely vanish from the market as their remaining slight price advantage disappears). But if you're interested in buying a rear-projection LCD screen, consider getting a DLP rear-projection set instead. It may cost a little bit more, but it will usually produce better-looking images.

REAR-PROJECTION DLP

Price range: \$4000 to \$5500 for a 43- to 61-inch screen.

Overview: Excellent for TV and movie viewing in almost any setting; more affordable than

a skinnier LCD or plasma. Good contrast ratios, response time, and color range make DLP the best choice for most serious PC or console gamers.

Details: It's hard to believe that you can produce video images by using thousands of tiny movable mirrors, but that is exactly how DLP sets work. Like LCD rear-projection TVs, DLP sets are shallow (15 to 18 inches thick), wide-screen, tabletop HDTVs that weigh 100 to 125 pounds and are immune to burn-in. Their contrast ratio is better than that of LCD and many plasma models. Picture quality does not deteriorate with age as it does on CRTs and plasmas, brightness is often higher, and color range is frequently broader. If you can't afford plasma, rear-projection DLP is an excellent alternative choice.



SAMSUNG HLN467W rear-projection DLP HDTV monitor, \$4000.

DIGITAL PROJECTORS

Price range: \$1000 to \$12,500 for models under 30 pounds.

Overview: Many digital projectors today are small enough and light enough to accommo-

date temporary home theater setups pretty much anywhere you have room for a screen. Though movies benefit most from big-screen treatment, regular TV and games can look stunning, too. On the ▶

DIGITAL TV

GETTING SET FOR HDTV

AMERICAN TV IS GETTING better (well, in terms of technology, anyway), and it's turning digital. Not all large-screen TVs support the higher resolutions known as HDTV (high-definition television), and right now relatively little TV is HDTV. But if you're shopping for a big-screen TV, you'll want to consider getting one that supports HDTV, if only for future-proofing.

Today's North American TV system is called NTSC, after the National Television System Committee that spawned it. The new digital television system is sometimes referred to as the ATSC system, for the Advanced Television Standards Committee. ATSC TV provides for some 18 transmission formats, ranging from 480i "standard definition" (similar to NTSC) to a pair of HDTV formats, 720p and 1080i. The numbers represent how many active scan lines, or pixel rows, make up each complete video frame. The letters represent whether the

frames are created by *progressive* or *interlaced* scanning. In progressive scanning, images are scanned left to right to create a full frame of scan lines from top to bottom; with interlaced scanning (which NTSC uses), all the odd-numbered scanned lines are created, after which the even-numbered lines are scanned and nested within the just-created odd-numbered scan lines. Interlacing causes minor picture degradation, such as flickering between adjacent lines, but it permits greater perceived resolutions at lower transmission bandwidths.

Both 720p and 1080i HDTV look superior to NTSC. Which is better? On still images or material with little motion, 1080i should provide more detail. But on fast-motion scenes, such as sports, 720p's rendering of full frames every sixtieth of a second, instead of half-frame fields, should yield a cleaner picture. CBS and NBC have chosen 1080i; ABC and Fox have opted for 720p.

The ATSC standard also provides for two aspect ratios (ratios of display width to display height): the squarish 4:3 familiar from NTSC (and most PC monitors) and wide-screen 16:9, a better match to the human visual field and to movies. The HDTV formats use the wide-screen aspect ratio: 720p is 1280 by 720 pixels, and 1080i is 1920 by 1080 pixels. The 4:3 aspect ratio (640 by 480) of 480i is basically a legacy provision, while 480p's 16:9 ratio is known as EDTV (enhanced-definition television). It resembles the output from a progressive-scan DVD player, but it isn't HDTV.

Sets described as "HD-ready" are capable of HDTV resolutions but have no built-in tuner to receive HD transmissions. To see HDTV on these sets, you'll need an external HDTV tuner, which supports all ATSC formats and costs a minimum of about \$400 (more if you want a built-in satellite tuner or other features).

other hand, the low-ambient-light requirement and setup hassles (unless you opt for a fixed installation) make projectors less than ideal for everyday living-room use.

Details: Want a really big picture (as in 5 to 10 feet diagonal)? Or maybe a big screen that you can put up quickly when you want it and put away just as easily when you don't? LCD and DLP digital projectors come to the rescue.

Generally speaking—and admittedly those are dangerous words, given the range of manufacturers and models—LCD projectors offer somewhat lower contrast than do DLP models (especially the ones with higher-end three-chip designs), but DLP models tend to cost more. For either type, key considerations include the range of acceptable



INFOCUS SCREENPLAY 5700 DLP digital projector, \$4999.

really big picture, consider a home theater projector that supports HDTV resolution. These go for as little as \$3000.

If you decide to purchase a projector, don't forget to check the fan noise. A projector that

can't display different resolutions. If you change the graphics resolution on a computer equipped with a CRT monitor, the monitor will change the number and thickness of lines scanned. In order for a fixed-

pixel device such as a laptop's LCD screen to display a nonnative resolution, it must interpolate the

image data to fit the grid—a process known as *scaling*. (If the desired resolution is smaller than the native resolution, a fixed-pixel display can simply refrain from using all its pixels, leaving a frame of black.)

Today there are multiple TV image formats, so much or all of what you view on a digital display will have to be scaled from its native resolution. Mediocre scaling technology thus can significantly degrade picture quality. Fortunately, decent scaling has become far more affordable in recent years. And the best fixed-pixel displays tend naturally to look sharper than CRT screens. But because a display's built-in scaler can have such a big impact on your viewing experience,

test a variety of video sources—from cable or satellite TV to DVD to HDTV—before you buy.

Also compare the video outputs on the devices that will feed the display—your DVD player, VCR, and so forth—with the number and type of inputs on the display. If you have an external HDTV tuner (see “Getting Set for HDTV,” page 169), you'll need at least one input for it—RGB, wide-band component video, or (if possible) DVI or HDMI. DVI is the digital input standard used for computer monitors. HDMI is essentially DVI with added lines to carry digital audio along with the video; in addition, it has HDCP (High-bandwidth Digital Content Protection) encryption, an industry standard that combats piracy of multimedia content.

Long-term, the best input to have is an HDCP-compliant DVI or HDMI input, since future broadcasts may require HDCP encryption between external tuners and displays.

If you want to hook up a progressive-scan DVD player, your display must also have an available component-video input. And if you want to connect a computer to the display, make sure it has a VGA input compatible with your PC.

Finally, these displays often have cooling fans to dissipate heat. Check the noise level. It may not matter in a meeting room, but it will in your home theater. When you're investing \$1000 or more in a living-room display, you want to nail down every detail. ■

Freelance journalist Michael Riggs has been writing about audio and video technology for more than 25 years.

If you decide to purchase a projector, don't forget to check the fan noise.

mounting distances from the screen and the maximum image sizes for those distances. Both types use a single adjustable lens and need none of the critical tube-convergence adjustments required with CRT-based projectors, so setup tends to be relatively simple.

But even though LCD and DLP projectors today generate significantly more light than CRT models, their pictures will still wash out unacceptably if you don't keep strong sunlight or room lighting away from the screen—and as a result, they are impractical for everyday, living-room TV use. Also, low-resolution images will have an obviously grainy appearance when blown up very large. So if your goal is a

is acceptable for business presentations may be annoyingly loud for movie watching.

You will probably want to get a good screen, too. Prices start at about \$170 for a 6-foot, 4:3 screen and at about \$300 for an 8-foot, 16:9 screen.

And if you'd like to avoid struggling with setup hassles every time you want to watch a DVD movie, consider investing in a ceiling mount: Basic models sell for \$120 to \$200.

DIGITAL DIFFERENCES

WHICHEVER display technology you choose, you'll be dealing with a fixed-pixel device. Unlike a CRT display, which can change the size of its pixels, a fixed-pixel display uses a grid of unalterable pixels that

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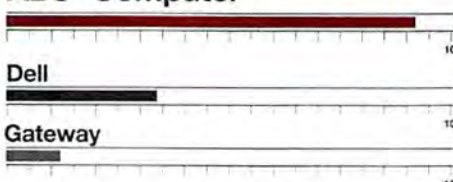


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HOME THEATER

UNIVERSAL CONTROL

FIVE REMOTES THAT HELP KEEP YOUR HOME THEATER IN LINE.

