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2004

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1-Year Battery⁵
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Top 15 Notebook PCs
Value Notebooks, 2004
– PC World April 2004

Best Buy Award, 2004
– LAPTOP March 2004

\$1,549 | Lease for as low as
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Popular Upgrades:

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Microsoft® Windows® XP Professional
Microsoft® Office OneNote™ 2003
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14.1" Diagonal XGA TFT² Display
NVIDIA® GeForce™ FX Go5200 w/32MB
Video Memory
10/100 Ethernet and V.90/56K Modem³
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Part#: PTM20U-OM06T8

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– Intel® 855 Chipset
Microsoft® Windows® XP Professional
Microsoft® Office OneNote™ 2003
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NVIDIA® GeForce™ FX Go5200 w/32MB
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Part#: PPR10U-04M817

The Top 25
Ultrathin Notebooks, 2004
– Computer Shopper March 2004

Editor's Top Notebooks
Ultrathin Notebooks, 2004
– CNET February 2004

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Jump Code: JABB-R100

Popular Upgrades:

Optional External USB 2.0 CD-RW/DVD-ROM
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Toshiba Slim Port Replicator \$299
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storage capacity. Available storage capacity will also be less if the product includes pre-installed operating system and/or application software. Actual formatted capacity may vary. 2. Small bright dots may appear on your TFT display when you turn on your PC. Your display contains an internal light source. 3. Actual data transmission speeds will vary depending on line conditions. 4. Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public peak times. 5. TO AVOID BEING CHARGED A MONTHLY MEMBERSHIP FEE, SIMPLY CANCEL BEFORE THREE MONTH PROMOTIONAL PERIOD ENDS. Premium services carry surcharges, and communication surcharges may apply, including in Alaska, even during promotional period. 6. With fair market value end-of-term purchase option available through Toshiba America Information Systems, Inc. to qualified commercial business customers only. Each lease subject to credit approval, acceptable documentation, 10% soft cost limit and order of Toshiba computer. 7. For full description of terms and conditions call 1-800-207-8362 or go to www.julyrelease.toshiba.com. 8. Free ground shipping on new notebook orders of \$999 or more via toshibadirect.com or by calling 800-316-9915. Enter code MAB8 during online checkout or mention order. Call for complete details.

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)))))

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Integrated Wi-Fi® (802.11g),⁴
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1-Year Battery⁵
Three Months of AOL® Membership⁶
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1. Gigabyte (GB) means 1,000 x 1,000 x 1,000 = 1,000,000,000 bytes using powers of 10. The computer operating system, however, reports storage capacity using powers of 2 for the definition of 1 GB = 1,024 x 1,024 x 1,024 = 1,073,741,824 bytes, and therefore may show less extremely large number of thin-film transistors (TFT) and is manufactured using high-precision technology. Any small bright dots that may appear on your display are an intrinsic characteristic of the TFT manufacturing technology. 3. Due to FCC limitations, speeds of 53Kbps are wireless LAN access points limited. 5. A copy of the standard limited warranty terms are available at www.warranty.toshiba.com. 6. Three months of AOL membership included with the purchase of a Toshiba Satellite or Satellite Pro PC. Availability may be limited, especially during Members may incur telephone charges on their phone bill, depending on their location and calling plan, even during promotional period. Available to new AOL members in the United States, age 18 or older; a major credit card or checking account is required. 7. 30-month lease offer products of \$1,500 up to \$100,000 (exclusive of taxes, fees and shipping). Rates quoted do not include taxes or shipping. Offer available in the United States only, valid only until 7/31/04 and may be withdrawn or changed at any time without notice or obligation. Other terms and conditions code MAB8 when placing orders via phone. Offer valid from May 25, 2004 through July 31, 2004. 9. Weight may vary depending on product configuration, vendor components, manufacturing variability and options selected. 10. Upgrade must be installed by an authorized service provider. Portégé, Satellite, Tecra, Slim SelectBay and SystemGuard are registered trademarks and ConfigFree is a trademark of Toshiba America Information Systems, Inc. and/or Toshiba Corporation. Intel, Celeron, Centrino, Intel Inside, Pentium, the Intel Centrino logo, and the Intel Inside logo are trademarks of the Wi-Fi Alliance. NVIDIA and GeForce are registered trademarks or trademarks of NVIDIA Corporation in the United States and/or other countries. All other trademarks are the property of their respective owners. Product specifications, configurations, prices, system/compo-

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Acclaim Editors' Choice - PC Magazine February, 2004
Editors' Choice Award - LAPTOP January, 2004
Editors' Choice Award - CNET March, 2004

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Best of 2004



WORLD CLASS AWARDS

86 Best of 2004

In 67 categories spanning hardware, software, and the Web, here are the top products and services of the year. Our picks, selected with input from a team of tech experts and analysts, offer first-rate usability, design, and value. We also choose the brightest newcomers and the biggest flop, and announce the first inductee into the World Class Hall of Fame.

Cover photography by Kevin Candland



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JULY 2004

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DIGITAL CAMERAS

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TECH SUPPORT

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Sooner or later everyone winds up there: on the horn to tech support. We go undercover to test the quality of help the major vendors provide, both on the phone and online.



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There's a better, quicker way to keep up-to-date than by checking the same sites daily: Subscribe to news feeds via an RSS reader. We look at the best reader programs and sources of feeds—and at the future of RSS.

ON THE COVER



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TELL US WHAT YOU THINK

Visit www.pcworld.com/pcwinput and rate this issue—you could win a 5.1-megapixel Sony Cyber-shot DSC-W1 digital camera, which 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 how to participate in the drawing if you're not a subscriber. You can enter from June 14 through July 9, 2004.

COMING UP IN AUGUST

Best Free Software: Our guide to the most useful, fun stuff that's truly free—no strings attached.

PC Mythbusters: We examine common PC "pearls of wisdom" and separate myth from reality.

Products for the Paranoid: Security solutions abound: We test the best and reveal the winners.

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Fix faulty OS shutdowns; undo a dual-boot setup.



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64-bit Processor
Model# ADA3400BOX

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Athlon™ 64 3200+
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64-bit Processor
Model# ADA3200BOX

\$282.00



Athlon™ 64 3000+
512KB L2 Cache
64-bit Processor
Model# ADA3000BOX

\$223.00



Athlon™ 64 2800+
512MB L2 Cache
64-bit Processor
Model# ADA2800BOX

\$185.00



AMD Opteron™ Model 150
1MB L2 Cache
64-bit Processor
Model# OSA150BOX

\$731.00

Motherboards



Chaintech VNF3-250
nForce3 250 Chipset for AMD
Socket 754 CPU

\$88.00



GigaByte GA-K8NS
nForce3 250
Chipset for AMD
Socket 754

\$119.00



Abit KV8 Pro
K8T800 Pro
for AMD
Athlon 64 CPU

\$119.00

Video Cards



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PCI TV/FM Tuner Card

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Sound Cards



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64-bit Processor
Model# ADAFX53BOX



AMD Opteron™ Model 244
1MB L2 Cache
64-bit Processor
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AMD Opteron™ Model 246
1MB L2 Cache
64-bit Processor
Model# OSA246BOX

\$461.00



AMD Opteron™ Model 248
1MB L2 Cache
64-bit Processor
Model# OSA248BOX

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AMD Opteron™ Model 250
1MB L2 Cache
64-bit Processor
Model# OSA250BOX

\$845.00

Memory



\$280.00

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1GB (512MBx2) DDR PC-4000

Hard Drives



\$390.00

SimpleTech 400GB
USB 2.0 / FireWire External
7200 RPM Hard Drive
Model# STI-USB235/400



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10,000 RPM
SATA Model# WD740GD - OEM



\$119.95

Maxtor Quantum 36.7GB
10,000 RPM SCSI
Model# 8B036L0 - OEM

CD/DVD RWs



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NEC ND-2500A 8x DVD±RW
ATAPI/E-IDE 2MB Buffer - OEM



\$102.00

LG Electronics
8x DVD±RW
Super-Multi Triple
Format DVD Writer
2MB Buffer Model#
GSA4082BI



\$78.00

Nu Tech DDW-082
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Internal ATAPI/
E-IDE 2MB Buffer
OEM



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8MB Buffer Hard Drive
OEM



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Extreme Volcano 12
CPU Cooler



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Traveling Projectors, a Speaker Set in a Box, and Creative Cameras

WE TRAIN OUR JULY *Top 100* Spotlight on portable projectors that are truly designed to be taken on the road. Our *Next Gear* section gives Zvox's one-box speaker set an admiring audition, and for

camera buffs we test a wave of point-and-shoot models that combine ease of use with attractive extras. Other focuses of this month's product coverage are RSS readers and wireless networking devices.



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Models from HP (upper left), NEC (upper right), and InFocus weigh 4 pounds and offer versatility, bright images, and no anchor to drag.



160 All-in-One Speaker System

The Zvox 315 Sound Console puts three speakers and a subwoofer into a single box that delivers remarkably strong, clean sound for a PC or TV.



102 Talented Digital Point-and-Shoots

Sony's super-svelte, 5.1-megapixel Cyber-shot DSC-T1—one of the best units we saw in our digital camera roundup—has a 2.5-inch LCD.

THIS MONTH'S CROP OF TOP PRODUCTS

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- 166 ABS Ultimate M6 ★★★★★
- 166 Alienware Aurora Extreme ★★★★★
- 166 Cyberpower Gamer Ultra 7000 ★★★★★
- 166 Velocity Micro Vision 64 ★★★★★

NOTEBOOK PCs

- 170 Gateway M405CS ★★★★★
- 170 Sony VAIO PCG-TR3AP3 ★★★★★

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- 172 Samsung SyncMaster 172X ★★★★★
- 172 Sony SDM-HS73P ★★★★★

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- 173 Plextor PX-712A ★★★★★

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- 164 Dell 3300MP ★★★★★
- 164 HP Digital Projector Mp3130 ★★★★★
- 164 InFocus LP120 ★★★★★
- 164 NEC LT10 ★★★★★
- 164 Optoma EZPro 725 ★★★★★

ALL-IN-ONE SPEAKER SYSTEM

- 160 Zvox Audio Zvox 315 Sound Console ★★★★★

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- 104 Canon PowerShot S500 Digital Elph ★★★★★
- 104 HP Photosmart R707 ★★★★★
- 104 Kodak EasyShare DX7630 ★★★★★
- 104 Nikon Coolpix 3200 ★★★★★
- 104 Panasonic Lumix DMC-FZ10 ★★★★★
- 104 Sony Cyber-shot DSC-T1 ★★★★★

DIGITAL VIDEO CAMCORDER

- 64 Panasonic PV-GS200 ★★★★★

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- 174 Asus MyPal A76 ★★★★★
- 174 HP iPaq Pocket PC H4150 ★★★★★
- 174 PalmOne Zire 72 ★★★★★

BACKUP STORAGE DEVICE

- 64 Iomega Rev 35GB/90GB USB 2.0 Drive ★★★★★

USB NETWORK SERVER

- 74 Keyspan USB Server ★★★★★

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- 63 Buffalo AirStation 125 Hi-Speed Mode Wireless Cable/DSL Router (WHR3-G54) ★★★★★
- 63 Cisco Linksys Wireless-G Router with SpeedBooster ★★★★★
- 62 D-Link Systems Air-Plus XtremeG DI-624 ★★★★★

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- 150 Bloglines ★★★★★
- 150 FeedDemon ★★★★★
- 150 NewsGator 2 ★★★★★
- 150 Pluck RSS Reader ★★★★★

PHOTO-SHARING SERVICES

- 68 Homestead Technologies PhotoSite AlbumBuilder ★★★★★
- 68 How2Share Technologies PIXPO 1.01 ★★★★★
- 68 Webshots Desktop 2 ★★★★★

E-MAIL SOFTWARE

- 72 Qualcomm Eudora 6.1 ★★★★★

THE HIGHEST-RANKING new products reviewed in this issue of *PC World* are listed above, together with the page number where

each product is reviewed and the star rating it received. See find.pcworld.com/10860 for more about *PC World's* Star Ratings.

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ONLINE FEATURES



Linux on Your Desktop

find.pcworld.com/42530

Our expert charts the rise of the anti-Windows operating system and explains why you might (or might not) want to run it on your PC.



The Hidden Risks of Online Lotteries

find.pcworld.com/42532

It's easy to play Powerball over the Internet, but the legality of online participation remains a gamble. If you win big, will the law allow you to collect?

FEATURED COLUMN



Tech.gov

find.pcworld.com/42534

From the DMCA to Voice over IP, from Congress to the courts, Senior Editor Anush Yeghazarian looks at tech policy and its impact on you.

E-MAIL NEWSLETTERS

Weekly Brief

Best stories of the week.

Daily Product Review

Expert reviews, sneak previews.

Steve Bass's Home Office

Get the most from your gear.

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HIGHLIGHTS

Techlog

find.pcworld.com/42538

PC World's Editor in Chief Harry McCracken offers his unique insights and perspective on emerging technology—and the latest products based on it—every weekday in Techlog, the first Weblog to appear on our site. Techlog is the place to go to get the inside scoop on what matters and what doesn't in the ever-changing high-tech universe. You won't want to miss it.



TOP 10 DOWNLOADS

Head to find.pcworld.com/42446 to locate and download these popular files.

1. Ad-aware 6.181
2. Spybot Search & Destroy 1.2
3. ZoneAlarm 4.5.538
4. Norton SystemWorks 2004
5. Print Screen
6. Fast Defrag Standard and Pro 2.16SP1f
7. Disk Cleanup 4.6
8. WinRescue XP 1.08
9. MasterBooter 3.3
10. Registry First Aid 3.3.1

MOST POPULAR PRODUCTS

At press time, these were the top sellers, by category, at *PC World's* Product Finder.

- **Desktop PC**
Dell Dimension 2400
find.pcworld.com/42520
- **DVD Recorder**
Panasonic DMR-E80H
find.pcworld.com/42522
- **Tablet PC**
Toshiba Portégé M200
find.pcworld.com/39803
- **Keyboard**
Logitech Cordless MX Duo Elite
find.pcworld.com/42524
- **Image Editing Software**
Adobe Photoshop 8
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UP FRONT

HARRY MCCrackEN

World Class 2004...and the Blooper Reel

A year's worth of products: the winning, the wearisome, and the weird.

TEN PAGES JAM-PACKED with 68 terrific products and one beautifully simple purpose: That's the 22nd World Class awards in a nutshell. Once again, we've set out to make your buying decisions easier with a one-stop guide to good stuff in an array of categories. It all starts on page 86.

The premise may be a no-brainer, but the process is a *many*-brainer. When our hallways start to sound like an episode of *Crossfire*, I know that World Class debate is well under way. (This year, the conversation burst beyond the walls of *PC World*—we asked outside experts to help us choose winners.)

As usual, an essential part of our regime consists of reviewing the past 12 months' worth of products. That helps us spot the year's biggest hits. But looking back at the best also reminds us of ways in which companies annoyed customers or failed to meet their needs. Herewith, a few notable bloopers, and thoughts about what they meant for both tech buyers and merchants.

The Blooper: TurboTax Gets Taxing. For me, the most irritating thing about taxes this year wasn't the taxes—I got a refund—but buying and using Intuit's TurboTax, a once-great program. Other *PC World* editors voiced similar gripes: The matrix of TurboTax versions, prices, and rebate offers has begun to feel a little like a shell game. And the program itself is pockmarked with pushy ads for other Intuit products. (At least the company did away with last year's glitchy copy protection.)

The Lesson: Software developers should think twice before treating customers like revenue-generating zombies. Regrettably, these annoyances seem to come standard with financial applications—packages from Microsoft and H&R Block suffer from similar aggravations.



The Blooper: Free Speech, AOL Style. If my own AOL inbox is any sign, the mega-ISP's spam filters have become pretty darn effective. But some users have found that AOL has been trashing *nonspam* messages—ones it says might offend a typical user (see *Consumer Watch*, page 51). Hmmm—just last year, the service ran a TV ad about its stick-figure mascot's one-night stand with Sharon Stone. **The Lesson:** Bad taste shouldn't be a second front in the spam wars. (Full disclosure: *PC World* is an AOL content provider.)

The Blooper: Smart Displays Come and Go.

In 2002, Microsoft began touting the Smart Display—a sort of portable satellite station for a home PC. The first units shipped in early 2003. But they were pricey and sluggish, required the business-oriented Windows XP Pro rather than XP Home, and tied up the PC. A year later, Microsoft killed the platform. **The Lesson:** When Microsoft (or anyone else) botches a worthwhile idea with bad execution, buyers will stay away in droves.

The Blooper: Mini-PCs Make Us Wait.

According to some folks, the next big thing in PCs will be really little: tiny Windows XP portables weighing about a pound. In some alternate universe, two of these ultra-portables may already be World Class winners—a unit from OQO was supposed to ship in 2002, and

another from Vulcan was due in 2003. Now they'll arrive late this year...in theory. **The Lesson:** Don't count your technology revolutions before they're hatched.