THE MANY-BUTTONED monstrosity of a remote that came with your cable box isn't close to being universal. If you're lucky, it may turn on the TV, VCR, and DVD player. But can it play CDs or switch from 2-channel stereo to 5.1 Dolby Digital? If you're tired of a coffee table loaded with devices for controlling your home theater, it's time to step up to a truly universal remote.

We tested five gadgets that claim they'll control virtually any home theater component right out of the box, and learn the functions they don't know.

When the RCA Universal Learning Remote Control

RCU1010 had trouble switching to Video 1 on my Harman/Kardon receiver, I pointed the original remote at it



INTRIGUE TECHNOLOGIES
Harmony Remote SST-768.

and pressed a few buttons to teach the RCA the right code.

You can also create macros that record a series of commands and replay them at a touch of a button—so one but-

ton can switch to the correct inputs on your TV and receiver while starting up a DVD.

These all-in-one devices aren't built like standard remotes. One For All's Kameleon URC9960 eschews hard buttons in favor of a backlit touchpad with keys that light up and switch off depending on which device you're controlling. Philips' Pronto TSU3000 and RCA's RCU1010 give you even more control over the button layout with touch-screen LCDs that you can reconfigure to suit your needs. Models like the Home Theater Master MX-600 and the

Intrigue Technologies Harmony Remote SST-768 use smaller LCDs that allow you to rename a set of buttons.






The Harmony Remote and the Philips Pronto even connect to your PC so that you can download new codes, program your buttons via handy software apps, and put TV listing data on your remote.

Provided you're willing to put in some time teaching your new gadget to behave, you can make controlling your home theater much simpler. But get ready for some sticker shock: Our Editor's Pick, the Harmony Remote SST-768, costs \$299. The convenience is worthwhile when you get it working right—but keep the original remotes close by for that moment when you realize you've taught the new device to turn everything on with one button, but you haven't yet told it how to turn anything off. —Michael Gowan ■

FEATURES COMPARISON

ALL-IN-ONE CONTROLS FOR YOUR HOME THEATER

UNIVERSAL REMOTES WITH LEARNING CAPABILITIES can make controlling your home theater setup much easier. These all-in-one devices can consolidate the many remotes you're using now, though you'll want to keep the originals around just in case.

HOME THEATER REMOTE		Basics	Performance and extras	Comments
	Home Theater Master MX-600 ★★★★☆ find.pcworld.com/38573	<ul style="list-style-type: none"> • \$250 • 33 hard buttons • 15 macros • Controls 10 components 	<ul style="list-style-type: none"> • Ease of use: Very good • Extra features: Very good • LCD can list 26 functions per device • RF base station extends range 	The MX-600 feels solid in your hand, and having all those buttons is reassuring. HTM's entry had trouble learning some DVD functions, but mimicked our original remotes admirably.
	Intrigue Technologies Harmony Remote SST-768 Editor's Pick ★★★★★ find.pcworld.com/38576	<ul style="list-style-type: none"> • \$299 • 32 hard buttons • Nearly unlimited macros • Controls 18 components 	<ul style="list-style-type: none"> • Ease of use: Outstanding • Extra features: Outstanding • Displays TV-listings data • Web-based setup, USB connection 	The SST-768 uses an activity-based model instead of focusing on devices. While the browser-based setup program can take some time, you get pinpoint control of all your components.
	One For All Kameleon URC9960 ★★★★☆ find.pcworld.com/38585	<ul style="list-style-type: none"> • \$99 • 53 programmable, backlit buttons • 5 macros • Controls 8 components 	<ul style="list-style-type: none"> • Ease of use: Good • Extra features: Good • Home theater mode keeps several useful functions on screen at once 	This inexpensive device features a bright and responsive touch screen, and it can download new codes over the phone using a built-in modem. Learning mode needs work.
	Philips Pronto TSU3000 ★★★★☆ find.pcworld.com/38579	<ul style="list-style-type: none"> • \$399 • 12 hard buttons, touch-screen LCD • Nearly unlimited macros • Controls 15 components 	<ul style="list-style-type: none"> • Ease of use: Good • Extra features: Outstanding • LCD interface is completely programmable via a USB-connected PC 	This PDA-like device offers a great many functions, but the 3.8-inch display shows few buttons per screen, and the touch screen is slow to respond. It's also very expensive.
	RCA Universal Learning RCU1010 ★★★★☆ find.pcworld.com/38591	<ul style="list-style-type: none"> • \$139 • 13 hard buttons, touch-screen LCD • 9 macros • Controls 9 components 	<ul style="list-style-type: none"> • Ease of use: Fair • Extra features: Very good • Customizable touch-screen buttons 	What this model lacks in flash, it makes up for in customization. You can easily remove or change buttons on the responsive touch screen, but setup requires too many steps.

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GADGET FREAK

DAN TYNAN

SATELLITE RADIO A-GO-GO

WE WERE HEADED on a road trip from the Carolinas to Boston, and as usual I'd packed more provisions than Lewis and Clark. We had toys, books, cellular phones, a CD player, and a portable refrigerator filled with enough string cheese to feed a small army. My wife and I brought most of it to keep our two adorable children from becoming screaming hellions on the New Jersey Turnpike, but one of the items was just for me: an Audiovox Satellite Radio Shuttle for Sirius.

About the size of a paperback book, the \$99 Shuttle has an LCD readout and enough buttons to satisfy any gadget freak. Sign up with Sirius (www.sirius.com), and for \$13 a month you receive 100 streams—or channels—of music, news, and entertainment anywhere you go in the contiguous 48 United States. (Audiovox also makes radios for XM, a similar satellite service.) The product seemed like an excellent way to relax while the kids murdered each other in the backseat.

Installation was a snap. I slapped the magnetic, pocket-size satellite receiver on top of the minivan and then fed the cable through the sunroof and

around the edge of the windshield, wedging the cable in place with some mint-flavored toothpicks I found buried in the seat cushions. (Serious



Sirius users may need to remove the car's interior panels and run the cable beneath them.) I plugged the power dangle into the cigarette lighter socket and tuned my car radio to 88.7 FM to get the signal from Sirius. Within moments I was boogying to the soulful sounds of Barry White on The Strobe (Stream 68).

For the next 1600 miles, I listened to Sirius. Save for brief interludes in rural Virginia and on the Bronx Parkway, the signal was smooth and static-free. My only real problem: remembering that turning the knob up (clockwise) cycled down through the streams on the LCD readout.

I tuned in the Sirius Trucking Network, Radio Slovakia, and Club Pam (for reasons that defy all human understanding, Pamela Anderson has a radio show). I dialed up NPR Now and BBC Mundo. I pondered the differences between The Rock (classic rock), Alt Nation (alternative rock), and First Wave (classic alternative rock).

And I found that listening to Sirius is like eating string cheese—bland and ultimately unsatisfying. Sirius's heavily niche-oriented programming leaves no room for random weirdness—you'll never hear Alice Cooper, Alice in Chains, and Allison Krause in the same mix. I found myself turning off the Sirius unit and scanning local frequencies. Despite static, commercials, and idiot DJs, local stations provide spontaneity and a feeling for an area you won't get from any satellite feed.

DONGLE BOOGIE

ON THE ROAD I encountered another problem: dongle glut. Every device—the radio, CD player, portable fridge, and cell phone charger—was vying for time on the same cigarette lighter socket (except, of

NEXT UP

Air-Mailed Movies

SICK OF SCHLEPPING to the video store and then paying late fees when you forget to return a movie on time? You could use a service like Net-



flix, but then you'd have to wait for your video choices to arrive by snail mail. Disney's solution is a new service called MovieBeam (www.moviebeam.com), which transmits DVD-quality movies from various studios via special over-the-air broadcasts to a set-top box in your home. To see a flick, you must pay \$4 for a new release or \$2.50 for an older title. You then have 24 hours to watch it. Monthly rental of the box costs \$7. The service will start in three cities: Spokane, Washington; Salt Lake City; and Jacksonville, Florida. Disney says that MovieBeam will spread nationwide in 2004.





course, the cigarette lighter, which we'd lost years ago). I had to keep swapping dongles while trying not to veer into traffic at 70 mph.