Got any thoughts about our World Class winners? Send 'em to me at mag-editor@pcworld.com. And visit Techlog, our new Weblog (blogs.pcworld.com/techlog) for updates on the good, the bad, and the just plain bizarre. ■

Harry McCracken is editor in chief of *PC World*.

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DVD's Next Big Leaps

DVD IS PICKING UP SPEED AND STORAGE CAPACITY—BUT FORMAT WARS AND HIGH PRICES MAY MEAN A WAIT FOR THE MOST ADVANCED NEW TECHNOLOGIES. **BY JON L. JACOBI**

JUST WHEN YOU think it's safe to go out and purchase a DVD burner, new technology shows up—three kinds in this case. The most innocuous new twist is 12X recordable—a speed jump that will save time but otherwise won't rock your world. Contending for the earthshaking technology award are soon-to-be-released dual-layer, double-capacity DVD+R and a still-over-the-horizon product based on blue laser technology called high-def DVD. Blue laser promises massively greater capacity and faster speeds, but as is usual with DVD, a war is brewing over the high-def format.

DOUBLE DUTY

DUAL-LAYER recordable DVD drives and media (also known as double-layer in the DVD+R format) possess roughly twice the capacity of current 4.7GB media and can hold an entire high-bit-rate, 8.5GB DVD-9



commercial movie. For consumers, that means comfortably fitting 3 hours or more of high-quality video on one disc. But our informal tests suggest that dual-layer discs may be incompatible with at least some current players and burners.

We tried out a \$199 internal

version of Sony's DRU-700A, a dual-layer, 8.5GB recordable drive that also writes single-layer DVD±R at 8X, DVD±RW at 4X, CD-R at 40X, and CD-RW at 24X. (The external version will sell for about \$299.)

The DRU-700A easily handled our more mundane tests.

Using a vendor-bundled version of Nero software, it wrote dual-layer discs flawlessly in a hair over 45 minutes for a full disc. We couldn't detect any layer-switch lag when playing back the movie we burned, on either the Sony DRU-700A or JVC's XV-N55SL DVD player.

But several caveats are in order. A relatively minor one is that dual-layer DVD+R writing proceeds at only 2.4X, so it requires about 45 minutes to write a full disc. (When using DL DVD+R, you must write a full disc to obtain the proper reflectivity on both layers.)

More important, dual-layer discs will reach store shelves slowly—and will temporarily return us to the \$10-a-disc days last seen with the first 1X DVD-R burners, says Verbatim spokesman Andy Marken. As more suppliers come on line, prices will probably drop drastically, but single-layer media will continue to be cheaper for the foreseeable future.

The most serious problem, however, is incompatibility with existing players and drives. Our state-of-the-art DVD burners from Plextor (the PX-712A and PX-708A) and Memo-

rex (the True 8X) wouldn't recognize video that we burned onto a preproduction DL disc, and only four of the twelve DVD players that we tried to use would play it. Firmware upgrades should fix the burner problem on new models, and Marken says that the goal for production-level media is 90 percent compatibility.

Benq, Lite-On, Memorex, and Pioneer each plan to release a DL drive within the next couple of months; those drives, like the Sony, will support dual-layer for DVD+R. In addition, some existing drives may add DL write support via firmware upgrades. Consult your drive's maker to be sure. The competing write-once format, DVD-R, should go dual-

layer by the end of June, when the DVD Forum is expected to ratify the new specification.

BLUE-WHAT?

DESPITE RECEIVING considerable press attention, blue-laser DVD is hardly poised to take over from today's DVD technology. Even the most optimistic analysts don't expect blue laser to have more than a minor market impact for at least five years. But the battle is on over whose format will win the hearts and minds of Hollywood—not to mention a boatload of future royalties.

Of numerous combatants, just two formats appear headed for the big showdown: the

megabits-per-second transfer rates. Two hours of material transmitted at this speed requires just over 19GB of storage, far more than single- or dual-layer discs now offer.

The DVD Forum, NEC, and Toshiba claim that HD-DVD, which increases the capacity of DVD from 4.7GB to 15GB per layer, is easier to implement and could be brought to market more quickly and less expensively because it doesn't necessitate a complete retooling of existing assembly lines. In fact, NEC has already announced production of a dual red/blue laser read/write head (but no accompanying drive) that is backward-compatible.

Nevertheless, since single-layer HD-DVD capacity falls short of the minimum requirement for handling 17.5GB HDTV—as does the 15GB EVD standard—the DVD Forum is

accommodating compression schemes besides today's tried-and-true MPEG-2: the MPEG-4-compliant H.264 and Microsoft's Windows Media 9. Both permit compression ratios higher than MPEG-2 at similar quality, but would require the DVD player manufacturers to pay additional royalties.

Sony and others argue that a clean break with older technology will result in greater capacity; Blu-ray offers from 23.3GB to 27GB per layer, easily exceeding HDTV requirements. Not surprisingly, Blu-ray is sticking with MPEG-2, although its creators haven't ruled out using other codecs.

Neither the HD-DVD nor the Blu-ray spec is graven in stone yet. To muddy the

Dual-layer discs will arrive in stores slowly, and will initially cost \$10 a disc.

DVD Forum's HD-DVD, created by Toshiba and NEC, and Sony's Blu-ray, which is supported by practically everyone else. China is going its own way with EVD (Enhanced Versatile Disc), yet another standard, but the impact of EVD in other countries is uncertain.

In comparison to the red-light lasers used in current CD and DVD products, blue-light lasers possess a shorter wavelength—405 nanometers versus red laser's 650 nanometers. That translates into speedier pulses and smaller marks that are positioned closer together, yielding greater capacity and faster speeds. One beneficiary will be HDTV, which offers up to 1125 lines of resolution and up to 19.4-

IN BRIEF

Tidbytes



GET YOUR HOT 64 BITS:

Microsoft would like you to move from a 32-bit to a 64-bit system sooner rather than later. The company now says its 64-bit version of Windows for AMD and Intel desktop CPUs—originally conceived as a bare-bones OS with limited extras, will offer nearly all the features of today's Windows XP Pro when it ships at the end of the year. However, the 64-bit OS will be available only preinstalled on PCs and through system builders; no shrink-wrap box is planned.



TWO CHIPS IN ONE: Performance nuts take note: In 2005, Intel intends to ship its first dual-core desktop processor. The company recently shelved plans for Tejas, which was to replace today's Prescott-based Pentium 4, to focus on an unnamed dual-core chip first slated for 2006. Industry analyst Kevin Krewell says that dual-core processors should offer substantially better performance than today's single-core chips.

spec waters further, MPEG-4 playback is already appearing on some current DVD players such as NextWave's TW-3108 and Technosonic's MP-101. If adopted by other players and recorders, MPEG-4 may become a de facto specification.

The high-definition DVD fight is a minor story for now. The difference in quality between high-res DVD and current DVD is too small to give users a reason to upgrade until HD content becomes more widely available. Few people own TVs capable of showing off the higher resolution. And the new format's copy protection system will be far tougher than the weak one in current DVDs (see "Copyright Cops Crack Down on DVD," below).

That said, the first blue-laser product is already on sale—Sony's 23GB-per-layer Professional Disc for Data. At \$2996 for an internal SCSI-3 drive and \$3300 for an external USB 2.0/SCSI-3 version, it's a business backup option only, and the \$45 discs it writes are not compatible with other types of

MEDIA

MAKING SENSE OF DVD

NEW DVD TECHNOLOGIES promise faster write speeds and higher disc capacities. Here's how the DVD landscape looks so far.

TECHNOLOGY	Top write speed	Capacity	Price per disk ¹
DVD+R (dual-layer)	2.4X	8.5GB	\$10
DVD+R	12X (16X soon)	4.7GB	\$1
DVD+RW	4X	4.7GB	\$1.50
DVD-R ²	8X (16X soon)	4.7GB	\$1
DVD-RW	4X	4.7GB	\$1.75
DVD-RAM	3X (5X soon)	4.7GB	\$4
DVD-RAM (double-sided)	3X (5X soon)	9.4GB	\$6
Enhanced Versatile Disc ³	No write	15GB	n/a
Blu-ray ^{3,4}	3.3X (4.5 MBps)	23GB to 27GB	\$30
HD DVD ^{3,4}	Likely 3.3X (4.5 MBps)	15GB	n/a
Professional Disc for Data ⁴	6.5X (9 MBps)	23GB	\$45

n/a = Not available; drives and media have not been released. **FOOTNOTES:** ¹Average price when bought in quantity. ²Dual-layer discs are coming this winter. ³Specification is still a work in progress. ⁴Listed X rating is based on current DVD standards and may not appear on product when sold. **CHART NOTE:** 1X for DVD = 1.38 MBps, 1X for DVD-RAM = 720 KBps.

drives. We were unable to obtain one for testing, but its availability suggests that blue-laser DVD will make its debut via data applications and the prosumer video market.

12X STANDARD DVD

FINALLY, THOUGH it's an incremental improvement, our first taste of 12X recordable

was sweet. Plextor's \$200 PX-712A (our World Class winner in the rewritable DVD drive category; see page 90) burns discs at 12X and doesn't even need yet-to-be-released 12X DVD+R media to manage the trick: It wrote a full movie in just over 6 minutes (at 12X) using Taiyo Yuden 8X DVD+R discs that Plextor provided. (Go

to Plextor's site to see a list of 12X-writable 8X media.) The PX-712A burns DVD-R discs at 8X, DVD±RW at 4X, CD-R at 48X, and CD-RW at 24X, too.

Another pleasant note: Plextor has finally decided to bundle its PlexTools burning and drive configuration utility. The utility lets you raise the PX-712A's maximum DVD video read speed from 2X to 16X for an entire computing session, so you no longer have to do it manually each time you rip.

The dual-layer drives from Benq, Lite-On, Memorex, and Pioneer will boast 16X DVD±R speeds as well—but don't expect media for them to ship until some time this fall.

Though there are clouds of confusion on DVD's horizon, your choice for the moment is fairly clear. The 12X drives will save you time and won't bust your budget. Sadly, the compatibility of dual-layer discs with current hardware is suspect, and the high initial price of discs means you may want to steer clear of the technology for the immediate future.

COPYRIGHT COPS CRACK DOWN ON DVD

AFTER A LENGTHY battle for the right to back up commercial DVD movies—and for its own profits—321 Studios was slapped with injunctions by federal courts in New York and California, forcing the company to cease selling its DVD X Copy products in their existing form. The programs copied (or ripped) commercial DVD movies by defeating their copy protection scheme—a major no-no under 1998's Digital Millennium Copyright Act. The company based its defense on the long-standing precedent that people have the right to make a single backup copy of media they buy for personal use—but that argument hasn't enjoyed much favor in court so far.

Since the ruling, 321 Studios has been selling DVD Xtreme, a promising but overpriced and underpowered CD/DVD software

suite that will copy only unencrypted material to either CD or DVD.

But unless you need DVD X Copy's extra-simple interface, there are better *free* alternatives available; a Web search will produce information on backing up your DVDs if the procedure once again becomes legal.

If you are bound and determined to spend some of your hard-earned cash, several commercial programs can shrink and copy video (keep it legal, please) to DVD once it's on your hard drive: InterVideo's DVD Copy 2 (\$80) and Pinnacle Systems' much more reasonably priced InstantCopy 8 (\$30), to name two. Both

Roxio's Easy Media Creator 7 and Ahead's Nero 6 Ultra Edition provide their own components to compress video and to re-encode to MPEG-4 at supersmall file sizes suitable for notebook playback.



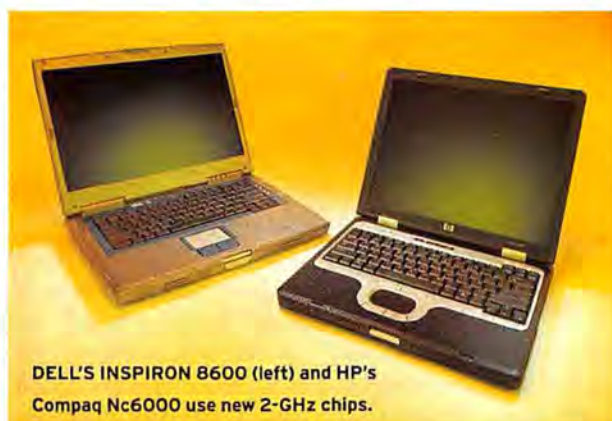
MOBILE COMPUTING

Brainy and Brawny New Laptops

NEW PENTIUM M PROCESSORS SET SPEED MARKS WHILE MAINTAINING GOOD BATTERY LIFE.

WANT EVEN MORE power as you crunch numbers or rework your presentation on the road? You've got it, thanks to Intel's new Pentium M processors, formerly code-named Dothan. Four notebooks—from Dell, Gateway, Hewlett-Packard, and IBM—running these chips set records for laptops on our tests, and they all offer the same top-notch battery life we've come to expect from the Pentium M family.

The new Pentium M CPUs come in 1.7-GHz, 1.8-GHz, and 2-GHz speeds, and boast several improvements over the prior generation of Pentium M chips, most notably a larger



DELL'S INSPIRON 8600 (left) and HP's Compaq Nc6000 use new 2-GHz chips.

Level 2 cache—2MB, up from 1MB. They are the first chips to use Intel's revamped CPU naming scheme (go to find.pcworld.com/42450 for more), which complements the clock speed with a model number.

The Pentium M CPU line has been at the core of Intel's Centrino mobile technology, consisting of the processors, the chip set supporting them, and Intel's wireless (Wi-Fi)

implementation. The newest Pentium M chips will go into Centrino notebooks at once; look for an overall upgrade of the technology in the near future (more about that later).

NUMBERS UP

WE TESTED THE FOUR notebooks configured with 1GB of RAM and Windows XP Professional. They came with different Pentium M processors:

Dell's Inspiron 8600C (\$2899) and HP's Compaq Business Notebook Nc6000 (\$2499) ran the 2-GHz Pentium M 755; Gateway's 450XL (\$2440) relied on the 1.8-GHz Pentium M 745; and IBM's ThinkPad T42 (\$1994) carried the 1.7-GHz Pentium M 735.

As expected, the Inspiron 8600C and Compaq Nc6000 notebooks, which had the fastest processors, earned the top scores (137 and 136, respectively) on PC WorldBench 4—the best results we've seen for Windows XP Pro laptops. The Gateway 450XL, scoring 130, and the ThinkPad T42, earning 133, weren't far behind. Overall, the average score of these four new notebooks is about 10 percent higher than the 122 average of 11 notebooks we've tested running on 1.6-GHz Pentium M CPUs. Note, however, that all of ▶

TEST REPORT

NEW PENTIUM M LAPTOPS DELIVER TOP SPEEDS

INTEL-BASED NOTEBOOKS with new chips rival desktop performance on PC WorldBench 4 and Adobe Photoshop.

SYSTEM	Processor	PC WorldBench 4 score Faster	TIME (IN SECONDS) REQUIRED TO RUN TEST			FRAMES PER SECOND*		Battery life (hours: minutes)
			AutoCAD	Photoshop 7.0.1	Q Premiere 6	Return to Castle Wolfenstein	Unreal Tournament 2002	
Dell Inspiron 8600C	2-GHz Pentium M 755	137	182	246	286	111	207	4:32
Gateway 450XL	1.8-GHz Pentium M 745	130	208	271	290	96	179	4:49
HP Compaq Business Notebook Nc6000	2-GHz Pentium M 755	136	190	251	285	70	124	6:12
IBM ThinkPad T42	1.7-GHz Pentium M 735	133	223	282	355	43	70	4:09
Average of three systems†	1.6-GHz Pentium M	120	264	348	384	n/a	n/a	5:37
One system‡	2.4-GHz Pentium 4-M	107	341	364	502	n/a	n/a	3:00
One system	2-GHz Mobile Athlon 64 3200+	134	n/a	n/a	n/a	n/a	n/a	3:03



n/a = The system was not tested with this program. **FOOTNOTES:** † At 1024 by 768 resolution and 16-bit color. ‡ 512MB of RAM. **HOW WE TEST:** Systems had 1GB of RAM unless otherwise noted, and all ran Windows XP Professional. See find.pcworld.com/42464 for more details on tests and system configuration. Higher is better on PC WorldBench 4, the battery test, and the gaming tests; on other tests, lower is better. Tests developed and conducted by the PC World Test Center. All rights reserved. **CHART NOTE:** Bold denotes best score.

the older systems had only half as much RAM, in addition to the slower processors.

The four new laptops performed well on our other tests (see the chart on page 31). On average, they completed both our AutoCAD and Photoshop tests in about three-quarters of the average time that three 1.6-GHz Pentium M laptops tested earlier (find.pcworld.com/42452) took on the same tests. Battery life remained good: Three of the new units lasted between 4 and 5 hours, and the HP over 6 hours.