If I were a traveling salesperson or long-haul trucker, I might give Sirius radio a go, just so I could bring favorite stations with me wherever I roamed. Otherwise I'd skip it: I've swallowed enough string cheese to last a lifetime. ■

Contributing Editor Dan Tynan anxiously awaits the second coming of disco.

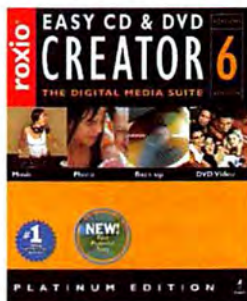


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SMART [Huge capacity and compatibility drive DVD to the front] STORAGE

Storage and recording technologies have come and gone like autumn leaves. Still, there is one that has not just endured but actually surpassed the hype around its initial introduction: DVD. With popularity fueled by plummeting hardware prices and the acceptance of industry-wide standards, DVD technology is fast becoming the removable medium of choice for consumers and business users alike.

The good news for users is that shifting to recordable DVD from CD-R/W is relatively easy and painless. Once DVD discs have been recorded, they can be played on just about all recent generations of DVD drives and recordable devices. And DVD drives can read virtually all formats of CD discs, giving users a straight upgrade path from their CD libraries.

Why upgrade to DVD in the first place? Just consider the gigantic capacity today of DVD compared with CD. A single-sided, single-layer DVD packs a beefy 4.7 GB of storage capacity—nearly seven times the capacity of a standard CD. This is only the beginning. By 2006, leading DVD media makers like Maxell predict DVD capacity will swell to a mind-numbing 100 GB per disc! This is the kind of capacity users will need as they explore more and more so-called “content-rich” applications, such as digital video clips embedded in PowerPoint presentations.

SIMPLY NOTHING ELSE LIKE IT

The fact is, there's no other storage and recording technology that can perform in such a wide variety of ap-

plications and offer a storage format with almost universal compatibility for recorded media.

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DVD+RW/R drives/recorders. It's also read-compatible with DVD-ROM playback devices.

And Maxell features a broad array of recordable DVD products. Its DVD-RAM camcorder medium is both rewritable and re-recordable for recording and re-recording with DVD-RAM compatible camcorders. Perfect for recording and editing video content, it features up to a full hour of video recording. And Maxell's DVD-RAM video product is just what you need for recording and re-recording TV shows, movies, and sporting events. You can record up to 100,000 times and record and play up to two hours of video on a single disk.

■ **For more information on the broad spectrum of DVD media from Maxell, click now on www.maxell.com.**

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visible to the host operating system. **R-Mail** is designed to rescue inadvertently deleted email messages and to recover damaged *.dbx files where folders with email messages are stored.

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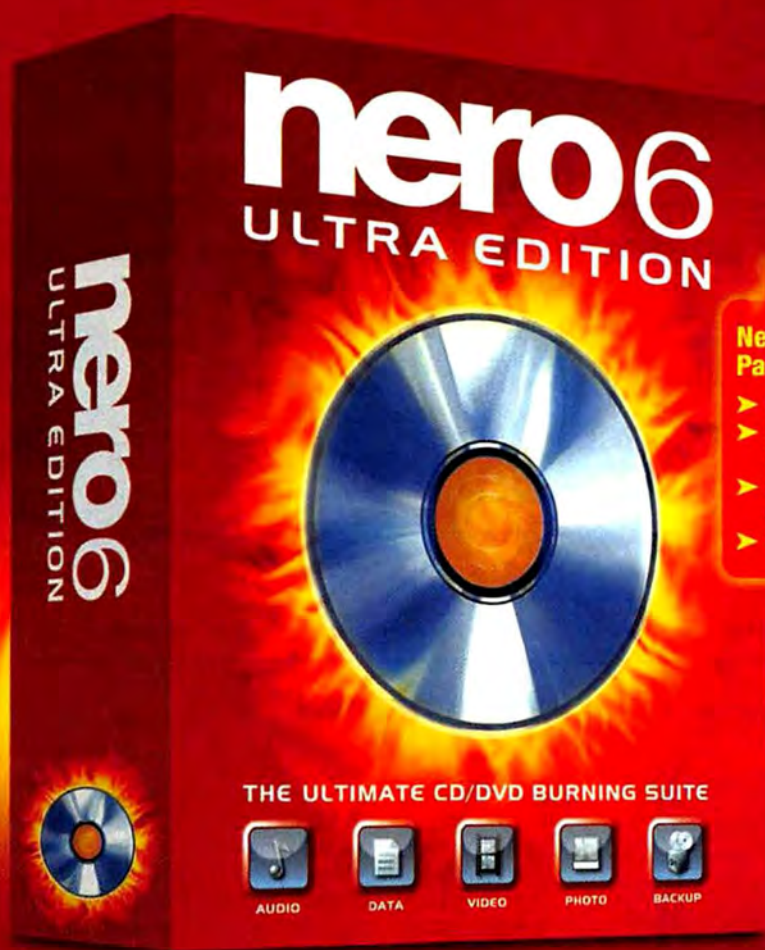


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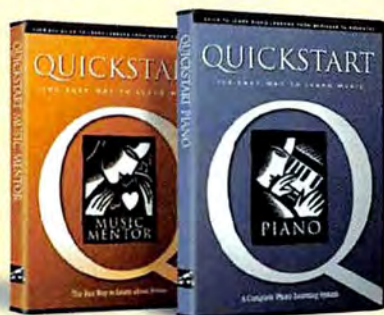
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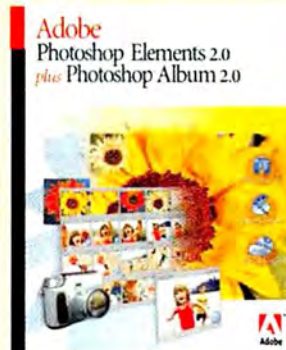
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HERE'S HOW

EDITED BY MICHAEL S. LASKY, DENNIS O'REILLY, AND ERIC DAHL



INTERNET TIPS

SCOTT SPANBAUER

Ultimate Network Security: How to Install a Firewall

CONNECTING YOUR NAKED PC to the Internet is like leaving your house unlocked—eventually, someone will wander in, rifle your underwear drawer, and empty the jewelry case. To make your system's points of entry more Net secure, install one of the many free software firewalls now available, and set up a hardware-based firewall for backup.

Firewalls are difficult to understand and configure, even for experienced computer users. If you've been putting off

installing a firewall, or if you aren't sure how to determine whether your firewall is protecting you fully, I'm here to explain it all.

According to Merriam-Webster, the original meaning of *fire wall* was "a wall constructed to prevent the spread of fire." Computer firewalls are constructed to prevent unwanted intrusions from the Internet into your PC. But unlike fire, Net threats don't leap onto your machine through mere proximity. They arise when

someone exploits a combination of your PC's unique IP (Internet protocol) address and one or more of the thousands of TCP (transmission control protocol) and UDP (universal datagram protocol) ports that serve as the door to your system.

Anytime you use a browser, an e-mail program, or other software to retrieve information from a Web site, ISP, or remote server, the data flows through one or more of these ports. Whether the malefactor is a teenage hacker trying to access your PC, a bit of spyware attempting to talk to a remote server, or a Windows XP Messenger Service spam pop-up, their strategy is the same: Find an open port leading into your PC, or trick your system into opening one.

Firewalls watch these thousands of ports—present in both dial-up and broadband Internet connections—and deny access to unauthorized traffic. Hardware-based firewalls are usually integrated into router and gateway products and sit between your PC and a cable or DSL modem. Software-based firewalls run on your PC. Hardware firewalls are great for protecting a network of PCs that share a broadband connection.

More important than the router's actual firewall, however, is the fact that it usually incorporates an NAT (network address translation) server that hides your networked computers' IP addresses (and thus, their existence) from anyone outside the local network.

For this reason alone, a hardware firewall is a wise investment for broadband users, even those who have only one computer. You can obtain a four-port cable/DSL router such as Linksys's BEFSR41 or D-Link's DI-704P for just \$40 to \$50, and models that include a wireless access

188 INTERNET TIPS

Install a software firewall—the first and best defense against a wide range of Internet security intrusions.