The Dell and the Gateway are desktop replacements with big screens (15.4 inches and 15 inches, respectively). The Dell weighs 8.3 pounds, and the Gateway 7.5 pounds. For their part, the mainstream HP and IBM units have 14.1-inch screens; and with their AC adapters, they weigh 6.6 and 5.7 pounds, respectively.



UNDER THE HOOD

THE 2MB OF L2 cache and improved handling of instructions certainly helped the new chips' test scores, but the battery life has remained so good thanks to the 90-nanometer manufacturing technology. The 90-nm process helps keep overall power consumption below that of the older Pentium M (21 watts versus 24.5 watts for 1.7-GHz chips) while

yielding higher performance, says Roger Kay, IDC's vice president of client computing.

Centrino's wireless capability is better than in the past, too: You now get Intel's Pro/Wireless 2200BG integrated Wi-Fi adapter, which (as the name implies) supports both 802.11b and the faster 802.11g Wi-Fi, as do all 802.11g adapters. Bear in mind, however, that 11g adapters will operate at the slower speed in Wi-Fi

network environments with connected 11b adapters.

One thing missing in the new Centrino units is a better chip set, but that should be rectified by year's end, when Intel plans to release a chip set code-named Alviso. That chip set is part of the next generation of Centrino, code-named Sonoma. Sonoma's many improvements will include a 533-MHz frontside bus (up from 400 MHz) as well as support for fast DDR2 memory, the PCI Express bus, better audio, and 802.11a/b/g Wi-Fi.

If you're in the market for a powerful notebook now, the latest crop of Pentium M systems offers a terrific blend of performance and battery life for a \$100 to \$200 premium over previous models. But if you're not in a hurry, wait for Sonoma so you can get the most out of a new notebook.

—Anush Yeghazarian

OPERATING SYSTEM

Latest Preview of Next Windows

SEARCHING IMPROVES, BUT DISABLED FEATURES HINT AT BIG PLUMBING CHANGES.

WITH TWO YEARS remaining until Microsoft plans to release Windows XP's successor, code-named Longhorn, the only changes visible in the latest prerelease version are some gradual improvements to the new search capabilities. The dearth of discernable new features in Longhorn Build 4074, plus many basic elements that are suddenly non-functional, suggests that whatever Microsoft is working on, it's taking place deep in the guts of the operating system.

In January, when I last examined Longhorn (see find.pcworld.com/42482), I found



BEEFED-UP search capability is evident in the latest Longhorn beta.

bits and pieces of promised new data-indexing, graphics, and security features. But six months later, in code released in May at the Windows Hardware Engineering Conference, those capabilities remain mostly unchanged, save for a little additional polishing.

Microsoft's plans to beef up Windows' search function are evident: No matter where you may be in Windows, clicking a search icon brings up a detailed form from which you can search the local PC, the local network, online help, or the Internet (the last via Micro-

soft's own MSN Search engine). Similarly, a new Communication History folder offers users one-stop searching for any e-mail message, instant message, or other form of communication.

The most surprising thing to me about Build 4074 was how many things didn't work. I installed it on two PCs, including one I used to test the last version, and it couldn't install network, audio, and display drivers that the previous version could, suggesting that Microsoft may be redesigning Windows' plumbing.

—Scott Spanbauer



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WEB-BASED E-MAIL

Gmail: Google's E-Mail Winner

PRIVACY CONCERNS ASIDE, IT WORKS.

IF YOU'VE HAD your fill of Web-based e-mail burdened with skimpy storage and cluttered interfaces, say hello to Google's free Gmail. Packed with innovative features such as message threading and fast searching, Gmail provides a full 1 gigabyte of server space and does away with both banner and pop-up ads, relying instead on sponsored links similar to those on Google's search engine page.

Gmail does have a controversial aspect: the way it handles advertising. Gmail automatically scans e-mail and displays ads that may be relevant to messages' content. Gmail's privacy policy states that no humans view your e-mail; that only a limited set

of employees can access user accounts for quality, security, audit, and other internal business purposes; and that any such access is recorded.

Instead of being embedded in e-mail messages, ads are placed on the Web page in a column alongside messages, much the way they appear in Google search results.

Overall I found the text ads unobtrusive—though often somewhat inappropriate. For instance, a message on the subject of privacy displayed a link for the privacy policy of Illinois's state drug program.

PRIVACY RISKS

RAY EVERETT-CHURCH, chief privacy officer of TurnTide, a Pennsylvania-based antispy



MARKING IMPORTANT messages with a star automatically places them in the Starred folder, making them easy to find later on.

company, says he isn't bothered by Gmail's computerized scanning of e-mail because users are given clear notice and because Google doesn't retain or share data that links ad-targeting information to individuals. Adds Gmail tester Sarah Milstein, a New York editor and author: "It's no different than ISPs and employers scanning for spam... There's no evidence that Google does anything more invasive than other e-mail providers."

Pam Dixon, executive director of the World Privacy Forum, disagrees. "Google's plan

to scan e-mails for ad placement sets a new precedent of allowing a third party to comment on our private communications," she says.

But ad-related issues notwithstanding, Gmail's message threading—"conversations" in Googlespeak—lets you view portions of message exchanges or entire threads. To store messages, you get six folders: In, Starred (containing messages you've highlighted with a star to make them easy to find), Sent Mail, All Mail, Spam, and Trash. Though you can't add new ones, you can apply one or more "Labels" to organize conversations.

Searching is fast and extensive, with standard options such as the ability to search by header field, time, label, or attachment. I used Gmail with Internet Explorer; other beta testers say that it works with a beta of Mozilla's Firefox but not with Opera.

If you would like a free and uncluttered Web mail service with tons of storage, check out Gmail the moment it launches. The privacy issue doesn't bother me: Unlike sleazeball spyware that grabs data without my knowledge, Gmail asked for my permission.

—Steve Bass

IN BRIEF

ATI, NVidia Ship Superpowered Graphics Chips

GRAPHICS GIANTS ATI and NVidia have resumed their battle for pixel supremacy. NVidia's latest weapon is its GeForce 6800 Ultra, while ATI is brandishing its Radeon X800 XT Platinum Edition. Both chips offer enhanced features such as 16-pixel pipelines and support for graphics double data rate memory (GDDR 3). Both companies hope to capture the hearts (and wallets) of performance junkies and PC gamers anticipating the summer release of Half-Life 2. Early tests show both chips outper-



forming their predecessors, but this kind of power isn't cheap: Expect cards to sell for \$500.

—Tom Mainelli



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LEGISLATION

Striking Back at Spyware

STATES, FEDS CONSIDER REGULATING INTRUSIVE SOFTWARE.

HERE'S GOOD NEWS for surfers stressing over spyware that surreptitiously slips onto their PCs to track their whereabouts and serve up advertising: A legal noose is starting to tighten around its purveyors.

Utah has made installing programs on a PC without the user's approval a \$10,000 offense. California, Iowa, and New York are considering similar laws, and Congress is weighing federal legislation.

"Using underhanded tactics, these companies are not only invading your privacy but hurting legitimate online companies," says Utah state representative Steve Urquhart, sponsor of that state's Spyware Control Act.

Spyware's recent spread has been breathtaking. Network monitoring firm Websense found spyware on 92 percent of PCs in an April study of firms with more than 100 employees. Microsoft blames spyware for over half of all application crashes. An analysis by EarthLink/Webroot reports an average of 28 spyware programs running on each PC it scanned for a recent study.

BOOTING LEGIT ADS?

BUT SOME OBSERVERS think anti-spyware laws will prohibit legitimate online ads and stifle innovation. "We feel this law will essentially outlaw a perfectly acceptable form of advertising and commerce,"

says Emily Hackett, executive director of Internet Alliance, a vendor trade association.

Advertisers and makers of ad programs want laws to distinguish between spyware and adware. "We agree there is a problem," says Robert Regular, president, Americas, of Cydoor Desktop Media. He notes that spyware installs itself without your consent and tracks your surfing habits so it can target ads.

The Federal Trade Commission has voiced its concerns about the scope and burden of new laws, says Tom Pahl, assistant director for advertising practices. Still, the FTC has not yet taken an official position on the new laws, he adds.



The legitimate adware business is small and focused on survival and growth, making it hard to work on proposed self-regulation, notes Tim Hicker-nell, vice president of market research firm MetaGroup. He opposes legislation and says that Utah's law goes too far.

For now, worried users can try the spyware removal tools at find.pcworld.com/42448.

—Tom Spring

INTERNET

Plug Into Easy, Cheap Broadband

INTERNET ACCESS OVER POWER LINES GETS OFF THE GROUND IN NEW OHIO-BASED SERVICE.

HIGH-SPEED Internet access may one day come from your electric company, thanks to broadband-over-power-line technology. BPL got off the ground recently when Current Communications and Ohio-based utility Cinergy partnered to begin offering the service.

Current Broadband is available only in the Cincinnati area. But the company says that roughly 1.5 million Cinergy customers in Ohio, Indiana, and Kentucky can later choose among three options: a 1-megabit-per-second connection for \$30 per month, 2



mbps for \$35, and 3 mbps for \$40. Cable and DSL services cost \$30 to \$50 for speeds usually well below 1.5 mbps.

I tried out BPL at a house in Maryland where Current piloted the service. Once a power company installs BPL equip-

ment on electrical boxes or poles, customers simply plug their power-line modem into any electrical outlet (Current provides the first modem for free). The modem connects to your PC via USB, ethernet, or sometimes Wi-Fi. In the controlled environment of the pilot site, the BPL connection was fast, but real-world performance may vary.

Current's BPL service includes five e-mail addresses, 15MB of e-mail storage, and a personal Web site. It offers the same high-speed connection both up- and downstream.

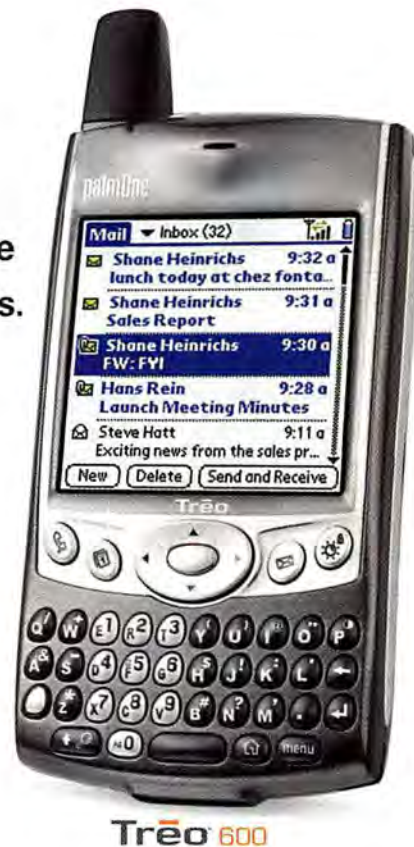
Cable and DSL services typically limit upload speeds to a fraction of download speed.

BPL service makes sense for people who don't already have broadband or who want two-way speeds and slightly lower prices. But it may take years for BPL to reach most people—if it ever reaches them at all.

Another hurdle: BPL may interfere with radio signals. The Federal Communications Commission is considering rules to forestall such problems, but those rules won't be finalized for months.

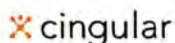
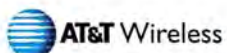
—Brad Grimes

**Suddenly the idea of email on a cell phone
seems obvious.**



Treo 600

Push one button on the TreoSM 600 smartphone from palmOne and it happens. Suddenly you're on email* – sending, replying, communicating. All with an integrated, easy to use QWERTY keyboard. No complex key punching or endless text scrolling. No booting up or waiting for applications to launch. Just updated email, ready when you are, right out of the box*. The Treo 600 is also a full-featured mobile phone, a Palm Powered[™] organizer and a digital camera. It lets you text message and browse the Web*. And yes, it really is small enough to slip in your pocket. Learn more at www.palmOne.com or visit your local service provider. Finally, a smartphone that really is smart.



*Wireless service plan required. Email and web require data services and ISP, and additional charges may apply. Wireless coverage may not be available in all areas. Screen image simulated. ©2004 palmOne, Inc. All rights reserved. palmOne, Treo, and Palm Powered are among the trademarks or registered trademarks owned by or licensed to palmOne, Inc. All other brand and product names are or may be trademarks of, and are used to identify products or services of, their respective owners.

FUTURE TECH

Bye-Bye Batteries?

A NOTEBOOK that can run for 10 hours—or longer—before it needs rejuicing? That's the promise of a new battery technology called direct methanol fuel cells. A potential successor to the rechargeable and disposable batteries that power many of today's mobile digital devices, DMFCs generate power by mixing methanol with air and water.

One catch: Most companies are still figuring out how to maximize the power DMFCs provide. Inside the fuel cell, water and methanol must be separated from the catalyst by a membrane. The higher the ratio of methanol to water is,

the more powerful the DMFC (and the smaller it becomes).

Also undecided: whether to make the new DMFCs disposable or rechargeable.



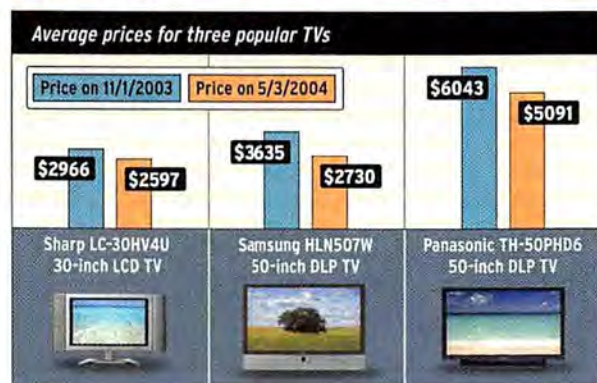
Manufacturer Samsung recently displayed a DMFC prototype for notebooks. NEC is also working on one for portable

PCs, and Hitachi has plans to sell one for powering PDAs. But don't ditch your existing batteries just yet: Though NEC says it expects to ship its product by year's end, most companies are targeting 2005—and it may be years before the new DMFC technology becomes widespread.

—Liane Cassavoy

PRICE CHECK

Plasma Prices Plummet



MAYBE NOW YOU CAN talk your spouse into a big plasma TV. From November to May, overall prices for plasma fell 21 percent, according to PC World partner PriceGrabber.com. Meanwhile, big-screen rear-projection TV (RPTV) prices dropped 12 percent, and LCD-TV prices fell about 7 percent. We looked at popular models in all three categories (see above; all data from PriceGrabber.com), and found that most closely followed the pricing patterns of their group.

—Ramon McLeod

THREE MINUTES

Godfather of the Spreadsheet



Twenty-five years after co-inventing the electronic spreadsheet, first marketed as VisiCalc, Dan Bricklin talks about the dawn of personal computing and the enduring role of his brainchild.

What's it like looking back at VisiCalc?

Those were the days when we believed in the personal use of computing, and society hadn't accepted it yet. We were evangelizing it. We believed in something that did come about. It's nice that we're still remembering it 25 years later. One year later, they weren't remembering it. The sales didn't grow the first year.

Early stories about VisiCalc had a hard time describing it.

Until you're actually immersed in a certain technology and using it and seeing how the public uses it, you don't necessarily understand it. Some people don't understand why instant messaging has taken off so much among certain parts of the population. That was true for the spreadsheet, which seems so obvious now.

Plus you had to buy a computer to use it. VisiCalc was a \$5000 purchase, if you included a good printer. But for many people it paid for itself in the first year, or in the first month.

Do you get a kick from seeing spreadsheets in use?

I love it. I still get letters. I responded today to a letter from somebody saying, "Thank you for putting food on my table."

What do you use?

I use Excel if I have Office on the machine, otherwise Works. I don't need that much of a spreadsheet. But at least once a year, I use it for something, and I'm happy it's there. I have a feeling that if I hadn't invented it back then, I would have invented it now, because I need it. I've always viewed myself as a tool builder.

Earlier this year you left Interland, which had bought Trellix, your Web-authoring tool company. What's next?

I really missed writing code and having product out there. Plus, I like small business. So I'm back at Software Garden again.

I believe that the small software developer is an important part of our society. A lot of innovation comes from there.

(Go to find.pcworld.com/42544 for a longer version of this interview, and to find.pcworld.com/42480 for VisiCalc history.)

—Eric Bender ■

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

SONY

Sony VAIO® Built to Sony
specifications. And yours.



Sony VAIO® TR with XBRITE™ LCD Display

Choose from a line of notebooks and desktops that offers the same results, quality and dependability you've come to expect from Sony.® With the versatile range of Sony VAIO® PCs, it's easy to find the power and multimedia capabilities you need. And since every Sony VAIO® PC is designed and built to work with other Sony products and accessories, your new VAIO® PC will feel right at home.

Sony VAIO® TR Series Notebooks feature Intel® Centrino™ Mobile Technology.



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Sony VAIO® Notebook PCs with Intel® Processors. Whatever you set your sights on, you can get it done and do it better with a Sony VAIO® Notebook PC. With build-to-order versatility, wireless capability, interactivity and mobility, now it doesn't matter where you are, thanks to Sony VAIO. Because there's no limit to how far you can go.

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



**Compact Design
TR Series**

PCG-TR3A

Featuring Intel® Centrino™ Mobile Technology

- Ultra-low-voltage Intel® Pentium® M Processor 1GHz¹
- Intel® PRO/Wireless Network Connection 802.11b/g²
- Intel® 855 Chipset
- Microsoft® Windows® XP Home Edition
- 40GB³ Hard Drive
- 10.6" widescreen XBRITE™ LCD display
- 512MB RAM
- Integrated CD-RW/DVD Combo Drive⁴
- Amazing battery life up to 5.5 hours⁵
- Integrated swivel camera
- Sleek design in a 3.11 lb. light⁶ and 1.44" thin body
- 1-Year Limited Warranty⁷

\$2,199⁹⁹ As low as **\$55** per month for qualified customers.¹⁰

UPGRADES

- Privacy Screen for \$79.99
- Sony VAIO® Standard Lithium Ion Battery⁸ for \$299.99

Add these features:

PCG-TR3AP2

- Microsoft® Windows® XP Professional
- 1GB (512MBx2) RAM



**Elegant Mobility
Z1 Series**

PCG-Z1WA

Featuring Intel® Centrino™ Mobile Technology

- Intel® Pentium® M Processor 1.70GHz¹
- Intel® PRO/Wireless Network Connection 802.11b/g²
- Intel® 855 Chipset
- Microsoft® Windows® XP Home Edition
- 60GB³ Hard Drive
- 14" SXGA+ TFT display
- 512MB RAM
- Integrated CD-RW/DVD Combo Drive⁴
- Amazing battery life up to 6.5 hours⁵
- Integrated Bluetooth® Wireless Technology⁶
- Stylish and sophisticated design in a 4.7 lb. light⁶ and 0.9-1.5" thin body
- 1-Year Limited Warranty⁷

\$100 rebate offer expires August 31, 2004. See www.sony.com for coupon terms and conditions.

\$2,199⁹⁹ After \$100 mail-in rebate. Rebate offer expires August 31, 2004. See www.sony.com for coupon terms and conditions.
\$2,099⁹⁹ As low as **\$55** per month for qualified customers.¹⁰

UPGRADES

- Sony VAIO® Port Replicator for \$199.99
- Sony VAIO® Double-Capacity Lithium Ion Battery⁸ for \$200

Add these features:

PCG-Z1WAMP2

- Microsoft® Windows® XP Professional
- 1GB (512MBx2) RAM
- Includes Double-Capacity Lithium Ion Battery for up to 12 hours⁵ of battery life



**Slim and Powerful
V505 Series**

Build-to-Order V505 Series

- Intel® Pentium® M Processor 1.5GHz¹
- Microsoft® Windows® XP Home Edition
- 40GB³ Hard Drive
- 12.1" XGA TFT display
- 256MB RAM
- Integrated CD-RW/DVD Combo Drive⁴
- 4.39 lb. light⁶ and 1.32-1.38" thin
- 1-Year Limited Warranty⁷

\$1,699⁹⁹ As low as **\$43** per month for qualified customers.¹⁰

UPGRADES

- Upgrade to a 60GB³ Hard Drive for \$50
- Integrated Wireless LAN 802.11b/g² for \$50

Add these features:

Build-to-Order V505 Series

- Intel® Pentium® M Processor 1.7GHz¹
- Microsoft® Windows® XP Professional
- Wireless-enabled 802.11b/g²
- 60GB³ Hard Drive
- 12.1" XGA TFT display
- 512MB (256MBx2) RAM
- DVD-RW Drive⁴



**Desktop Replacement
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Build-to-Order VGN-A170

- Intel® Pentium® M Processor 1.50GHz¹
- Microsoft® Windows® XP Professional
- 60GB³ Hard Drive
- NEW! 17" widescreen WUXGA (1920x1200) with XBRITE™ LCD technology
- NEW! ErgoBright™ technology with Smart Display sensor
- 512MB RAM
- CD-RW/DVD Combo Drive⁴
- ATI® Mobility™ RADEON™ 9700 Graphics Card
- 1-Year Limited Warranty⁷

\$2,229⁹⁹ As low as **\$56** per month for qualified customers.¹⁰

UPGRADES

- Upgrade to a 80GB³ Hard Drive for \$70
- Integrated Wireless LAN 802.11b/g² for \$50
- Turn Your VAIO® PC into a TV with an AV Entertainment Docking Station for \$350

Add these features:

Build-to-Order VGN-A170

- Microsoft® Windows® XP Professional
- 80GB³ Hard Drive (4200 rpm)
- 1GB RAM
- Integrated Wireless LAN 802.11b/g² with Bluetooth® Wireless Technology⁶
- AV entertainment dock for TV viewing

\$2,499⁹⁹ As low as **\$63** per month for qualified customers.¹⁰

UPGRADES

- Sony VAIO® Double-Capacity Lithium Ion Battery⁸ for \$349.99
- Sony VAIO® USB Adapter with Bluetooth® Wireless Technology⁶ for \$99.99
- Additional Sony VAIO® AC Adapter for \$99.99

\$2,699⁹⁹ As low as **\$68** per month for qualified customers.¹⁰

UPGRADES

- Additional Sony VAIO® AC Adapter for \$99.99
- Sony VAIO® 802.11g² Wireless LAN Router Access Point for \$199.99

\$2,849⁴⁹ As low as **\$72** per month for qualified customers.¹⁰

UPGRADES

- Upgrade to an 80GB³ Hard Drive for \$200
- Sony VAIO® Double-Capacity Lithium Ion Battery⁸ for \$200

\$3,169⁹⁹ As low as **\$80** per month for qualified customers.¹⁰

UPGRADES

- Upgrade to an 80GB³ Hard Drive (5400 rpm) for \$100
- Upgrade to a DVD+RW Drive⁴ for \$200

Financing and Warranty Information: Take advantage of these added choices and benefits that make owning a Sony so worthwhile. Sony Financing offers online application, low monthly payments and a quick credit decision. You can also apply for a revolving line of credit good for use at www.sonymstyle.com, www.imagestation.com and any Sony Style Real World retail store. For warranty and service information, plus FAQs, Sony Product Service and Support is the source.

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



Desktop Replacement

A Series

Build-to-Order VGN-A130

- Intel® Celeron® M Processor 1.40GHz (1MB L2 cache)
- Microsoft® Windows® XP Home Edition
- 40GB² Hard Drive
- 15" XGA TFT display
- 256MB DDR SDRAM
- CD-RW/DVD Combo Drive⁴
- 1-Year Limited Warranty¹

\$1,199⁹⁹ As low as **\$30** per month for qualified customers.¹⁰

UPGRADES

- Upgrade to a 60GB² Hard Drive for \$80
- Integrated Wireless LAN 802.11b/g¹¹ for \$50
- Upgrade to a DVD±RW Drive⁴ for \$200



Essential Computing

K Series

PCG-K15

- Intel® Pentium® 4 Processor 2.80GHz¹
- Microsoft® Windows® XP Home Edition
- 60GB² Hard Drive
- 15" XGA TFT with XBRITE™ technology
- 512MB RAM
- DVD±RW/CD-RW Drive⁴
- 1-Year Limited Warranty¹

\$1,699⁹⁹ As low as **\$43** per month for qualified customers.¹⁰

UPGRADES

- Sony VAIO® Standard Lithium Ion Battery⁵ for \$199.99
- Sony VAIO® USB Adapter with Bluetooth® Wireless Technology⁶ for \$99.99

Add these features:

Build-to-Order VGN-A130

- 15" SXGA+ with XBRITE™ technology
- Microsoft® Windows® XP Professional
- 60GB² Hard Drive
- 512MB (512MBx1) RAM
- DVD±RW Drive⁴

\$1,879⁹⁹ As low as **\$47** per month for qualified customers.¹⁰

UPGRADES

- Upgrade to an 80GB² Hard Drive for \$90
- Sony VAIO® Standard Lithium Ion Battery⁵ for \$249.99
- Turn Your VAIO® PC into a TV with an AV Entertainment Docking Station for \$350

Add these features:

PCG-K17

- Mobile Intel® Pentium® 4 Processor 3.06GHz¹
- Microsoft® Windows® XP Home Edition
- 80GB² Hard Drive
- DVD±RW/CD-RW Drive⁴
- Exclusive Click to DVD™ software for easy DVD creation

\$1,899⁹⁹ As low as **\$48** per month for qualified customers.¹⁰

UPGRADES

- Sony VAIO® AC Adapter for \$99
- Sony VAIO® Standard Lithium Ion Battery⁵ for \$199.99
- Compact and Lightweight Portable 60GB² External Hard Drive for \$349

Freedom Is Everywhere

With Sony VAIO® notebook PCs and these simple and elegant devices, you can stay connected and organized while on the go. Multiple wireless technology support—802.11a/b/g and Bluetooth®—means that you can exchange more information with more compatible devices in more places, for unmatched freedom.



MSX-512 Memory Stick PRO™ Media

- 512MB of storage (460MB usable)
- Designed for newer high-end devices with theoretical file transfer speeds up to 160Mbps

\$219⁹⁹

Sony's Memory Stick® media is designed to easily store, transfer and share photos, music, presentations and more.



PCGA-BA1/A VAIO® USB Bluetooth® Adapter⁷

- Includes BlueSpace NE utility software and Network Smart Capture software

\$99⁹⁹

Connect wirelessly to other Bluetooth®-enabled devices such as PDAs, cell phones, keyboards and more. Fewer cables on your desk means more freedom and convenience.



PCWA-AR800 802.11a/b/g Wireless LAN Router Access Point

- Up to 16 users can access one access point
- Compatible with 802.11a, 802.11b, and 802.11g

\$349⁹⁹ After \$50 mail-in rebate. Rebate offer expires June 30, 2004.¹² See www.sonystyle.com for complete terms and conditions.

\$299⁹⁹ As low as **\$9** per month for qualified customers.¹⁰

Stylish and compact design with the ability to access the Internet with a wireless signal.¹³



PEG-TJ37 CLIE® Handheld

- Integrated Wireless LAN (802.11b)¹⁴
- 310,000 pixel digital camera with 2X digital zoom
- Built-in MP3 audio player¹⁵

\$299⁹⁹ As low as **\$8** per month for qualified customers.¹⁰

Sony CLIE® handhelds provide everything you need to stay organized, entertained and connected.



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Sony VAIO® Desktop PCs with Intel® Processors. Whether you're entertaining a new friend or thinking about your entertainment options, a Sony VAIO® desktop can make life easy. Enjoy a movie on DVD, listen to music on MP3, or watch TV. Even download your favorite TV shows. Thanks to Sony, showtime is whenever you want it to be.

Sony recommends Microsoft® Windows® XP Media Center Edition.



Performance
RZ Series



Affordability
RS Series

Build-to-Order PCV-RZ50C

- Intel® Pentium® 4 Processor with HT Technology at 2.60GHz*
- Microsoft® Windows® XP Home Edition
- 80GB* Hard Drive (7200 rpm)
- 512MB DDR at 400MHz
- DVD+RW Drive†
- 128MB nVIDIA® GeForce™ FX5200 Graphics Card
- Sony VAIO® Creation Suite PLUS software package
- Stereo speaker system with subwoofer and Sound Blaster® Audigy™ Sound Card
- Multimedia Card Reader
- 1-Year Limited Warranty†

\$1,217⁴⁹ As low as **\$31** per month for qualified customers.*

UPGRADES

- Upgrade to a 160GB* Hard Drive for \$50
- 3-Year Limited Warranty† for \$199
- Add the SDM-HS73/L 17" Flat Panel Display for \$499.99

Add these features:

Build-to-Order PCV-RZ50CG

- Microsoft® Windows® XP Media Center Edition
- Creative® Inspire™ T5400 speaker system with Sound Blaster® Audigy™ Sound Card
- 128MB ATI® RADEON™ 9600XT Graphics Card
- 120GB* Hard Drive (7200 rpm)

\$1,446⁴⁹ As low as **\$37** per month for qualified customers.*

UPGRADES

- Upgrade to 1GB DDR for \$90
- 3-Year Limited Warranty† for \$199
- Add the SDM-HS73/L 17" Flat Panel Display for \$499.99

PCV-RZ54G

- Intel® Pentium® 4 Processor with HT Technology at 3.20GHz*
- Microsoft® Windows® XP Media Center Edition
- 200GB* Hard Drive (7200 rpm)
- 512MB DDR at 400MHz
- DVD+RW and DVD-ROM Drives†
- 128MB nVIDIA® GeForce™ FX5200 Graphics Card
- Stereo speaker system with subwoofer and Sound Blaster® Audigy™ Sound Card
- Multimedia Card Reader
- Convert analog video to DVD with the Personal Video Recorder powered by Giga Pocket® Recorder
- 1-Year Limited Warranty†

\$1,699⁹⁹ After \$100 mail-in rebate. Rebate offer expires June 30, 2004. See www.sonymusic.com for coupon terms and conditions.
\$1,599⁹⁹ As low as **\$43** per month for qualified customers.*

UPGRADES

- Add the SDM-HS93/L 19" Flat Panel Display for \$699.99

Add these features:

PCV-RZ56G

- Intel® Pentium® 4 Processor with HT Technology at 3.40GHz*
- Microsoft® Windows® XP Media Center Edition
- 250GB* Hard Drive (7200 rpm)
- 1GB DDR at 400MHz
- DVD+RW and CD-RW Drives†
- 128MB ATI® RADEON™ 9800XT Graphics Card

\$2,099⁹⁹ As low as **\$53** per month for qualified customers.*

UPGRADES

- Add the SDM-HS93/L 19" Flat Panel Display for \$699.99

Build-to-Order PCV-RS500C

- Intel® Celeron® Processor at 2.4GHz*
- Microsoft® Windows® XP Home Edition
- 80GB* Hard Drive (7200 rpm)
- 256MB DDR at 333MHz
- DVD-ROM and CD-RW Drives†
- 128MB ATI® RADEON™ 9200 Graphics Card
- Stereo speakers
- Sony VAIO® Creation Suite Standard software package
- 1-Year Limited Warranty†

\$699⁹⁹ As low as **\$18** per month for qualified customers.*

UPGRADES

- Upgrade to a 160GB* Hard Drive for \$50
- 3-Year Limited Warranty† for \$199
- Add the SDM-HS73/L 17" Flat Panel Display for \$499.99

Add these features:

Build-to-Order PCV-RS500CG

- Intel® Pentium® 4 Processor with HT Technology at 2.80GHz*
- Microsoft® Windows® XP Home Edition
- 120GB* Hard Drive (7200 rpm)
- 512MB DDR at 400MHz
- DVD+RW and DVD-ROM Drives†
- Multimedia Card Reader
- Convert analog video to DVD with the Personal Video Recorder powered by Giga Pocket® Recorder

\$1,206⁴⁹ As low as **\$31** per month for qualified customers.*

UPGRADES

- Upgrade to 1GB DDR for \$90
- 3-Year Limited Warranty† for \$199
- Add the SDM-HS73/L 17" Flat Panel Display for \$499.99

PCV-RS620G

- Intel® Pentium® 4 Processor with HT Technology at 3EGHz* (1MB L2 cache)
- Microsoft® Windows® XP Home Edition
- 160GB* Hard Drive (7200 rpm)
- 512MB DDR at 400MHz
- DVD+RW and DVD-ROM Drives†
- 128MB ATI® RADEON™ 9200 Graphics Card
- Multimedia Card Reader
- Stereo speakers
- Sony VAIO® Creation Suite Standard software package
- Convert VHS to DVD with Giga Pocket® Personal Video Recorder
- 1-Year Limited Warranty†

\$1,299⁹⁹ After \$100 mail-in rebate. Rebate offer expires August 31, 2004. See www.sonymusic.com for coupon terms and conditions.
\$1,199⁹⁹ As low as **\$33** per month for qualified customers.*

UPGRADES

- Add the SDM-HS73P/B 17" Flat Panel Display for \$609.99 \$559.99 (after \$50 mail-in rebate)
- Rebate offer expires July 3, 2004.

See www.sonymusic.com for coupon terms and conditions.