192 WINDOWS TIPS

Make Windows XP look like previous versions of Windows; restore lost desktop icons; reopen folders automatically.

196 HARDWARE TIPS

Spruce up your old PC to support Windows XP; check your PC's temperature; get better sound for your notebook.

200 STEP-BY-STEP

Optimize your PC for fast start-ups by using various tweaks, program elimination, and other PC checkup tests.

202 ANSWER LINE

Recover lost files that aren't preserved in the Recycle Bin; control XP's picture editor; put a lid on repetitive start-up nags.



198



FIGURE 1: ENABLE WINDOWS XP'S firewall, but only until you install a better one.

point cost only a bit more (go to find.pcworld.com/37811 to access PC World's Product Finder page that lists routers).

A FIREWALL ON EVERY PC

HARDWARE ROUTERS are highly configurable: You can usually set them to block all incoming and outgoing traffic except through a few key ports you designate. Programming an external device to protect your PC is a lot of work, however. Firewall software that runs on your PC is easier to set up and maintain. Besides blocking uninvited traffic at your ports, software firewalls can prevent programs that run on your computer (including such malefactors as Trojan horses, spyware, and backdoor software) from sending data to remote servers, and from accepting incoming connections.

If you connect to the Internet exclusively through a dial-up modem, an external, hardware-based firewall won't do you

much good. A software firewall is perfect for protecting a dial-up connection. Windows XP users may be tempted to rely exclusively on the operating system's integrated Internet Connection Firewall. To enable it, click *Start*•*Control Panel*•*Network Connections* (in XP's Category View, first click *Network and Internet Connections*).

Then right-click the Internet connection you want to protect, choose *Properties*•*Advanced*, put a check next to the option *Protect my computer and network by limiting or preventing access to this computer from the Internet*, and click *OK* (see **FIGURE 1**).

Withhold your sigh of relief, however. Though it's better than no firewall at all—and compatible with any others you may use—XP's firewall monitors incoming connections only. Should Back Orifice, NetBus, or any other backdoor program find its way onto your PC, XP's firewall will do nothing to stop it from granting scoundrels remote access to your system.

PICK YOUR FREEBIE

I'VE USED FOUR no-cost firewalls on various PCs: Kerio Personal Firewall 2; Outpost Firewall Free, from Agnitum Limited; Sygate Personal Firewall 5.1; and Zone Labs' ZoneAlarm 3.7. Though they differ in the features they offer and the help they provide, all of these programs will stoutly defend your PC (see "Firewall Free-for-All" on page 190 for download and feature details). A software firewall is easy to install, but it requires a brief training period as the firewall detects your browser, e-mail, network, and other programs that attempt to connect with remote servers.

All four software firewalls pop up warn-

ing dialog boxes when a program attempts to connect for the first time. You simply click the button that permits or disallows the connection. Most also provide an optional check box so you can turn your choice into a permanent, automatic firewall rule (see **FIGURE 2**). After you've gone about your usual online business for a day or two, creating firewall rules along the way, you may not need to interact with your firewall again until you add or upgrade an Internet utility.

The trick to responding appropriately to firewall warnings and creating effective rules is knowing which programs are safe and which are not. You'll easily recognize many of the more-common applications by name—Outlook, Internet Explorer, and Netscape, for example. Other programs, however, aren't exactly household names. For example, many of Windows XP's networking features are handled by a program called *svchost.exe*, a fact that none of us should be expected to know (though you do now). Conversely, spyware and other unwanted pests may use safe-sounding or familiar names like ►



FIGURE 2: OPT FOR a permanent rule to tell the firewall when not to ask for permission.

"clever screensaver" that entice you to grant them network access. What's a firewall jockey to do? For starters, avoid the temptation to be lax. Instead, deny access to any program that you're at all unsure about—you'll have plenty of chances to change your mind later.

If your knowledge of which programs are safe is shaky, choose a firewall that provides more information about the program in question than just its file name. Kerio and Sygate don't offer many hints as to whether a detected program is safe, and they eschew nonfirewall bonus features. This arrangement may suit expert users, but novices will benefit from a more informative firewall.

ZoneAlarm offers a bit more information about detected programs, including a link in the warning dialog box to a description of the program in question on Zone Labs' Web site (see **FIGURE 3**). ZoneAlarm also preconfigures itself by default to permit connections from Internet Explorer and Windows XP's svchost.exe component, minimizing the number of

attachment protection, Outpost provides the same minimal information about the detected program as do Kerio and Sygate.

FINE-TUNING FILTERS

ONCE YOU'VE completed the basic firewall configuration, you may want to change, delete, or fine-tune the rules you created. All four of these firewalls maintain a list of rules or known programs.

Kerio: Right-click the program's system tray icon and choose *Administration•Firewall•Advanced*. In the list of known programs, select the program whose filter rule you want to modify, and click *Edit* to open the 'Filter rule' dialog box. To switch the program's basic default status, select either *Permit* or *Deny* at the bottom of the dialog box. Other options let you restrict the remote server IP addresses and incoming and outgoing ports that the program uses. If you know what those are and why you'd want to specify them, you're probably reading this column just to see what errors it contains. The rest of us can live with the default settings. Click *OK* to save any changes.

Outpost: Right-click the program's system tray icon and choose *Options•Application*. Select a program in the list of blocked, partially allowed, and trusted applications, and click *Edit*. Choose *Always block this app* or *Always trust this app* to move it to the appropriate category. Your best step, however, may be to select a trusted application and move it to the partially blocked list (by clicking *Edit* and choosing *Create rules using preset•Browser*, for example); this maneuver grants the program Internet access, but under a constrained set of rules. The browser rule set (Outpost also comes with rules for e-mail, instant messaging, and other programs) limits an app to the handful of inbound and outbound protocols (TCP or UDP) and ports needed by a Web browser, thereby minimizing the damage a malicious Web site or HTML e-mail message can do.

Sygate: To change program rules, right-click Sygate's system tray icon and choose *Applications*. In the list of known applications, right-click the program whose rule you want to modify, and choose either *Allow* or *Block*. Choosing *Ask* tells Sygate

REVISION CONTROL

Firewall Free-for-All

WITH NOTHING TO LOSE and everything to gain, you should install one of these free firewalls on your PC.

Kerio Personal Firewall 2: The perfect firewall freebie for power users, Kerio Personal Firewall 2 lets you fine-tune application rules to restrict access to and from specific IP addresses and ports.

2MB; find.pcworld.com/35141

Outpost Firewall Free: Agnitum's no-cost firewall brims with extra features, including ad and pop-up blockers, Web site content filtering, mail attachment filtering, and a surf-speeding DNS cache.

2.5MB; find.pcworld.com/37817

Sygate Personal Firewall 5.1: Sygate's no-frills interface provides fine-grained control over how and when applications can connect to remote servers.

5.2MB; find.pcworld.com/37820

ZoneAlarm 3.7.202: Zone Labs' novice-friendly firewall includes a mail-scanning feature that quarantines dangerous Visual Basic Script (.vbs) attachments.

3.6MB; find.pcworld.com/37814

to prompt you to allow or deny Internet access every time the program seeks it.

ZoneAlarm: To modify program permissions, right-click the ZoneAlarm system tray icon and choose *Restore ZoneAlarm Control Center* (or just switch to it, if it's already running). Select *Program Control* on the left, and then select the *Programs* tab at the upper-right. To change one of the program's four settings (the ability to access remote servers or to act as a server itself in both the Internet and Trusted Zones), click the check mark (allowing access), the X (blocking access), or the question mark (instructing ZoneAlarm to ask you each time the program seeks access); then choose a new default action from the pop-up menu. ■

Find more firewall tips at find.pcworld.com/38624. Send your questions and tips to nettips@spanbauer.com. We pay \$50 for published items. Go to find.pcworld.com/31523 for more Internet Tips. Scott Spanbauer is a contributing editor for PC World.



FIGURE 3: ZONEALARM ALERTS you the first time a program tries to access the Web.

decisions you'll need to make about granting these applications Internet access.

Outpost's pop-up dialog box creates a permanent rule for you by default, but you can opt out of the rule by clicking the *Allow once* or *Block once* buttons instead. Despite being laden with nifty features such as ad and pop-up blocking and e-mail

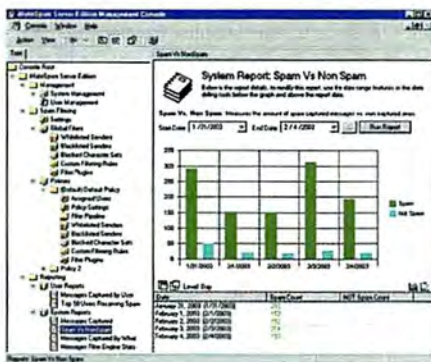
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**YOUR 'FILTER'
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WINDOWS TIPS

SCOTT DUNN

REOPEN FOLDERS
AUTOMATICALLYRESTORE LOST
DESKTOP ICONSPRINT FASTER,
CONSERVE PAPER

Throwback: Give XP That Old-Time Windows Look

Windows 2K XP 98 ME YOU BOOT UP your brand-new Windows XP computer and suddenly everything's different. "Where are my Quick Launch icons?" "Why doesn't Windows start with my last-opened folders active?" "How do I turn off that column on the left side of my folder windows?" Microsoft makes

Windows back. To do this, first right-click the taskbar and choose *Properties*. Under the Taskbar tab, uncheck *Group similar taskbar buttons* under 'Taskbar appearance' and then click OK.

Automatically reopen folders: When you log in to Windows 2000, it automatically reopens the folder and Internet Explorer windows that were open when you logged out. To have your last-opened windows reopen automatically in Windows XP, first open any folder window and choose *Tools*•*Folder Options*•*View*; then check *Restore previous folder windows at logon* under *Advanced Settings*. Click OK.

Restore Quick Launch: If your Quick Launch toolbar is AWOL from your taskbar, right-click

an empty portion of the taskbar and select *Toolbars*•*Quick Launch* (see FIGURE 2). You'll have to drag the right edge if you want to see more or fewer of your Quick Launch icons (see the next item).

Rearrange your toolbars: Is your taskbar not where you like it? Do you want to

reposition or resize your Quick Launch, Links, or other toolbars, whether on the taskbar or in folder windows? If you try to alter these elements, you may find them unwilling to budge in Windows XP. The fix is simple: Right-click the item in question and uncheck *Lock the Taskbar* or *Lock the Toolbars* (see FIGURE 3). Drag the taskbar and toolbars until they're positioned and sized the way you prefer; then recheck the 'lock' option (if desired) to prevent yourself or anyone else from accidentally undoing your setup.

Banish the blue: Do you hate Windows XP's new rounded blue, olive, or silver title bars? Then right-click the desktop and choose *Properties*•*Appearance*. Choose *Windows Classic* style from the 'Windows and buttons' drop-down menu. If you want to customize the colors, click *Ad-*



FIGURE 1: YOU HAVE TO DANCE the two-step to access one of several open windows on XP's grouped taskbar.

these changes in an effort to simplify things for people who've never used Windows before. To experienced users, however, the interface changes from one version of Windows to the next just make the OS more annoying. Fortunately, you can turn back the clock to make new versions of Windows act as their predecessors did.

Eliminate taskbar groups: When you have several folder, application, and browser windows open at the same time, the separate sessions for each category share a single taskbar button. You click the button to select the desired window from a pop-up menu (see FIGURE 1). Reader Lee Harmon of Colleyville, Texas, likes the old way of having a taskbar button for each open file and asks how to change



FIGURE 2: TOOLBARS ARE only two clicks away when you right-click the taskbar.



FIGURE 3: IF YOU CAN'T DRAG or resize a toolbar or taskbar, it may be locked.

vanced and choose a color from the drop-down palette for the element selected in the Item list, or click *Effects* to customize visual aspects of your windows, icons, and menus. When you get the look you like, click OK twice to exit Display Properties.

Bring back desk icons: If you miss the My Computer and My Documents icons that XP whisked off your desktop, right-click the desktop and choose *Properties*•*Desktop*. Click *Customize Desktop*, and under the General tab, check the icons you want to see on your desktop (see FIGURE 4). Click OK twice to exit Display Properties.

Lock your Start menu items: Windows XP's new Start menu automatically adjusts to list the programs you use most often. This makes launching Start menu items from the keyboard (by pressing the first letter of the item you want to launch) more difficult to do, both because the list changes so often and because many of ▶

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FIGURE 4: CHOOSE 'MY COMPUTER' and other desktop icons via Display Properties.

the menu's icons may start with the same letter. If you prefer Windows' old, reliable (if less automatic) Start menu, right-click the Start button, choose *Properties*•*Classic Start menu*, and click OK.

Kill off peekaboo menus: If you yearn for the good old days of Windows 98's Start menu, which doesn't hide seldom-used items until you click or pause over the double chevron at the bottom, right-click the Start button and choose *Properties*. Under the Start Menu tab, select *Classic Start menu* if it's not already selected, click its *Customize* button, scroll to the bottom of the 'Advanced Start menu options' list, uncheck *Use Personalized Menus*, and click OK twice to exit the Taskbar and Start Menu Properties dialog box.

Reveal your Tools menu: To see the Administrative Tools menu when you click Start•Programs, or Start•All Programs, right-click the Start button and choose *Properties*. Under the Start Menu tab, click *Cus-*

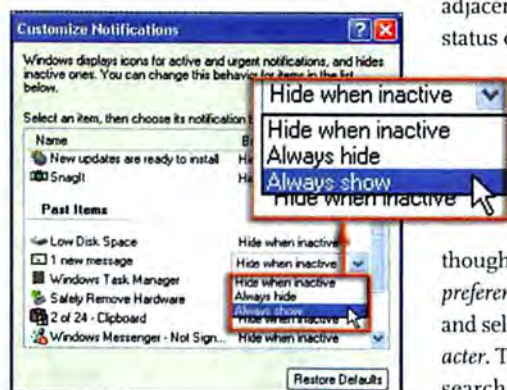


FIGURE 5: TAKE CHARGE of tray items by choosing when and whether an icon is visible.

tomize next to the version you use (either 'Start menu' or 'Classic Start menu'). To use Windows XP's default Start menu, click *Advanced* and select one of the first two options listed under System Administrative Tools in the 'Start menu items' list. For the Classic Start menu, check *Display Administrative Tools* in the 'Advanced Start menu options' list.

Hide common tasks: In previous versions of Windows, you could view Web content in, or add a preview pane to, folder windows. If you didn't like these features, you probably won't like the "common tasks" area on the left side of folder windows in Windows XP. To eliminate it, choose *Tools*•*Folder Options*; then, under the General tab, select *Use Windows classic folders*.

Make folders mind: Windows XP sets a different view for various kinds of folders (Thumbnails view for picture folders, Tiles for audio files, and so on); you can, however, get the look you want for each folder. Visit find.pcworld.com/37670 for Lincoln Spector's instructions from his August 2003 *Answer Line* column on how to proceed.

Keep tray items visible: The new taskbar tray in Windows XP (the "notification area" near the clock) lets you selectively hide items or see them all with the click of a button. If you want to decide which icons get hidden, right-click the taskbar and choose *Properties*. Under 'Notification area' on the Taskbar tab, uncheck *Hide inactive icons* to get the old Windows behavior, or keep it checked and then click the adjacent *Customize* button to control the status of each icon (see FIGURE 5).

Smarten up your file searching: A show of hands, please: Who likes the animated character that appears when you choose Start•Search or Start•Find•Files or Folders? That's what I thought. To give it the boot, click *Change preferences* in the Search Results window and select *Without an animated screen character*. To approximate Windows' previous search options, click *Change files and folder search behavior*•*Advanced* – includes options to

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lection of text snippets that you can print together (saving even more paper). It is true that you could accomplish the same thing by pasting the extracts into a word processor. But for students and researchers who do this a lot, the drag-and-drop conven-

ience and other features may justify the program's \$25 registration fee. If you're not sure, go to find.pcworld.com/37676 to try the fully functional demo version.

manually enter search criteria. Recommended for advanced users only. Click OK to return to the Search Results window.