Add these features:

PCV-RS630G

- Intel® Pentium® 4 Processor with HT Technology at 3.2EGHz*
- Microsoft® Windows® XP Home Edition
- 250GB* Hard Drive (7200 rpm)

\$1,449⁹⁹ After \$100 mail-in rebate. Rebate offer expires August 31, 2004. See www.sonymusic.com for coupon terms and conditions.
\$1,349⁹⁹ As low as **\$37** per month for qualified customers.*

UPGRADES

- Add the SDM-HS73/L 17" Flat Panel Display for \$499.99

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apply. 8. Memory Stick PRO and Memory Stick PRO Duo media features vary and are dependent on the host hardware. 10. On your Sony Financial Services Card, subject to credit approval. A minimum purchase of \$299.99 is required. This is a same-as-cash promotion. If balance on these purchases is paid in full before the expiration of the promotional period indicated on your billing statement and your Account is kept current, accrued Finance Charges will not be imposed on these purchases. If balance on these purchases is not paid in full, Finance Charges will be assessed from the purchase date at the Standard Rate APR of 21.99%. For Accounts not kept current, the Default Rate of 24.99% APR will be applied to all balances on your Account. Minimum monthly payments are required. The minimum monthly payment presented is based on the product and purchase price shown. The minimum monthly payment is 2.5% of the "New Balance" or \$10, whichever is greater. The number of months you will pay and the amount of your total minimum monthly payment will depend on additional purchases and your Account balances. Minimum Finance Charge: \$2.00. Certain rules apply to the allocation of payments and Finance Charges on your promotional purchase if you make more than one purchase on your Sony Card. Call 1-888-367-4319 or review your cardholder agreement for information. 16. Requires compatible 802.11b, 802.11g or 802.11a wireless access point, some of which may require a fee and/or 6P. 17. Requires compatible 802.11b wireless access point, some of which



Sony recommends Microsoft® Windows® XP.

Entertaining Combinations

Surround yourself with more entertaining possibilities. Sony VAIO® computers are designed to look beautiful, and engineered to work beautifully with other Sony products—creating a network of compatible devices that makes it easy for you to enjoy your music, photos and movies.



**All-in-One
V Series**

PCV-V200G

- Intel® Pentium® 4 Processor 2.80GHz¹
- Microsoft® Windows® XP Home Edition
- 120GB² Hard Drive
- 512MB DDR at 333MHz
- DVD-RW Drive³
- 15" LCD display
- Wireless keyboard, wireless mouse and remote control
- Built-in stereo speakers
- Convert VHS to DVD with Giga Pocket® Personal Video Recorder
- FREE wireless-b LAN PC card⁴ when purchased from www.sonymstyle.com. While supplies last.⁵
- 1-Year Limited Warranty⁶

\$1,699⁹⁹ As low as **\$43** per month for qualified customers.¹⁰



**All-in-One
W Series**

PCV-W600G

- Intel® Pentium® 4 Processor 2.80GHz¹
- Microsoft® Windows® XP Home Edition
- 160GB² Hard Drive (7200 rpm)
- 512MB DDR at 333MHz
- DVD-RW Drive³
- Built-in 17.5" widescreen LCD display
- Memory Stick® Media Slot
- Built-in stereo speakers featuring SRS™ WOW™ technology
- Convert VHS to DVD with Giga Pocket® Personal Video Recorder
- FREE wireless-b LAN PC card⁴ when purchased from www.sonymstyle.com. While supplies last.⁵
- 1-Year Limited Warranty⁶

\$1,899⁹⁹ **New lower price** As low as **\$48** per month for qualified customers.¹⁰



**Flat Panel LCD
Display**

SDM-S204/B

- 20.1" UXGA 1600x1200 high-resolution LCD panel
- Super-thin bezel design
- ErgoBright™ technology for optimal image performance
- Digital and analog inputs

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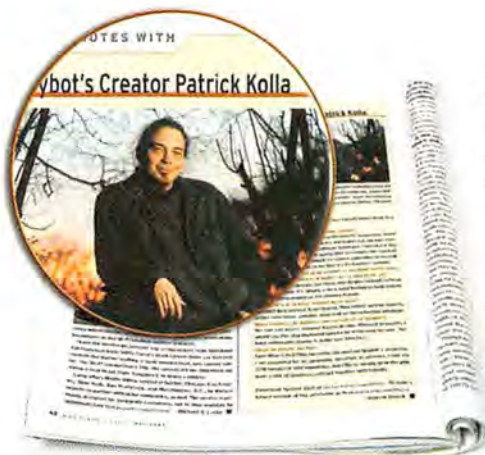
LETTERS

LETTERS@PCWORLD.COM

HDTV: WATCH THE PIXEL FACTOR

HOW TO CLEAN A DIGITAL LENS

A COMPACTFLASH COMPUTER?



THREE CHEERS FOR SPYBOT

YOUR INTERVIEW with Spybot Search & Destroy's creator, Patrick Kolla (*News and Trends*, May), reminded me that I had not made a donation. I immediately logged on and transferred \$20 by PayPal.

I have been using this very valuable anti-spyware program for some time. People like Patrick Kolla should be held up as heroes in our online universe. It is a war out there, and these individuals sure make it a lot easier to survive.

Egil Lomeland, Alberta, Canada

MR. KOLLA SHOULD be given the Medal of Freedom for allowing all of us Internet surfers to be free from spyware. Every user should take the time to visit his site and make a \$10 contribution.

Beaz Junk, via the Internet

HOLDING OFF ON FIREFOX

TOM SPRING'S "Firefox Outtrots IE" (*News and Trends*, May) gives a good brief evaluation of this Mozilla-based browser. Firefox seems to have one glaring fault that has afflicted all such browsers, however: a serious leak that drains system resources. A fix for this problem is posted at various troubleshooting sites, so why is it still in Firefox?

Joe McCormick, Columbia, Tennessee

YOUR REVIEW gushed a bit for a product that's not yet in version 1 and that has very little in the way of user preferences or controls for the browsing process.

Will Fastie, Baltimore

PENCIL-AND-PAPER POWER

STEPHEN MANES'S May *Full Disclosure* column on "The Ultimate Personal Technology: Paper" reminded me of the old story about NASA's spending untold sums to develop a pen that could write in the weightlessness of space.

The Russian solution: Use a pencil.

Jim Wirth, Pittsburgh

HEY, WE WENT TO the moon during a time when the only desktop computer was a slide rule. It still impresses me what a pencil and paper can do.

Gary Magliari, via the Internet

FAX IS EXTRA

JEFF BERTOLUCCI'S informative article "Internet Phones: Clear Winners" [May] omits one important point. Some services charge extra for fax sending and receiving on the same line that you use for your voice calls. If you have a dedicated fax line, you may incur an additional charge.

Rich Marotta, New York

LETTER OF THE MONTH

Water, Water Everywhere...

IN THE ONLINE article "Smaller Chips? Just Add Water" [find.pcworld.com/42478], Tom Krazit refers to the breakthrough ingredient as "one of the most commonly available substances on the planet." While H₂O is certainly commonly available, what's not commonly available is water filtered to the purity at which chip makers need it. The water is generally

HELP FOR TECH DEPENDENTS

THE ADVICE IN your May issue concerning tech dependents [*Consumer Watch*] is quite useful. I'm thinking of buying a couple of copies to "accidentally" leave at the homes of my own tech dependents.

Here's an additional tip: Downloading, installing, and explaining maintenance software is simple enough. However, it can be a time-consuming and irritating experience for the user to locate all the necessary programs. I prefer to create a folder on the desktop containing a step-by-step text file, links to various utilities, and (if needed) text files detailing the software's use. I name the folder something like "Tech Support" or "FixPC" so that it will be easy to find.

Michael Hitson, via the Internet

BUT IS IT TRUE HDTV?

IN THE MAY issue's "HDTV Answer Guide" [*Next Gear*], you talk about high-definition TV and enhanced-definition TV. But I notice that very few sets listed today as HDTV-ready can display all of the 2.07 million pixels broadcast in a 1080i mode in the 16:9 picture format, and most that do cost more than \$10,000. Indeed, most displays—CRT, plasma, ►

used to clean the "shavings" from the 45-nanometer "valleys." Every bottle of water sold on the street has impurities larger than 45 nanometers.

The H₂O used in chip making is so pure that if you drank it, it would corrode the iron in your blood and kill you. That kind of water is far from common.

Paul Threatt, via the Internet



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LETTERS

LCD, LCOS, DLP, or whatever—still have a ways to go. Most makers don't even list the pixel capability. But that does not stop them from labeling a set an HDTV.

Bob Corzine, Ridgecrest, California

CLEANING A DIGITAL LENS

THE DIGITAL CAMERA section of May's "PC Problems? Fix 'Em Yourself" says, "To clear debris, digital single-lens reflex users can remove the lens and spray a shot of compressed air (sold in cans) into the space behind it."

This isn't true, as residue left behind from the compressed air (aerosol propellants) can severely damage CMOS and CCD sensors. Use a "hurricane blower" or other air source, not compressed. Also, don't use a brush with a blower—the brush may scratch the sensor's glass.

Harrison Steg, via the Internet

A GLIMPSE OF THE FUTURE?

I BELIEVE THAT the next generation of computers will be completely solid-state, with the hard drive being replaced by something like CompactFlash technology and the operating system living in memory. Applications and data will reside on removable CompactFlash-type cards so that the user will be able to take them to any PC, plug them in, and start working.

The item on the 8GB CompactFlash card in May's *Plugged In* makes me realize how close this concept is to reality.

Edward Hawksley, via the Internet

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

CORRECTIONS

AFTER OUR JUNE issue went to press, Logitech announced that its Cordless Click Plus Optical Mouse, one of our Editor's Picks in the *Top 100 Spotlight*, would not be available for purchase until late July.

In the sidebar on page 94 of May's "Which PC Do You Need?" we should have said that CHI Centers is in Silver Spring, Maryland.

PC World regrets the errors.



Jeannie celebrates as she Elevates to new heights.



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STEVE FOX

Privacy Fears Dog Google's Free E-Mail

Plus: Fake spyware removers, phones that ID songs, and home robots.

1 Google Is Watching

The Buzz: Everyone's favorite search giant recently launched a beta version of Gmail, a beautifully designed, free e-mail service that offers a staggering 1GB of storage (see *News and Trends*, page 34). The catch? Google reserves the right to scan your e-mail and use the info to send targeted text ads to your browser (imagine



writing a secret note to your great-aunt Victoria and being assaulted by ads for women's intimate apparel). Privacy advocates are up in arms, and at press time a California state senator had introduced a bill to prohibit the service.

Bottom Line: Sure, it's invasive and even borderline creepy, but Google has been

up-front about its practices. Besides, no one is forced to use Gmail. If you don't like it, vote against it with your browser.

2 Calling the Tune

The Buzz: Ever listened to a song but couldn't remember its title or who recorded it? If you're an AT&T Wireless customer, you can press #ID (#43), hold your cell phone up to the music for about 15 seconds, and receive a text message with the relevant data. The service costs 99 cents a pop (plus standard airtime charges), but there's no fee if you stump its database of 1 million tunes.

Bottom Line: In my highly unscientific smattering of tests, the service nailed Warren Zevon's "Werewolves of London" and Duke Ellington's "Cotton Tail," but it struck out on Jim Nabors's "Back Home Again in Indiana." Hey, can you blame it?

3 Anti-Spy vs. Spy?

The Buzz: First there was spyware—utilities that surreptitiously track your online activities, gathering data about you and passing it on to advertisers. To fight back, privacy advocates came up with spyware removers that eradicate the pesky buggers. Most recently, users are being plagued by an infestation of bogus anti-

spyware apps, which claim to remove spyware but in reality embed the nasty stuff in your computer. Links to these programs show up on download sites or in pop-up ads (a clue to their reliability). Unsuspecting users are suckered by dire warnings that their system could be attacked by spyware. Turns out, the danger is real: Click the Download button, and you can kiss your privacy good-bye.

Bottom Line: Network security guru Steve Gibson has a simple solution: Stick with top-rated anti-spyware utilities Ad-aware (find.pcworld.com/38240) and Spybot Search & Destroy (find.pcworld.com/41582), which are free and safe.



4 Bring On the Bots

The Buzz: With commercially available domestic robots finally entering the mainstream, the timing of the July movie *I, Robot* is starting to make a lot of sense. The \$200 vacuum-cleaning Roomba from iRobot (no relation) is now cleaning up in the market; Honda's humanoid ASIMO (which climbs stairs, dances, and even balances on one leg) has been touring the country; and Toyota has a slate of domestic helper robots due out next year.

Bottom Line: Impressive? Absolutely. Practical? We'll see. We're still in the early stages of domestic robot evolution. C3PO doesn't have real competitors just yet. ■

NAGGING QUESTION

What Does 'MP3' Stand For?

MUSIC PLAYER, VERSION 3? Melodic patterns for threesomes? Musical pandemonium for three-year-olds? Nope. The commonly used music coding format MP3 actually stands for "MPEG-1 audio level 3". MPEG refers to the Motion Picture Experts



Group, the committee that defined the MPEG video compression standard. And yes, there is a level 1 and a level 2, but the level 3 algorithm turned out to be tops for musical fidelity. I have to wonder: Could they have made music sound any less fun? Probably not.

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

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CONSUMER WATCH

ANNE KANDRA

SPAM PROTECTION OR CENSORSHIP?

PRIVACY WATCH: PERILS OF FORGED E-MAIL

ON YOUR SIDE: SPY SCANNER SUSPICIONS

When ISPs Think They Know Best

Is your Internet provider protecting you from spam—or censoring your inbox?



IT WAS SUPPOSED to be all in good fun. When Jackie Pettycrew came across a video online that made her laugh out loud, she did what many of us would do: She e-mailed the URL to some friends.

But a few hours later, Pettycrew wasn't laughing. And neither were the half dozen or so of her friends who used AOL. They never saw her e-mail because the online giant's servers bounced her message at the gate. The reason? According to an automatically generated e-mail that AOL sent to Pettycrew, "the URL contained in your email to AOL members has

generated a high volume of complaints."

Pettycrew was both mystified and incensed. "[The video file] was a European car ad," she recalls. In the ad, a shiny new auto, in the sights of a pigeon, raises its hood to smack the bird before it can leave a calling card. "There was nothing vulgar or obscene about it. Since when has AOL assumed a censorship role?"

It's a question that more and more e-mail users may be asking as ISPs call in heavy artillery in the war against spammers. AOL has adopted some particularly aggressive tactics, and users like Petty-

crew whose messages have been apprehended by server-level filters—as well as recipients like Pettycrew's friends who find that some of their innocent incoming messages are being snagged—are starting to wonder if the online giant has gone from security guard to thought police.

THE PUBLIC'S WILL

NOT SURPRISINGLY, what Pettycrew calls censorship, AOL considers good customer service. According to AOL spokesperson Nicholas Graham, the service's mail filters are based in part on member complaints. "When the number of complaints about a given message or link reaches a particular point relative to the number of times that message is sent," he explains, "the filters kick in and the message is blocked. Clearly, in this case we were responding to a large number of members who felt that [the video] was objectionable." (Note: PC World provides some content for AOL.)

Spam is often offensive, but not everything that's offensive is spam. So when an ISP blocks e-mail based on its content, isn't that tantamount to censorship? "Balderdash!" responds Graham. "If anything, it's the opposite [of censorship]. We're responding to feedback from our customers, not our own positions on the issues. We have to put control in the hands of our members because that's who the service is for."

Clearly, it's good for consumers that ISPs are tightening up their spam filters and trying new techniques—many of them highly effective—to weed out junk mail. But if protection against spam means that you may not get an online ▶

coupon you requested or that a racy joke you sent will be squashed, it may be time to consider whether your ISP's filtering methods give you enough control.

There's a very good reason why ISPs are turning to the kind of "let the tribe decide" approach to screening spam that Graham describes: It works. In our round-up last month of stand-alone spam filters (find.pcworld.com/42508), we discovered that the most effective filters incorporated some kind of feedback from users to identify spam. It's one of the techniques employed by Brightmail, a large-scale spam filter used by many major ISPs, including EarthLink, MSN, and Adelphia.

The feedback method is helpful be-

cause the definition of spam is squishy—a message that you delete I may think is a worthwhile offer. By polling users, spam guardians can identify the messages that the vast majority of users consider spam.

I spoke with representatives of a number of ISPs, and all of them bragged that "false positives"—legitimate e-mail messages that their filters mistakenly identify as spam—are extremely rare.

AOL's Graham says the company does not maintain specific numbers on false positives. "But," he says, "the 2 billion e-mails that we detect [as spam] on a daily basis are almost all spam, and almost all of it is based on what our members have reported to us as spam. Many people want

to claim that 'good' e-mail is deleted by AOL, but they don't understand that good mail to them is many times deemed 'bad mail' by our members in droves."

But what if you and your friends disagree with AOL's vox populi? If Pettycrew's friends would have gotten a laugh out of the pigeon video, should it matter that lots of other AOL users found it offensive? AOL's Graham points out, "There's no such thing as a 'universal joke' that's acceptable to everyone." But in our pursuit of a spam-free inbox, will we find ourselves limited to communication that's acceptable to everyone?

The philosophical questions that underlie spam filtering merit continued debate.

PRIVACY WATCH

Why Your Friends Believe You're Selling Viagra

LAWRENCE KESTENBAUM is a good guy. So is Norman De Forest. So why is Kestenbaum's inbox choked with angry e-mail messages accusing him of sending spam and distributing viruses? And why is De Forest being reported to his ISP as a spammer?

Kestenbaum and De Forest have gotten lousy reputations because of the infuriating ability of spammers and viruses to forge names in the From field of tainted e-mail.

Lots of savvy PC users realize that messages often lie about who sent them. Viruses will harvest e-mail addresses from the hard drive of computers they infect, and then choose one of those addresses to enter as the sender of their automatically generated virus spawn. Spammers use similar tactics.

But many people don't know about address forging and consider the person named in the From box responsible for their inbox misery. And some software sends warnings to users whose systems don't have a virus but whose addresses appear in infected messages.

The result, if you're unfortunate enough to have your address forged: Family and friends leave angry messages on your answering machine. Total strangers send you e-mail messages telling you what a bad person you are. On top of that, you may receive dozens of bounce messages from receiving mail servers telling you that "your" message couldn't be delivered.

"Starting in early January, some [spammer] started using my e-mail address in the From and Reply-to lines of a large quantity of bulk messages," writes Kestenbaum, an Ann Arbor, Michigan, lawyer and Webmaster of Politicalgraveyard.com. "As a result, I received

thousands of bounce and rejection notices from all over the world."

"On top of this came the MyDoom outbreak," which led to his receiving thousands more bounce messages, Kestenbaum says.

De Forest, from Halifax, Nova Scotia, says that his ISP's abuse desk received multiple complaints about him when someone forged his e-mail address in the sender's line of a spam message.



It's virtually impossible to keep viruses or spammers from forging your e-mail address. And there's no perfect way to avoid the nasty consequences. Your spam filter may be able to exclude bounce messages. Also, you can educate friends who complain about a message that they thought had come from you.

But the software guardians of mail servers have to help too. Earlier versions of Symantec's corporate anti-virus tool alerted users if it intercepted a virus-ridden message with their address in the From field. And McAfee's SpamKiller can send com-

plaints to your ISP if your address appears in a spam message. These were once useful features. But today, with most spam and viruses carrying a bogus From address, all these messages do is litter innocent people's inboxes and get them in trouble with their ISPs. Newer versions of these apps have these features disabled by default, but why should the features remain at all?

"If your [antivirus program] is smart enough to recognize MyDoom, why is it too dumb to know that the From line has nothing to do with the origin of the item?" asks Kestenbaum.

—Andrew Brandt

But from a practical perspective, you want to ensure that the e-mail you send doesn't get diverted into some digital Dumpster. Here are a couple of tips:

- Check your subject line. Obviously, any mention of debt consolidation, enlargement devices, or rich Nigerian relatives is a sitting duck for any filter worth its code. Other red flags: headers that use ALL CAPITAL LETTERS or vulgar language.
- Don't send file attachments unless they are absolutely necessary—they're filter magnets. So next time you decide to forward a funny, paste the text or image into the body of the message instead of attaching it as a separate document.

If you don't receive an e-mail message that you know a friend or company sent your way, check with your ISP. If you feel that the company's antispam efforts have crossed the line into censorship, let it know. And if the company's answer isn't acceptable, start looking around for a new ISP that will take your concerns more

seriously. There's no reason to pay for spam control that's out of control. ■

Anne Kandra is a contributing editor and Grace Aquino and Andrew Brandt are senior associate editors for PC World. You can send

them e-mail at consumerwatch@pcworld.com. If you would like to read previously published Consumer Watch, Privacy Watch, or On Your Side columns, visit find.pcworld.com/31703, find.pcworld.com/31706, or find.pcworld.com/31709, respectively.

ON YOUR SIDE

Spyware Scanner Raises Doubts



ENIGMA SOFTWARE GROUP'S free spyware-scanning service scared me by finding many spyware programs on my PC. It claimed that the company's paid software, SpyHunter, could delete such sneaky programs from my system. As I was purchasing the product my browser indicated that the site was unsecured. Should a company that purports to protect me from online thievery be using an unsecured server? Can I trust SpyHunter to do what it claims?

Richard Lanke, Honolulu

On Your Side responds: As we went to press, Enigma Software had not replied to our repeated inquiries. However, we asked security expert and PC World author Mary Landesman to test the SpyHunter software. She found the product's scanning extremely slow. In addition, the application failed to detect a number of common spyware programs. As for the spyware it managed to detect, it did an incomplete job removing the offending program and the Registry changes associated with it.

—Grace Aquino

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The Best Web People Finders Are Free

You don't have to spend money to get reliable information about somebody.

YOU MAY HAVE been tempted at some time to try a fee-based people-finder service on the Web. My advice, based on the six I tried, is to keep your money in your pocket. You can find out just as much about almost anybody with only a browser and a Net connection.

In February I told you about some no-cost people-search Web sites (find.pcworld.com/41896). When I looked at some of their fee-based counterparts recently, I was appalled. It wasn't just that the goods they delivered were underwhelming. I was repulsed by the sleazy sales tactics of some of these rip-offs. And the topper is, the best of what they sell is available elsewhere for free.

For instance, Intelius (www.intelius.com) wanted to charge me \$10 for a report on political contributors in my neighborhood (free at find.pcworld.com/41928) and the same amount for an unclaimed-property report that's gratis at the National Association of Unclaimed Property Administrators' site (www.naupa.org). Intelius charges \$6 for a death record report, yet it couldn't find one for a close relative; I found the record myself, free, in—no kidding—RootsWeb.com's Social Security Death Index (find.pcworld.com/41930). Would you like a satellite photo of your home? Grab a view at find.pcworld.com/41932—or if you simply have money to burn, you can pay Intelius \$6, plus a buck to e-mail the report to you.

FINDERS LOSERS

I ENTERED MY father's name in the search field at MyFamily.com, and the resulting information was only partly correct; without spending a cent, I got the errorless results I needed on Google, including a free map to my parents' house.



If you want free access to many of the sites that I paid \$30 to see, hop over to find.pcworld.com/41934 and check out the list at Docusearch.com.

Web Detective (www.web-detective.com, \$30 for a "lifetime" membership) was by far the worst of the paid services I tried. The site makes you scroll through more than 18 screens full of links to commonplace sites. I counted 77 links to government sites, such as the FBI, CIA, and IRS. Web Detective even screws up the simplest people-search tools, making it difficult to find someone by name, phone number, address, business, and so on.

Net Detective (www.net-detective.com, \$29 for three years of unlimited use) was a little better, beginning with an easy-to-navigate menu that listed hundreds of links in ten categories. Some of these links saved time by bringing me right to the state and county sites I needed. Even so, I could have found any of those government resources on my own, and many of Net Detective's other resources are simply padding, such as the Internet Movie Database, Smoking Gun, Urban Legends Reference Pages, and Showbiz Search.

What really riles me is how some fee-based sites continue pitching for my pennies even after I have paid the price of admission. Take MyFamily.com (please!). After handing over \$30 for a one-year subscription, I searched, found the data about my father, and then got pushed to buy a \$20 detailed report about his neighbors. And unless I stop MyFamily.com, the service will automatically renew my subscription and bill my credit card—all for my own convenience, of course. Net Detective's search for detailed data on my father, meanwhile, was fast and accurate, but the service offered three other searches that took me to yet more fee-based sites.

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IF YOU'RE INTENT ON removing traces of yourself from the Internet, enter your name in every search engine you can find. Visit find.pcworld.com/41936 for Pandia Powersearch's list of engines. Some sites offer a way for you to get your name out of their database, often on their Terms of Service page. Visit find.pcworld.com/42126 to remove your listing from ClassMates.com, and go to www.infospace.com/wp to update or remove your listing from InfoSpace's White Pages.

You could edit your record and replace the data with bogus information (I'm now Sammy Gray on MaidenName.net, for example), but it's safest to contact the service via e-mail, phone, or snail mail and ask to have your data removed.

Now that's what I call an eye-catching example of addition by subtraction. ■

Contributing Editor Steve Bass is the author of PC Annoyances, published by O'Reilly. Contact him at homeoffice@pcworld.com.

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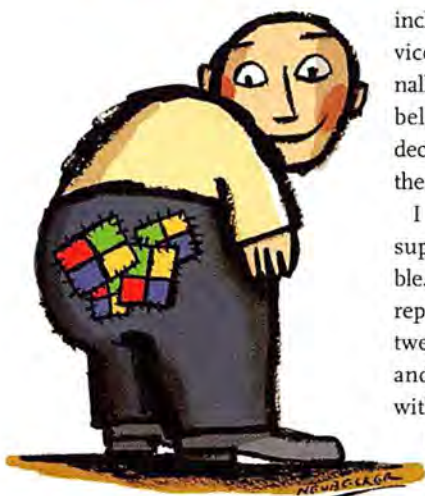


BUGS & FIXES

STUART J. JOHNSTON

Megapatch for Windows: Do Not Ignore

Two of the most serious attacks could happen right under your nose.



HERE'S ONE PATCH that you don't want to miss: Microsoft recently released a single security update that fixes 14 separate flaws. Six of these are rated "critical," and most of them occur in Windows XP, 2000, and NT 4.0, and in Windows Server 2003. For users of XP, this bundle of fixes will be

included in Windows XP Service Pack 2—whenever it finally shows up (see "In Brief," below right). But Microsoft decided that you should patch these bad boys right away.

I urge you to install this superpatch as soon as possible. Here's why: Last month, I reported that the lag time between the release of a patch and when crackers come up with code to exploit the hole

has shrunk dramatically (see find.pcworld.com/42274). Two of the critical

holes illustrate this trend. The recent Sasser worm, created in less than two weeks, employs one of the six critical holes to infect PCs. Users reported that their systems were rebooting unexpectedly after infection. The hole is in a part of Windows XP and 2000 called the Local Security Au-

thority Subsystem Service, or LSASS, which verifies who should be allowed to use your PC locally and, in some cases, remotely over the Internet (see find.pcworld.com/42430 for details). What makes Sasser and its variants so worrisome is that you don't have to do anything, such as click a link, to be infected. Merely failing to protect yourself in the first place puts you in harm's way.

Microsoft has also patched a weakness in its version of Secure Sockets Layer, or SSL—the main technology that is used to keep online transactions private. Crackers took less than a week to create exploitative code based on the patch. Again, you don't have to click anything to unleash the attack. In fact, you don't even have to be in the middle of an online transaction.

So far, only a small number of "break-ins" have occurred (see find.pcworld.com/42276). But it's only a matter of time before someone attaches the attack code to a worm.

Jump to find.pcworld.com/42278 to grab Microsoft's big patch. This is a case where the early bird just may be lucky enough *not* to get a worm.

However, as if Sasser and the other threats weren't bad enough, there's a problem with the big patch itself: Some Windows 2000 users have had trouble logging onto their ma-

chines after installing the update. Visit find.pcworld.com/42400 for a link to Microsoft's hot fix—and for specifics on when you should apply it. ■

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

IN BRIEF

Slip Happens

MICROSOFT has announced that it will not release Windows XP Service Pack 2 by the end of June after all. Because of testing issues, the release date has been moved back to July or maybe even later, the company says. Go to find.pcworld.com/42344 for Microsoft's brief explanation.

Nastier Worms

NEW TWISTS on the Netsky and Beagle worms scored 3 on Symantec's severity scale; most worms are rated at 1 or 2. Update your anti-virus definitions by using Symantec's LiveUpdate (find.pcworld.com/42346) or McAfee's VirusScan (find.pcworld.com/42348).

BUGGED?

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

OFFICE XP SERVICE PACK 3 NOW AVAILABLE

THE LATEST SERVICE PACK for Office XP (aka Office 2002) provides all the patches (security and otherwise) found in SP1 and SP2. To these, Service Pack 3 adds all updates after SP2 up to March 30, 2004. So if you've been slow to get earlier service packs, now's your chance to get up-to-date in one fell swoop.

SP3 includes a long list of hot fixes that eliminate a hodgepodge of minor, but sometimes maddening, quirks, such as items in the Outlook calendar that seem to duplicate themselves.

The update is available in two different sizes: big and humongous. You can use the 16MB version if you have your Office XP CDs handy. If you don't, you'll need the industrial-strength version that comes in at a hefty 60MB. Ouch.

Hop to find.pcworld.com/42284 to download either one. Or visit find.pcworld.com/42342 to order SP3 on CD for free.



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- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM full-size keyboard
- 7.5-hr Li-Ion battery¹¹
- 1-yr system/battery limited warranty⁷

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IBM ThinkPad X40 Solution Pack

Distinctive IBM Innovations:

- Longest standard battery life of any leading-brand notebook

System Features:

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 - Intel Pentium M Processor LV 1.20GHz
 - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- 7.5-hr Li-Ion battery
- 3-yr system/1-yr battery limited warranty⁷

Accessories Included:

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- 3-yr parts/1-yr limited onsite service limited warranty¹³

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- 256MB DDR SDRAM
- 40GB hard drive • CD-RW
- Norton AntiVirus with 90 days of virus definition updates
- Integrated 10/100 Ethernet
- Lotus SmartSuite Millennium license
- 3-yr parts/1-yr limited onsite service limited warranty¹³

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THINK EXPRESS MODEL
PRICED AT:

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With Microsoft Office Small Business Edition 2003: \$1,049

IBM ThinkCentre S50

Distinctive IBM Innovations:

- The smallest IBM desktop without compromise: 62% smaller than a standard IBM desktop

System Features:

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- Microsoft Windows XP Professional
- 512MB DDR SDRAM
- 40GB hard drive • CD-ROM
- Norton AntiVirus with 90 days of virus definition updates
- Gigabit Ethernet-integrated
- 3-yr limited warranty with limited onsite service¹³

NavCode 818336U-M423

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With Microsoft Office Small Business Edition 2003: \$1,319

ServicePac Service Upgrade:
4-yr Onsite/9x5/4-hr Response
#69P9162 **\$250**

IBM ThinkCentre M50

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
- 3-yr limited warranty with limited onsite service¹³

NavCode 8187EJU-M423

\$1,049

With Microsoft Office Small Business Edition 2003: \$1,288

ServicePac Service Upgrade:
3-yr Onsite/9x5/4-hr Response
#41L2734 **\$129**



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IBM Think Express Program:

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#22P7437 **\$60**

ThinkPad Premiere Leather Carrying Case¹⁴
#10K0209 **\$99**

ThinkPad 72W AC/DC Combo Adapter
#22P9010 **\$99**

ThinkPad Port Replicator II
#74P6733 **\$179**

IBM ThinkCentre Accessories

128MB USB 2.0 High-Speed Memory Key
#22P9229 **\$59**

Lexmark X6170 All-in-One
#22P9147 **\$200**

IBM ThinkVision™ L170 17" Flat Panel Monitor with system purchase
#W9SPA60 **\$449**



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Standard shipping included when you order online.¹⁶

applicable; weight may vary due to vendor components, manufacturing process and options. **Thinness:** may vary at certain points on the system. **(10) ServicePac services:** are available for machines normally used for business, professional or trade purposes, rather than personal, family or household purposes. Service period begins with the equipment date of purchase. Service levels are response-time objectives and are not guarantees. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. For ThinkPad notebooks requiring LCD or other component replacement, IBM may choose to perform service at the depot repair center. **(11) Full-size keyboard:** As defined by ISO/IEC 15412. **(12) Battery life:** Based on manufacturer's published figures or CNET.com results for the top 5 vendors in 2003 notebook sales, as of 1/29/2004. **(13) Systems with limited onsite service:** are designed to be repaired during the applicable warranty period primarily with customer-replaceable parts provided by IBM. IBM will only send a technician onsite to perform a repair if (a) remote telephone diagnosis and/or customer part replacement are unable to resolve the problem, or (b) the part is one of the few designated by IBM for onsite replacement. For a list of onsite replaceable parts, contact IBM. Support unrelated to a warranty issue may be subject to additional charges. **(14) Certain IBM logo products:** are not manufactured, warranted or supported by IBM; IBM logos and trademarks used under license. Contact IBM for details. **(15) Wireless capability:** requires compatible wireless-enabled options, sold separately. **(16) Shipping:** Standard shipping included when you order online. U.S. only. **(17) Battery:** These model numbers achieved the Ziff Davis Media, Inc.'s Business Winstone® 2002 BatteryMark™ Version 1.0 Battery Runtime Time of at least the time shown. This test was performed without independent verification by the VeriTest testing division of Lionbridge Technologies, Inc. ("VeriTest") or Ziff Davis Media, Inc.; neither Ziff Davis Media, Inc., nor VeriTest makes any representations or warranties as to these test results. Winstone is a registered trademark and BatteryMark is a trademark of Ziff Davis Publishing Holdings, Inc., in the U.S. and other countries. A description of the environment under which the test was performed is available at ibm.com/pc/vw/thinkpad/batterylife. Battery life (and recharge times) will vary based on many factors including screen brightness, applications, features, power management, battery conditioning and other customer preferences. **Trademarks:** The following are trademarks or registered trademarks of IBM Corporation: IBM, the IBM logo, ImageUltra, Lotus, NavCode, Rapid Restore, Rescue and Recovery, SmartSuite, ThinkCentre, ThinkPad, ThinkVantage, ThinkVision, UltraConnect, UltraBase, Ultrabay and UltraNav. Microsoft and Windows are registered trademarks of Microsoft Corporation. Intel, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Intel SpeedStep and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Other company, product and service names may be trademarks or service marks of other companies. © 2004 IBM Corporation. All rights reserved. Visit www.ibm.com/pc/safecomputing periodically for the latest information on safe and effective computing.