Take a giant leap backward. If the XP version of Windows Explorer isn't your bag, try a file manager with a look and feel that goes all the way back to Windows 3.1. Go to find.pcworld.com/37673 to check out Steve Bass's favorites from his August 2003 *Home Office* column.

Send Windows-related questions and tips to scott_dunn@pcworld.com. We pay \$50 for published items. Visit find.pcworld.com/31607 for more Windows Tips. Scott Dunn is a contributing editor for PC World.

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HARDWARE TIPS

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YOUR NOTEBOOK**

Is Your Old PC Ready for a Windows XP Upgrade?

WHEN IT COMES to PCs, procrastination isn't always a bad thing. Wait a while and you'll likely pay less for new technology and experience fewer problems. However, if you've been putting off your upgrade to Windows XP, you've waited long enough: The price has gone down (a little), and the biggest bugs have been squashed.

Of course, it isn't like you didn't have a reason to postpone the upgrade: Windows XP has its share of security and performance problems, although XP's Service Pack 1 addressed the most serious of these when it was released over a year ago. (Unfortunately, some people report a performance problem *because* of SP1; for more on this, browse to find.pcworld.com/37781 to read Stuart J. Johnston's August 2003 *Bugs and Fixes* column.)

Microsoft claims that XP's Service Pack 2—due by mid-2004—will address many

other bugs and security holes, but if you're already using Windows XP, you don't have to wait. Visit windowsupdate.microsoft.com to download the latest bug fixes, or go to find.pcworld.com/37778 to learn all about the patches scheduled for inclusion in Service Pack 2.

For all you folks still using Windows 2000, Me, 98, and even 95, it's time to consider updating to XP. (One big exception: A version of Windows 2000 updated with all available service packs and patches has many of the most important security and file-management features of Windows XP, though it leaves out XP's candy-coated interface.)

The easiest way to upgrade to XP is also the most expensive (of course): Buy a new PC with Windows XP preinstalled. On the other hand, what with the holiday season's assault on your bank account, it may make more sense to upgrade your current PC's OS. Before you go the XP route, however, make sure that your old PC has the hardware to handle it.

FIND OUT WHAT XP NEEDS

MICROSOFT'S DEPARTMENT of Eternal Optimism reports that the minimum system requirements for running Windows XP are 1.5GB of free disk space, 64MB of RAM, and an Intel or AMD CPU running at 233 MHz or faster. Yeah, right.

Though XP will run on a PC using a Pentium II-233 CPU, you'll have plenty of

time to practice your deep breathing exercises between each mouse click. If your inner peace depends more on jolts of caffeine than on the soothing waves of a mantra, you'll need at least a 600-MHz Pentium III CPU or its equivalent. Anything less will feel sluggish running XP.

Point your browser to find.pcworld.com/37784 to take PC Pitstop's Windows XP Readiness Test. It evaluates your PC's CPU, memory, BIOS, hard drive, and graphics card (see **FIGURE 1**).

If your CPU fails the readiness test, adding more RAM will probably earn your PC a passing grade faster and less expensively than a CPU upgrade would. But if your CPU falls far short, you'll have to upgrade your CPU and/or motherboard, which is time-consuming and

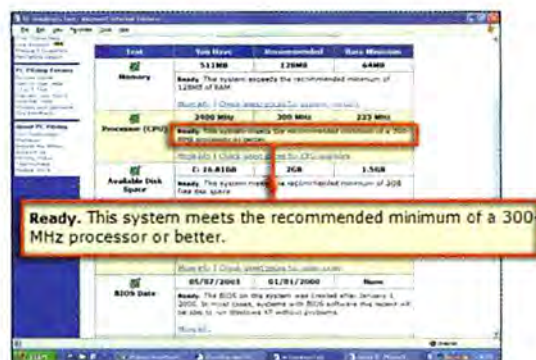


FIGURE 1: CAN YOUR PC MAKE the upgrade? PC Pitstop's Windows XP Readiness Test will tell you.

expensive. Before you embark on this course, however, you should carefully weigh the effort and expense against the cost of a new PC that ships with XP.

If your CPU is strong enough, but your other hardware components flunk, upgrading them can be worthwhile.

BIOS: Check your system's BIOS to make sure it's suitable for XP. The BIOS in PCs that are more than three years old may not support XP's power-management functions. The Windows XP Readiness Test will tell you whether your BIOS is recent enough, but it's a good idea to check with your system or motherboard manufacturer to confirm compatibility.

If your BIOS isn't up to the task of running XP, look for a BIOS upgrade on the manufacturer's Web site. Also check Wim's BIOS (www.wimbios.com) ▶

TOOLS TO BEAT PC HEAT

EXCESSIVE HEAT is your PC's greatest enemy; it slows PC performance and accelerates chip and circuit deterioration. Installing a thermal alarm such as the \$8 PC Power & Cooling 110 Alert can help your system avoid overheating. Browse to find.pcworld.com/37799 for a description of the product. But to pinpoint the hot spots inside your PC, get the \$99 Raytek MiniTemp MT-4. Just aim its laser beam at any surface—apple, pet, beer can, motherboard—and read the temperature. Go to find.pcworld.com/37802 for more information.

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HOW IT WORKS



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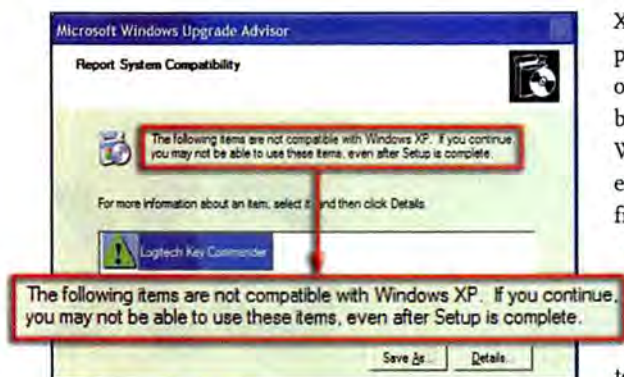


FIGURE 2: THE FIRST WORD on the XP compatibility of your PC's hardware is Microsoft's Windows XP Upgrade Advisor.

for more information on all things BIOS.

Hard drive: You can free up disk space on your hard drive by moving your data and applications to a second hard drive. A drive that stores 40GB or more costs less than \$80. On the other hand, for just a bit more money, offload extra data to a rewritable DVD drive. Remember to back up all your data files before you upgrade.

Memory: Adding more RAM is usually the most cost-effective upgrade you can make to improve Windows XP's performance. Forget running Windows XP on 64MB of RAM, though; 128MB is the bare minimum. And if you run your e-mail, browser, PIM, and other programs at the same time, you'll need at least 256MB of RAM. Power users will find getting 512MB (or more) of RAM worth the investment.

CAN HARDWARE GET ALONG?

ANOTHER HEADACHE for Windows XP upgraders is hardware compatibility. Some of your existing devices and components won't work with Windows XP, while others will operate only if you can find and properly install a new driver.

Check the XP compatibility of your PC and peripherals before you spend any time or money on an OS upgrade. Start with your printers, scanners, and other expensive peripherals. If the manufacturer's Web site has Windows XP drivers available for download, you're set. If not, search the Web for alternative drivers. Two excellent sites to check are Drivers Headquarters (www.drivershq.com) and WinDrivers (www.windrivers.com).

For example, Canon has no Windows

XP drivers for its BJC 5000 printer. But a quick search on Google reveals a number of fixes that relate to Windows 2000 drivers, and even a petition to Canon from stranded owners.

Microsoft maintains a Windows XP Hardware Compatibility List, as well as a guide to identifying XP-compatible hardware and software. Go to find.pcworld.com/37787 and enter the article

numbers 314062 and 295322 in the Microsoft Knowledge Base's search field.

Next, visit find.pcworld.com/37790 to give your PC a compatibility exam with Microsoft's Windows XP Upgrade Advisor. This program examines your PC's currently installed hardware and software and reports possible conflicts and compatibility problems (see FIGURE 2).

At 50MB, this program takes a chunk of time to download, even if you're using a broadband connection. Alternatively, you can find the XP Upgrade Advisor on the Windows XP CD; simply insert the disc, wait for the autostart menu, and select *Check system compatibility*.