NEW PRODUCTS

EDITED BY ANNE B. McDONALD

Speed-Boosted Wi-Fi

Enhanced 802.11g devices promise blazing speeds; we found them to be about one-third faster.

WIRELESS NETWORKS

WHILE SOME PEOPLE are still moseying along with poky old 11-megabits-per-second 802.11b Wi-Fi network cards and routers, the second generation of 802.11g is already here, promising rip-roaring speeds of 108 mbps to 125 mbps.

My informal testing shows that the real-world throughput of these souped-up devices is actually more like 22 to 24 mbps, still significantly faster than the real-world speed of 18 mbps you get with basic 54-mbps 802.11g cards.

The catch with all of this is that the "high-speed" wireless mode is nonstandard: In order to get the promised speed increases, you have to use both cards and routers that have the same type of speed-boosting technology, currently selling in two competing flavors: 108 mbps and 125 mbps. The 108-mbps Super G technology, which came out last fall, is based on Atheros chip sets and is used by D-Link and NetGear, among others. The 125-mbps After-

burner technology, which shipped this spring, is based on Broadcom chip sets and is found in products from Belkin, Buffalo, Linksys, and U.S. Robotics, among others.

I tried three of these new high-speed routers (and their companion adapters) to see how they stacked up: Buffalo Technology's **AirStation 125 High-Speed Mode Wireless Cable/DSL Router with AOSS (WHR3-G54)**; Cisco Systems' **Linksys Wireless-G Router with Speed-Booster**; and D-Link Systems' **AirPlus XtremeG DI-624**.

WORK TOGETHER?

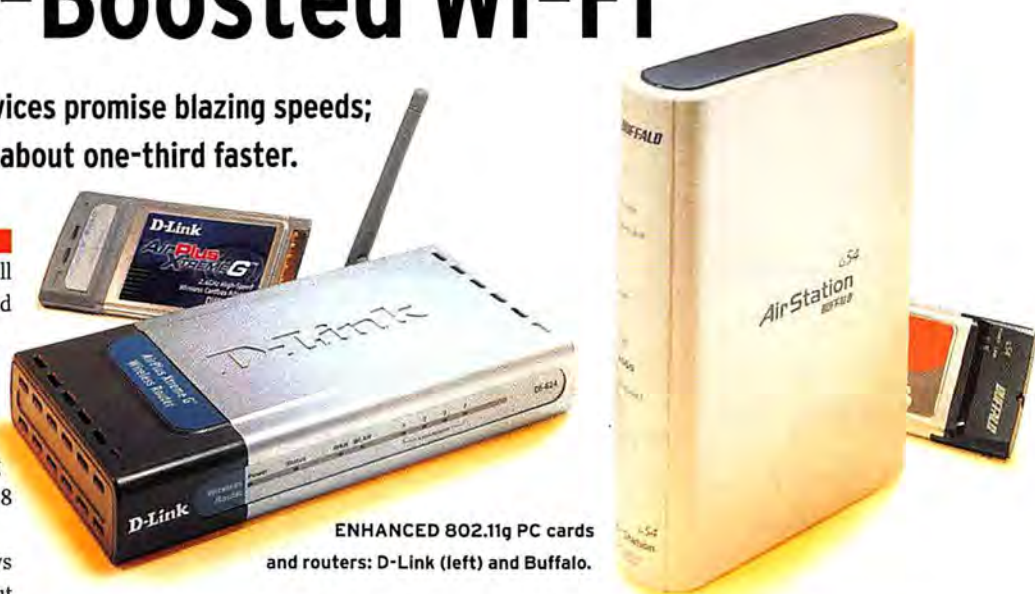
THOUGH ALL these devices are certified Wi-Fi G compatible, that simply means they

will perform in the standard 54-mbps 802.11g mode with G cards and routers from other vendors. So if you have a network with a 108-mbps card and a 125-mbps router, the whole thing will run at a maximum of 54 mbps, negating the advantages of the speed-boosting technologies. Similarly, if you have a mixed network of high-speed and regular 802.11g devices, performance will drop when the regular devices are connected.

However, if you are just setting up a wireless home network and can buy matching equipment, either of these technologies will do the job about 33 percent faster than basic 802.11g equipment—

but you will be paying about 30 percent more money.

Just how do the Super G and Afterburner modes work? Super G gets part of its speed increase from "bonding" data from two nonoverlapping wireless channels together (normal Wi-Fi uses only 1 out of the 11 channels in the 2.4-GHz range). This channel bonding, though, increases the potential for troublesome



ENHANCED 802.11g PC cards and routers: D-Link (left) and Buffalo.

AirPlus XtremeG DI-624

D-Link Systems

★★★★☆

Excellent performance, stout firewall features, and wireless distribution system support.

Street: router \$90, card \$45

find.pcworld.com/42428

62 ENHANCED G ROUTERS

Buffalo Technology AirStation 125 High-Speed Mode Wireless Cable/DSL Router (WHR3-G54), Cisco Systems Linksys Wireless-G Router with SpeedBooster, D-Link Systems AirPlus XtremeG DI-624

64 CAMCORDER

Panasonic PV-GS200

STORAGE

Iomega Rev 35GB/90GB USB 2.0 External Drive

INPUT DEVICE

Intracom FireFly Lighted Keyboard

66 PHONE SYNCHRONIZATION

Intellisync Phone Edition, FutureDial SnapSync 1.3

GPS

DeLorme Earthmate Blue Logger

68 PHOTO SHARING

Homestead Technologies PhotoSite AlbumBuilder, How2Share Technologies PiXPO 1.01, Webshots Desktop 2

70 SCANNERS

Fujitsu ScanSnap FI-5110EOX; Microtek ScanMaker 5950

CAMCORDER

Philips Key Ring Camcorder

72 E-MAIL

Eudora 6.1

74 SERVER

Keyspan USB Server



70

interference with microwave ovens, with cell phones, and with other Wi-Fi networks.

BANDWIDTH HOG?

IN PARTICULAR, Super G has been criticized in the past for using so much of the Wi-Fi band that other networks in the vicinity, which normally would automatically seek out and use nonoverlapping channels to avoid interference problems, could be severely impacted. During my week of tests, I experienced no noticeable drop in performance in either network when I used the D-Link 108-mbps router in the same house with the Linksys 125-mbps router.

In contrast, the 125-mbps Afterburner technology uses just one channel. Instead of bonding two channels of data together, it squeezes more data through a single channel by reducing overhead, and also by aggregating smaller packets of data into larger ones. Some of this technology will be used in the upcoming 802.11e wireless multimedia enhancements

standard, which is designed to improve delivery of streaming audio and video.

The 125-mbps Afterburner vendors claim that their products are all interoperable in high-speed mode, while Super G products may not be. In a separate test, I found that D-Link and NetGear Super G products were in fact compatible in the 108-mbps mode; however, such compatibility may not be true of products from all Super G vendors.

In my informal tests of file

real-world performance, ranging from 22 to 24 mbps in wireless throughput. That's still significantly slower than their 108-mbps and 125-mbps monikers would lead you to believe. Nevertheless, both models boost speeds well above the 802.11g rate of 18 mbps and the 802.11b rate of about 4.5 mbps I achieved with the same test procedure, and they can be a boon to users who need to transfer large files from one computer to another.



LINKSYS Wireless-G Router with SpeedBooster, plus PC card.

transfers from a local server to a wireless client—performed with encryption off, 4 feet from the router, and in 802.11g-only mode—the two technologies provided similar

er wirelessly or to stream high-quality multimedia files. Just surfing the Internet? Most broadband services connect at well under 1 mbps, so even using enhanced wireless equipment, you won't experience faster performance.

All three shipping routers were easy to connect to the Internet, and all of them have very good router and firewall features, such as MAC address filtering and WPA (Wi-Fi Protected Access) encryp-

tion. The D-Link and Buffalo routers also include WDS (wireless distribution system), a convenient way to link multiple routers wirelessly to cover a larger area; for households with children, the Linksys router offers a fee-based parental control system.

The Linksys also had the best setup utility and documentation. However, all three routers and adapters were difficult to get working together in high-speed mode—I fiddled for hours with advanced router settings and card drivers before I got them humming at their top speeds. The job would have taken only a few minutes had better setup utilities been provided. I suspect that many users, after paying the considerable price premium, will simply get the routers working and will never know that the products are not performing in high-speed mode.

Such users should probably not be buying these routers in the first place, though. If all you need is reliable and compatible Wi-Fi service for typical broadband connections, an inexpensive 802.11g router will provide all the speed you require. But if you really need the performance boost that these new routers provide, then by all means step up.

—Becky Waring

AirStation 125 High-Speed Mode Wireless Cable/DSL Router with AOSS (WHR3-G54)

Buffalo Technology

★★★★☆

Great performance, compatibility.

Street: router \$130, card \$100

find.pcworld.com/42426

Linksys Wireless-G Router with SpeedBooster

Cisco Systems

★★★★☆

Admirable performance and compatibility, great setup utility.

Street: router \$100, card \$75

find.pcworld.com/42424

Small Size, Sharp Video

CAMCORDER

SMALL IS IN for camcorders this season, and at 3 by 3 by 6 inches and just over 1 pound, Panasonic's **PV-GS200** is the smallest three-CCD camcorder we've seen. The unit shoots great-looking video, too: In informal tests, I saw sharp images with accurate colors in all types of lighting.

The high-quality video is due to the three CCD image sensors, which allow the camera to use a separate sensor for capturing each of the primary colors. The camcorder also has two low-light modes: one for slow shutter speed



and another that uses the LCD's backlight to illuminate the scene. The latter mode works adequately, but only for a range of a few feet.

The camcorder's small body sits comfortably in the hand, with the record button falling under the right thumb and the zoom under the index finger. The other controls (for accessing the well-designed on-screen menu and playback) are located under the 2.5-inch LCD screen. Battery life is more than adequate,

USE ONE HAND:

Panasonic's palmable PV-GS200.

with a fully charged battery providing more than an hour of shooting in informal tests.

The \$900 PV-GS200, winner of a 2004 World Class award (see page 86), can take still images at a maximum resolution of 1760 by 1320 and save them to an included 8MB SD card. While reasonably good-looking, they are not as appealing as those cap-

PV-GS200

Panasonic

★★★★☆

Small, feature-rich camcorder takes great video.

Street: \$900

find.pcworld.com/42336

Easy, Automated Backups

STORAGE

THE BEST WAY to keep your backups current is to schedule them automatically. And for maximum protection, you need easily removable media. Iomega's **Rev 35GB/90GB USB 2.0 External Drive** offers both features, plus an effective soft-

ware bundle and tiny hard-disk cartridges that hold about seven times as much data as most recordable DVDs.

Iomega says that its Rev disks can store from 35GB (uncompressed) to 90GB (compressed) of data, but how much you can actually store will vary. If your backup is heavy with already-compressed

files, such as photos, music, and video, you won't get much beyond 35GB. Backups of mostly business documents may amount to about 90GB.

The included software is Iomega's Automatic Backup Pro, which handles automated and manual backups, and Norton Ghost for Rev, which images your hard drive for disaster recovery.

I had no difficulties installing a shipping version of Iomega's \$400 external USB 2.0 drive, although I would have preferred to see a full user guide instead of the quick-install flyer and reference to Web-based support. I manually backed up 20GB in only 60 minutes using maximum

compression on my Athlon XP 2700+ system. Copying the same files from one fast internal hard drive to another using Windows Explorer took 40 minutes—so the Rev drive is no slouch.

This drive is too expensive for casual users who can back up with their CD or DVD burners. But it's a great choice for business and power users.

—Rex Farrance

Rev 35GB/90GB USB 2.0 External Drive

Iomega

★★★★☆

Provides terrific, speedy, high-capacity removable backup.

List: \$400 with one disk included

find.pcworld.com/42338



IOMEGA
Rev drive.

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Two Ways to Back Up a Cell Phone Book

PHONE SYNC

IF YOUR CELL phone doubles as your contact manager, having a backup copy of your stored names and numbers is great insurance for the day you either lose the phone or want to move your phone

called tech support only to learn that the firmware version on this particular phone wouldn't support synchronization software—something FutureDial and Intellisync tell you only on their respective Web sites. A free firmware

you've copied the numbers, the desktop software lets you choose which ones you'd like to sync with Outlook and vice versa—a useful feature for those whose Outlook contacts outnumber the amount of entries their phone supports.

You can purchase SnapSync alone for \$30, but you might consider paying \$129 to get it bundled with FutureDial's SnapScan business card scanner and software. That's a good price for a very basic card scanner that lacks the advanced features of Corex's \$200 CardScan, such as batch processing. Unfortunately, SnapScan uses a different desktop address book than SnapSync (but both can transfer contacts to Outlook).

SnapSync supports more than 160 phone models, compared with the 35 that Intellisync Phone Edition currently supports. The \$35 Phone Edition worked right off the bat with the replacement Samsung SPH-A500 and a \$35 cable (available on Intellisync's Web site). But oddly enough, given that Intellisync is known for its PDA-syncing software that supports multiple contact managers, the version of Phone Edition I looked at works only with various versions of Microsoft Outlook (the company says support for other address-book applications such as Lotus Notes is

QUICK TAKES

Bluetooth GPS

DELOREME'S small Bluetooth GPS receiver, the **Earthmate Blue Logger**, records location data as you travel. Once you're off the road, you can download the recorded data and view your track on DeLorme digital maps on your PC or notebook. I looked at the \$150 shipping version with Street Atlas USA 2004, and found that—as with all small GPS devices—the Blue Logger's ability to lock on to GPS satellites and calculate locations can sometimes be disappointing.

The system includes the compact receiver with a rechargeable battery—good for about 8 hours—and Blue Logger Management software.

The device did work nicely with my Bluetooth-enabled Palm Tungsten T3, giving me real-time location data on DeLorme Handheld maps. find.pcworld.com/42362

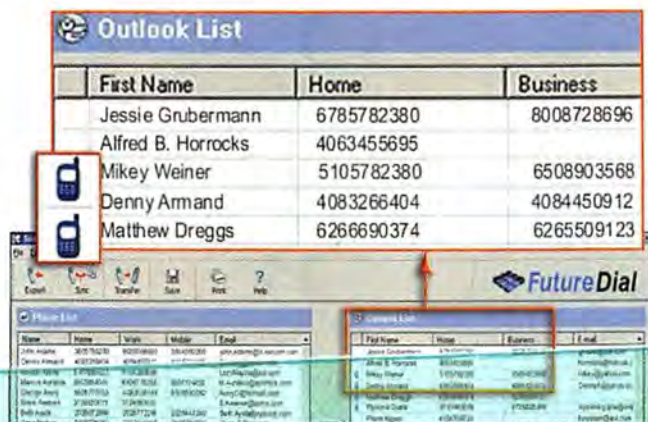
—Tracey Capen



on the way, which will make Phone Edition more worthwhile). You can select the Outlook contacts you wish to sync via a Record Chooser, or you can use filters.

In my tests, I found the Intellisync cable prone to slipping off my phone, but otherwise the product worked as advertised. So did SnapSync, though—and with its cable, it costs \$10 less than Phone Edition and its cable.

—Yardena Arar



FUTUREDIAL SnapSync 1.3's icons quickly show you which contacts you have already exported easily from Microsoft Outlook to your cell phone.

book to a new handset. But most conventional handsets don't come with either the hardware or the software you need to synchronize the built-in phone book to a PC. I tried out shipping versions of two packages that do the job—**SnapSync 1.3** by FutureDial and **Intellisync Phone Edition**—and came away generally pleased with the results.

Both of these products require the use of a special, phone-specific USB cable that connects your handset to the PC—and this can be a real showstopper, as I learned when I tried to sync my husband's Samsung SPH-A500 phone book using SnapSync 1.3 and FutureDial's \$30 cable (which has an additional connector to let you use your cell phone as a laptop modem). When nothing worked, I

upgrade at a Sprint store ended up destroying the phone and all data on it. Sprint (which replaced the phone) and FutureDial say my experience is unusual, but, at the very least, it suggests proceeding with some caution.

SYNC PLUS SCAN

THE GOOD NEWS: With the replacement phone, which had the necessary up-to-date firmware, the synchronization of the phone data (entered into the phone by hand after the fiasco) to SnapSync's desktop app went smoothly. Once

Intellisync Phone Edition

Intellisync

★★★★☆

Competent Outlook cell phone backup; supports fewer phones.