Even if your system receives a clean bill of health at the conclusion of all these tests, you may still encounter problems when upgrading from Windows 98 or, to a lesser extent, Windows 2000. Interest-



FIGURE 3: SHARE YOUR MP3 music with Creative's TravelSound MP3 speakers.

ingly, many of these problems disappear when the installation is performed on the same PC with a clean hard drive—that is, with a drive that has no operating system installed on it. (The Windows XP upgrade disc will ask you to insert a CD holding a

previous version of Windows when it fails to find any OS on the blank hard disk.)

Of course, performing a so-called clean installation of Windows XP takes a lot of extra time. You have to reinstall your software, and reorganize and reconfigure your data. Even so, it can be well worth the effort for the fresh start it offers.

LISTEN OUTSIDE THE BOX



I'D LIKE TO WATCH DVDs and listen to music on my laptop when I'm out of the office. But the sound quality is really bad, even when I use headphones. I've tried adjusting every software setting I can find, to no avail. Is there some clever way to improve my notebook's sound quality?

Harry Towle, Newark, New Jersey

IF BY "CLEVER" you mean inexpensive, then no, there's no cheap, easy fix. Many laptops come with mediocre sound hardware, and even notebooks with good sound-processing chips are subject to interference and noise caused by the densely packed circuitry found in laptops.

Your best bet is to bypass your laptop's internal sound hardware altogether by using an external sound card such as Creative's \$60 Sound Blaster MP3+. This USB device gives your laptop a 10-band equalizer and Smart Volume Management, which automatically corrects for the varying volume levels of MP3 files, among other Sound Blaster functions.

The best sound card in the world isn't going to make a poor pair of laptop speakers sound any better. For an extra \$30, you can get Sound Blaster Go, which bundles a Sound Blaster MP3+ card with a decent pair of noise-canceling headphones. (The headphones cost \$59 on their own.)

If you want to be free of headphones, Creative's TravelSound MP3 is a convenient, one-piece set of speakers that's easy to pack and sounds substantially better than most laptop speakers (see FIGURE 3). Go to find.pcworld.com/37793 for more on the Sound Blaster MP3+.

Go to find.pcworld.com.31511 for past Hardware Tips columns. Send your tips and questions to kirk_steers@pcworld.com. We pay \$50 for published items. Kirk Steers is a PC World contributing editor.



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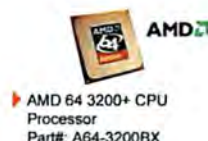
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STEP BY STEP

STAN MIASTKOWSKI

Optimize Your PC for Faster Start-Up Times

FOR GOOD OR ILL, we've come to expect instant gratification from our technology. Turn the key in your car ignition, hit the On button on your TV remote, or press Start on your microwave oven, and things

happen immediately. But that isn't the case with a Windows PC, where—depending on a number of factors—you have to wait between 30 seconds and several minutes before your PC is ready to run.

1 Tweak the PC Setup program: Your PC's hardware can keep you waiting for quite a while before Windows has a chance to start. You can reduce the delay by changing a few settings in your PC Setup program.

Advanced BIOS Features	
Virus Warning	Disabled
CPU Level 1 Cache	Enabled
CPU Level 2 Cache	Enabled
CPU L2 Cache ECC Checking	Enabled
Quick Power On Self Test	Enabled
First Boot Device	Floppy
Second Boot Device	HDD-0
Third Boot Device	LS120
Boot Up Floppy Seek	Disabled

Enter the Program: The right way to do this varies, but usually you hold down <Delete> or some other key while your system starts up. Watch for an on-screen message, or check your PC or motherboard manual.

The settings you're looking for are often located within subcategories, and the terms for each setting vary. Read the screens carefully for options and navigation commands.

Quick Power On Self-Test: Set this to *Fast* or *Enabled* to skip some time-consuming memory and hardware start-up tests. The downside is that you might miss a developing problem with RAM or the motherboard.

Floppy Seek: If your PC's floppy has been working fine, there's no reason to test it every time you boot. Set this to *Disabled*.

IDE Drives: Look for a list of your Primary and Secondary IDE channels. When these options are set to *Auto*, your PC pauses to identify each IDE device as it boots. Set this to *None* on IDE channels you aren't using.

2 Check for viruses, spyware, and adware: Hidden malicious or annoying programs often load at system start-up, slowing down the process. Get rid of them by scanning for viruses and pests regularly.

Don't have antivirus and spyware utilities? You're living dangerously! At housecall.trendmicro.com, you can find a free online virus check. Ad-aware (find.pcworld.com/37628) can help you remove spyware and adware from your system, or you can try the free online detector at www.pestscan.com.

For more tools to defeat the nasties, see "Pest Zappers" (find.pcworld.com/37916).

WinDoctor is now checking for Windows problems. Press 'Stop' to stop the diagnosis.	
Examining...	Status
✓ Windows Registry Scan: ActiveX/COM SubKey ...	Done
✓ Windows Registry Scan: Application Paths Sect...	Done
✓ Windows Registry Scan: Device Drivers Section	Done
✓ Windows Registry Scan: Fonts Section	Done
✓ Windows Registry Scan: Help Section	Done

4 Tune up the Registry: Programs like RegClean (find.pcworld.com/21382) can sweep out defunct hardware and software settings that can clog up your Registry. RegClean works for older versions of Windows. For XP, commercial programs, such as Symantec's Norton SystemWorks (pictured above; find.pcworld.com/34559) and V Communications' SystemSuite (find.pcworld.com/37922), and shareware like Registry First Aid (find.pcworld.com/37919) can do the job.

For more on the Registry, see my May 2002 column, "Care and Feeding of the Windows Registry" (find.pcworld.com/35789).

This isn't, of course, the worst problem you can run into with Windows. You could use the extended boot-up time to get another cup of java (liquid variety) or smell the roses. But if you're the impatient type, there are ways to speed up your PC's emergence out of the starting gate. And some of these procedures can also help Windows run more efficiently overall.

As usual, make sure you do a complete system backup before you start tweaking. For backup tips, see the "Ultimate Backup Guide" (find.pcworld.com/30719). ■

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.

3 Eliminate unneeded start-up programs: In Windows 98, Me, and XP, you can see what programs load at start-up by going to *Start>Run*, typing *msconfig*, and clicking *OK*. (Msconfig isn't in Windows 2000, but programs like Startup Control Panel can fill in for it; see find.pcworld.com/37319.)

Click the *Startup* tab to see a list of programs that launch at start-up. You'll need to experiment to see what you can do without. Just uncheck the boxes on the left-hand side of the Msconfig window to keep them from loading. The name and location of each file can help you figure out what it does.

In Windows XP, Msconfig has a *Services* tab that shows other application and OS components. Some can be unchecked so they won't load at start-up; others are essential to Windows. For more on services in XP and 2000, see find.pcworld.com/37917.

Startup Item	Command
✓ Mixer	Mixer.exe /startup
✓ ccApp	"C:\Program Files\Common Files\Symantec Shared
✓ ccRegVfy	"C:\Program Files\Common Files\Symantec Shared
mm_tray	C:\Program Files\MUSICMATCH\MUSICMATCH Juke

5 Defragment your hard drive: Your hard drive doesn't always save a file in one place. Instead, it tucks parts of the file wherever there's free space. Use Disk Defragmenter on each of your drives to make those files contiguous, improving both start-up and overall Windows performance. Select *Start>Programs>Accessories>System Tools>Disk Defragmenter*, select a drive, and click *Start*.



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Recover Lost Files That Aren't in the Recycle Bin

? SOMETIMES I EMPTY Windows' Recycle Bin before I realize that I shouldn't have deleted a particular file. And if I delete a file through the command line or if the deleted file is too big, the files might never get to the Recycle Bin. How do I get these deleted files back?

Jon Martinez, Cottonwood, Arizona

IT'S EASY TO RESTORE a deleted file that's still in the Recycle Bin—just right-click it and choose *Restore*. But recovering a deleted file that's not in the bin is no sure thing. Luckily, Windows doesn't actually erase the data until it reuses the disk space formerly occupied by the deleted file, so recovering the data is possible.

You can do three things to increase the likelihood of recovering a deleted file:

Back up your data: If you have a copy, you may not have to undelete the original.

Defrag your hard disk often: Restoring a deleted file is more likely if it was on your drive in one contiguous piece.

Don't write to the drive: Avoid saving files or otherwise accessing your hard disk

until you have restored the file. Windows treats a deleted file as available space, so saving a new file could overwrite the deleted one, thereby rendering it irretrievable.

That's why I recommend DTI Data's \$25 Fast File Undelete, which operates without writing to the hard drive. Download the utility onto another computer, unzip the program file to a floppy disk, insert the floppy in the PC with the deleted file, and run the program. Go to find.pcworld.com/37805 to download the demo (which requires registration and will retrieve only files smaller than 15KB), or visit www.dtidata.com to buy the full version.

WHAT'S .DAT IN MY E-MAIL?

? PEOPLE HAVE received e-mail from me with an attachment named win-mail.dat. Is this a virus?

Brian Zoriki, via the Internet

NO, IT'S NOT. Outlook uses a Microsoft Exchange format called Rich Text that can't be read by other e-mail software—even Outlook Express. When you open an Outlook Rich Text message in another program, you get plain text plus an attachment with a .dat extension—usually named a variation of "winmail.dat". To stop sending Rich Text messages to non-Outlook recipients, click *Tools•Options•Mail Format*. In Outlook 2000, select *Plain Text* or *HTML*, and click OK. In Outlook 2002 and 2003, click the *Internet Format* button, select *Convert to HTML format* in the 'Outlook Rich Text options' dropdown menu, and click OK twice.

CONTROL XP'S PICTURE EDITOR

? THE BUTTON IN Windows XP's Picture and Fax Viewer for editing an image [see FIGURE 1] previously opened Photoshop Elements, but since I updated that program, it brings up Microsoft Paint. How do I change this setting?

Joseph A. Lurz Jr., Spring, Texas

YOU CAN'T CHANGE this file association in Windows Explorer. You have to edit the Registry. (Go to find.pcworld.com/37808 for Registry backup instructions first.)

Right-click the Start menu shortcut to the program you want to use to edit your



FIGURE 1: CHANGE THE IMAGE EDITOR that loads automatically in Windows XP's Picture and Fax Viewer.

images, and click *Properties*. Select the path and file name in the Shortcut tab's Target field, and press **<Ctrl>-C** to copy it. Click *Cancel*, and then *Start•Run*. Type *regedit* and press **<Enter>**. In the Registry Editor's left pane, navigate to and select *HKEY_LOCAL_MACHINE\SOFTWARE\Classes\SystemFileAssociations\image\shell\edit\command*. In the right pane, double-click the (*Default*) listing.

Select the first part of the 'Value data' field's contents (something like '%systemroot%\system32\mspaint.exe'). Press **<Ctrl>-V** to insert what you copied from the shortcut. Leave the last part of the field contents, '%1', untouched. Click OK and close the Registry Editor. ■

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.

STOP MSCONFIG'S NAGGING

I OFTEN TELL readers to uncheck items in Msconfig to keep programs from loading automatically. But as Mario Cruz of Springville, Utah, points out, when Windows XP boots with unchecked items in Msconfig's Startup tab, a very wordy message box comes up, followed by Msconfig itself. If you'd rather not deal with this every time you boot, check *Don't show this message or launch the System Configuration Utility when Windows starts* at the bottom of the dialog box before you click OK.

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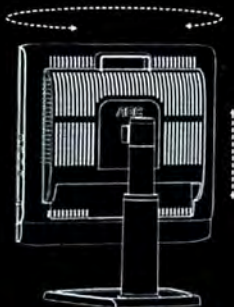
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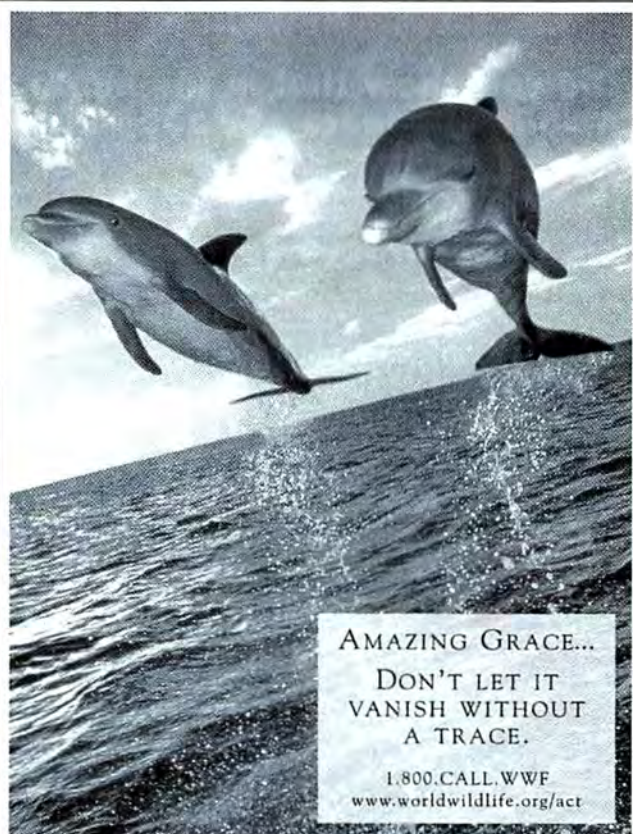
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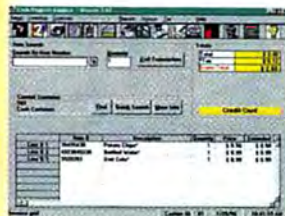
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Is That a Computer in Your Living Room?

I NEVER THOUGHT I'D SAY THIS, but I'm beginning to think my entertainment world will eventually revolve around a computer.

Back when the Web was an infant, "digital convergence" was all the rage. Computers, communications, consumer electronics, and entertainment technology were supposedly going to merge into one wonderful universe. The big question was whether the computer or the TV would be at the center.

Today we take convergence for granted. (In fact, it's the subject of *Next Gear*, *PC World's* new section, which debuts on page 155 in this issue.) Communications and entertainment went digital, and computers got smarter. It's a pretty sorry PC that can't play DVDs and CDs, not to mention handling all manner of digital photo, video, and music files.

Today's best TVs accept a plethora of inputs, but they're still little more than very fancy monitors. Since those inputs can easily come from a PC instead of dedicated devices like DVD players, the logical conclusion is that the center of my media world will ultimately be a PC—though it may not look like the one sitting under my desk or on my lap.

Sure, you could get a TiVo, a DVD/CD recorder, a multimedia receiver, and a device to show photos on a TV. But you'd need to find space for them all, tame a snake pit of cables, and somehow integrate the remotes.

Put 'em all into a single computer that sits where the other stuff does now, and you save

space and cabling and can browse the Web in the bargain. With luck, you might even be able to upgrade to exotic new hardware as it arrives—say, Blu-ray high-definition drives. And with enough bandwidth, you might one day use your machine to watch high-def programming delivered via the Net in a format like Windows Media. You might even network the box to devices throughout the house.

Media PCs: Almost ready for prime time.



Windows XP Media Center Edition is Microsoft's entry into the living room, but the machines that run it still feel like computers. It's hard to imagine the family enjoying entertainment from a noisy machine susceptible to worms and crashes. One alternative is a dedicated device, like the highly touted Moxi set-top box. But where do the designers of such boxes say "enough"? How will you feel when you want the latest videocam software and your month-old machine won't run it?

The battle isn't over yet, but consumer electronics companies are on the verge of losing it. Lesser-known computer vendors offer home-theater PCs that have cases designed to fit where consumer devices do and that handle all but the very latest formats. After going its own way for years, even Sony has Media Center PCs.

Still, the PC isn't quite ready for its close-up. As far as I know, there's not a PC on the planet that has a satellite or digital cable decoder or that can power big speakers. But this is hardly an impossible dream.

Microsoft has spent piles of money over the years trying to worm its way into the dedicated set-top-box business. My guess is that its Media Center approach is going to be the one that ends up winning—even if it's Apple that ends up showing us how a media computer should really work. ■

Visit find.pcworld.com/31595 to see additional columns by Contributing Editor Stephen Manes. He has been writing about technology for two decades.



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