Street: \$35 (\$35 cable required)

find.pcworld.com/42330

SnapSync 1.3

FutureDial

★★★★☆

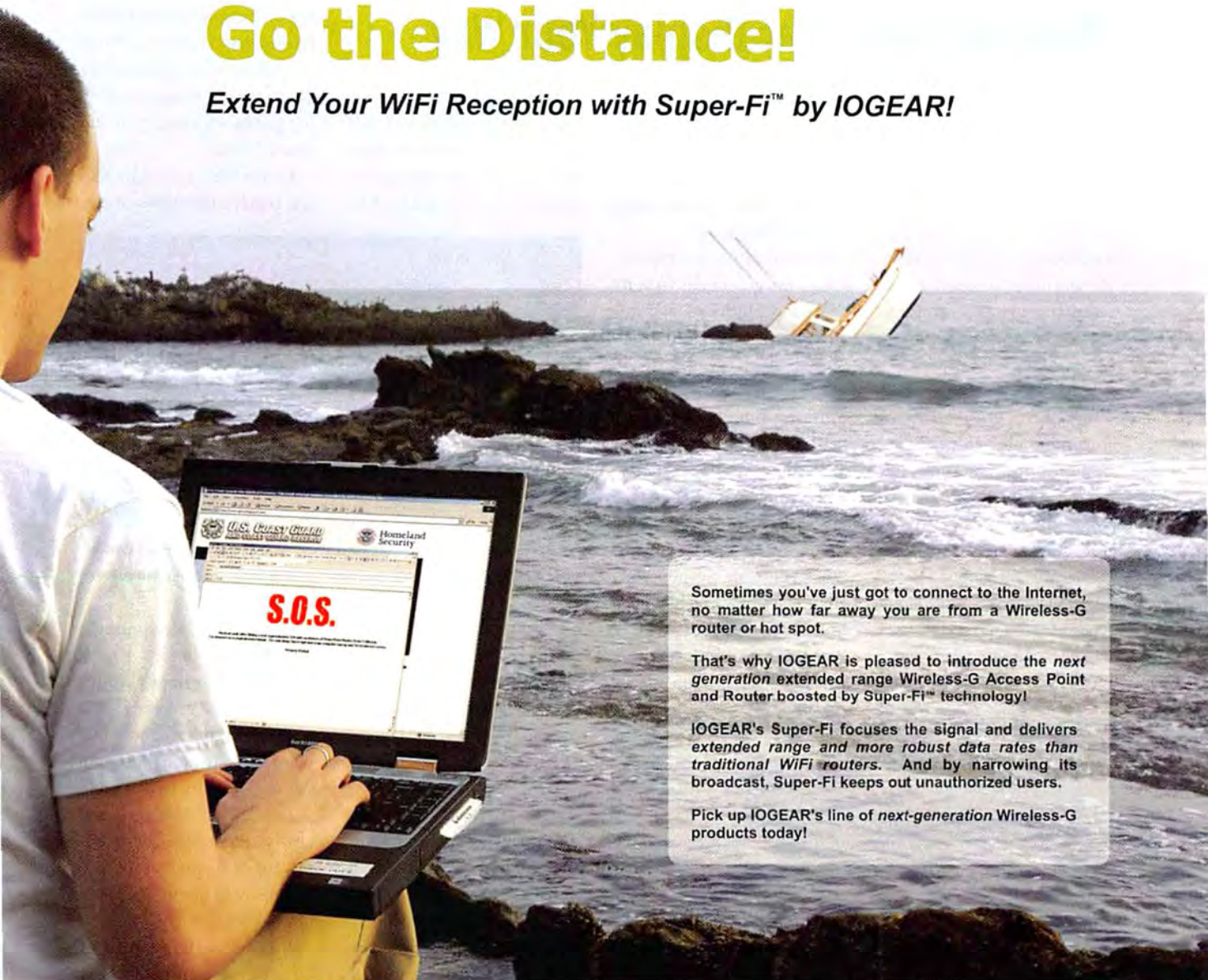
Easy-to-use Outlook-compatible syncing; supports many models.

Street: \$30 (\$30 cable required)

find.pcworld.com/42332

Go the Distance!

Extend Your WiFi Reception with Super-Fi™ by IOGEAR!

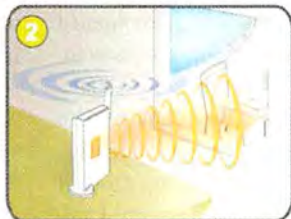
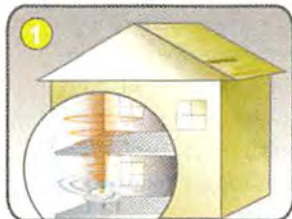


Sometimes you've just got to connect to the Internet, no matter how far away you are from a Wireless-G router or hot spot.

That's why IOGEAR is pleased to introduce the *next generation* extended range Wireless-G Access Point and Router boosted by Super-Fi™ technology!

IOGEAR's Super-Fi focuses the signal and delivers *extended range and more robust data rates than traditional WiFi routers*. And by narrowing its broadcast, Super-Fi keeps out unauthorized users.

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- 1 Patch Antenna Signal
- 2 Regular Antenna Signal

- 1 Multi Floor Coverage
Built-in patch antenna beams stronger signal between upstairs/downstairs.
- 2 Focused Signal, Extended Range
Built-in patch antenna beams stronger signal for specific areas
- 3 Enhanced Security
Focused signal keeps out unauthorized access

Wireless-G Broadband Access Point/Router

GWA502

- Innovative Super-Fi technology uses internal patch antenna and retractable external antenna to extend range and restrict access
- Fast and simple setup via wizard
- Built-in firewall, supports WPA and WEP



Wireless-G Notebook Network Card

GWPS12

- Short antenna board - no need to extract when packing up
- Funk's Odyssey Wireless Security Software is built in for maximum protection
- Backward compatible with all 802.11b wireless devices



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Photo Albums That Display Your Way

PHOTO SHARING

NEW PHOTO-SHARING services help digital photographers show their work to the world by displaying their photos on the Web. You can fashion albums and invite others to view them, or allow authorized friends and family to access the latest shots stored on your PC's hard drive.

How2Share Technologies' \$30 **PIXPO 1.01** gives you access through a peer-to-peer connection, or you can show your albums on the Web by invitation only. Homestead Technologies' **PhotoSite AlbumBuilder** and Webshots' **Desktop 2** permit you to create different types of free online albums. I looked at shipping versions.

PiXPO 1.01 is a combined

grate, and make thumbnails of 65 images. Although currently you can only crop and rotate your photographs, the company plans to add more image editing tools.

If you'd rather post quick, casual images on the Web, try Webshots. With its Desktop 2 software, I created three albums; the largest, with 79 hefty JPEGs, took about 20 minutes to upload and publish. At this site, you can view slide shows of others' albums and sign guest books or e-mail postcards to friends, inviting them to view your albums. If you prefer, designate your albums as viewable by invitation only. I used the ad-free Webshots Premium software, which lets you post up to 3000

With Webshots Desktop 2, you can zoom and rotate pictures, but there are no templates or design elements to enhance your photos. You

www.photosite.com took approximately 3 minutes. PhotoSite offers extra controls over access to your images, including password protection and album hiding.

At the Web site, you also can watch slide shows of oth-



WEBSHOTS DESKTOP 2 software allows you to post online albums of your digital photos quickly and easily, using basic modular templates.

also get access to tools for creating screen savers and slide shows, and may order prints. Ad-free Premium service is \$4 per month or \$30 per year.

EASY ELEGANCE

USING HOMESTEAD'S intuitive PhotoSite AlbumBuilder, I built a professional-looking, four-page Web site inside of 30 minutes, including time for experimenting with different layouts. The program offers modular templates: colorful, splashy designs to themed backgrounds, or understated, gallery-style showcases that I modified by choosing the color of my background, mats, frames, and fonts. Once I designed and created my photo album, publishing it to

ers' albums and view and sign online guest books. I used PhotoSite Deluxe (\$8 per month or \$70 per year), with no ads, unlimited photo display, and a personal domain name. The Plus package (\$5 per month or \$40 per year) lets you store 1000 pictures at a time. You may store 150 images with the free version, but visitors view ads.

Webshots offers a popular online community of photo sharers, while PiXPO's peer-to-peer service is more intimate. Homestead's PhotoSite combines the best of both worlds, giving you privacy—if you want it—and a very attractive backdrop for your online photo albums.

—Kathleen Cullen



HOMESTEAD'S PHOTOSITE ALBUMBUILDER lets you design your own online photo albums with backgrounds, mats, frames, and fonts.

chat client and photo-sharing application. With it, you can create public or private albums stored on your hard drive, browse another PiXPO subscriber's album, search for public images on the PiXPO network by title or subject, or provide permission for others to view your private albums.

Adding images to a PiXPO album is simple—it took me about 4 minutes to find, inte-

photos and download high-resolution photos by professional photographers; the free ad-supported version allows you to store 240 photos.

PhotoSite AlbumBuilder

Homestead Technologies

★★★★☆

Fully customizable photo Web site.

List: Free with ads; ad-free Plus

\$40 per year; Deluxe \$70 per year

find.pcworld.com/42326

PIXPO 1.01

How2Share Technologies

★★★★☆

Quick, fun, private photo sharing with online chat available.

List: \$30

find.pcworld.com/42304

Webshots Desktop 2

Webshots

★★★★☆

No-hassle, fast photo sharing.

List: Free with ads; ad-free

Premium version \$30 per year

find.pcworld.com/42302

magicolor 2300

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- Photorealistic image quality
- Mac® & PC compatible
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- 2400 x 600 dpi
- Windows® XP/2000/NT4/Me/98/95
- USB & parallel interfaces

\$599



magicolor 2300W

Personal color laser

- 4 ppm color; 16 ppm b&w
- 1200 x 600 dpi
- Windows XP/2000/Me/98SE/95
- USB & parallel interfaces

\$499



buymagicolor.com



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Document Scanners Tame Paper Chaos

SCANNERS

DOCUMENT scanners can transform a cluttered office into a more manageable place, and the \$495 Fujitsu **ScanSnap FI-5110EOX** and the \$150 Microtek **ScanMaker 5950** are both handy tools for storing large volumes of hard copy information on your PC. I found each scanner ideally suited for different uses.

Both are USB 2.0 scanners that can convert documents directly to Adobe Portable Document Format, and each can manage up to 50 pages at

duction unit's default settings, the ScanSnap took just under 2 minutes to turn a 30-page document into a 300-dots-per-inch PDF (3MB in size) that was generally readable, although some small fonts looked fuzzy. The FI-5110EOX provides 600-dpi maximum optical resolution (up from 300 dpi in its predecessor). The upgraded software bundle includes Adobe Acrobat 6—an excellent workgroup collab-



FUJITSU'S petite ScanSnap FI-5110EOX PDF scanner.

optical resolution and can handle photos, books, and magazines. This multipurpose flatbed model also sports a bevy of push buttons to quick-start different scanning tasks, such as PDF creation.

The shipping ScanMaker I saw was much slower than the ScanSnap at PDF scans; it took nearly 8 minutes to turn my 30-page document into a 300-dpi PDF (4.6MB in size).

However, although it has no PDF compression options, the ScanMaker's results were perfectly readable, including small fonts. The software bundle includes Adobe PhotoDeluxe 4.1 for image editing, ABBYY FineReader Sprint OCR software, and a scanning utility (Microtek ScanWizard) that offers more control (such as the ability to adjust color) than the ScanSnap software.

The speedy but pricey Fuji-



MICROTEK ScanMaker 5950.

once via its included automatic document feeder.

The compact 5.5-pound FI-5110EOX—the latest addition to Fujitsu's ScanSnap line—is a sheet-fed model designed to convert single- or double-sided pages directly to PDF. It cannot scan bound books or magazines, nor is it intended to handle photos. But what it does, it does well. A single button starts the scanner, and a simple utility (ScanSnap Manager) lets you select the desired level of image quality and compression.

In my tests using a prepro-

duction tool—as well as Card-Minder 2 for importing contact info from business cards into an electronic database.

BIGGER SCAN

THE 10-POUND ScanMaker, meanwhile, claims more desk space than the ScanSnap, but it boasts 2400-dpi maximum

ScanMaker 5950

Microtek

★★★★☆

Slower flatbed scanner handles multiple tasks well, including PDF.

List: \$150

find.pcworld.com/42300

ScanSnap FI-5110EOX

Fujitsu

Preproduction, not rated

Speedy sheet-fed scanner excels at making PDFs from documents.

List: \$495

find.pcworld.com/42298

QUICK TAKES

Tiny Camcorder

PHILIPS'S svelte \$250 **Key Ring Camcorder** is the perfect accessory for anyone who has ever wished they could have a camera with them anytime, anywhere. The Key Ring plugs into a USB 1.1 port. In addition to its flash memory, it contains an MPEG-4, QVGA (320 by 240) resolution audio/video camcorder; an MP3 player; and a 2-megapixel CMOS digital camera that proved itself an adequate shooter in outdoor light. The unit has a tiny, surprisingly viewable LCD built into the eyepiece, and a remote control that handles music, video, and image



playback (but doesn't display track or image info). Unfortunately, it has only 128MB of storage. That's enough for taking some casual snaps or videos, but it means you won't be able to pack many music files onto it at the same time, which cuts down somewhat on its versatility.

find.pcworld.com/41938

—Melissa J. Perenson

tsu ScanSnap FI-5110EOX is arguably the better choice if PDF creation is your only focus, and especially if you want to scan double-sided documents. For those who need a multipurpose scanner, the slower but more affordable Microtek ScanMaker 5950 does photo scanning and OCR tasks in addition to PDF.

—Richard Jantz



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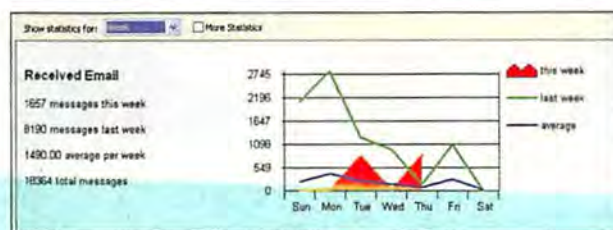
E - M A I L

QUALCOMM's latest e-mail software, **Eudora 6.1**, is a modest upgrade that isn't worth paying for if you installed version 6 over a year ago.

But if you aren't using version 6 at all, version 6.1 gives you a couple of extra reasons to check out this e-mail client, which has one of the better built-in spam filters around.

through Eudora messages without Google's assistance.

The previous version (find pcworld.com/42350) added a Content Concentration feature that can make older parts of long, ongoing e-mail conversations disappear partly or completely from view. Version 6.1 is updated so that you can easily change that setting on the fly by means of a small



USE EUDORA 6.1's Statistics tool to produce graphs mapping how much mail you've received in a given day, week, month, or year.

This version is free if your Eudora license is less than a year old, \$40 if your Eudora version is one to two years old, and \$50 for owners of even older versions or for customers new to Eudora.

Probably the flashiest new feature is a Statistics tool that produces nifty-looking graphs illustrating how much mail you have received (by day, week, month, or year), how much of it is junk (based on what's in your junk folder), and how those figures stack up against those of the previous day, week, month, or year. The idea is to let you know for sure whether Eudora's spam filter (first introduced in version 6) is doing its job.

This version's new keyword search feature can either launch Google Web searches from within Eudora (your browser quickly launches and displays results) or comb

window in the bar that separates the message list from the preview pane.

To woo new users, Eudora has an improved ability to import Outlook info and will now also allow you to import Apple Mail. And if you are careful about filing messages, you'll appreciate the ability to highlight a word or phrase that matches a mailbox name, and to transfer the message into that mailbox with a single click (or choose from a list of several mailboxes if more than one applies).

—Yardena Arar

Eudora 6.1

Qualcomm

★★★★☆

E-mail client worth getting if you don't already use Eudora 6.

List: Free for recent owners of version 6; \$40-\$50 upgrade depending on your version

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Simple device is great for sharing USB peripherals in a multiple-PC home office.

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among multiple networked PCs—and without leaving any of your PCs turned on.

You connect the \$130 USB Server to your network via its ethernet port. The USB Server has four USB 1.1 ports, and allows you to share multifunction devices, printers, scanners, and even input devices (mice and keyboards). External hard drives may work too, but the company says they'll perform more slowly than if attached directly to the PC.

When you connect a peripheral to the server, a small application on each networked PC will show that it's available. Click a button to connect to the server, and if the device

isn't already installed, you'll receive a Windows prompt to set it up, just as if you had plugged it into the back of the PC.

I looked at a shipping USB Server and found using peripherals through it almost as easy as if they were connected to a USB port on my computer. I tried it with two PCs, a printer, and a scanner; I could print and scan at the same time, with no apparent slowdown. However, the server will not allow two systems to access the same peripheral

KEYSPAN'S UNIQUE
USB Server.

simultaneously, so I could not queue print jobs. Keyspan says it's working on that, but most of these devices weren't meant to be shared.

If you have a stable of USB 1.1 peripherals, especially devices that aren't printers, using the USB Server can help avoid sharing conflicts.

—Alan Stafford ■



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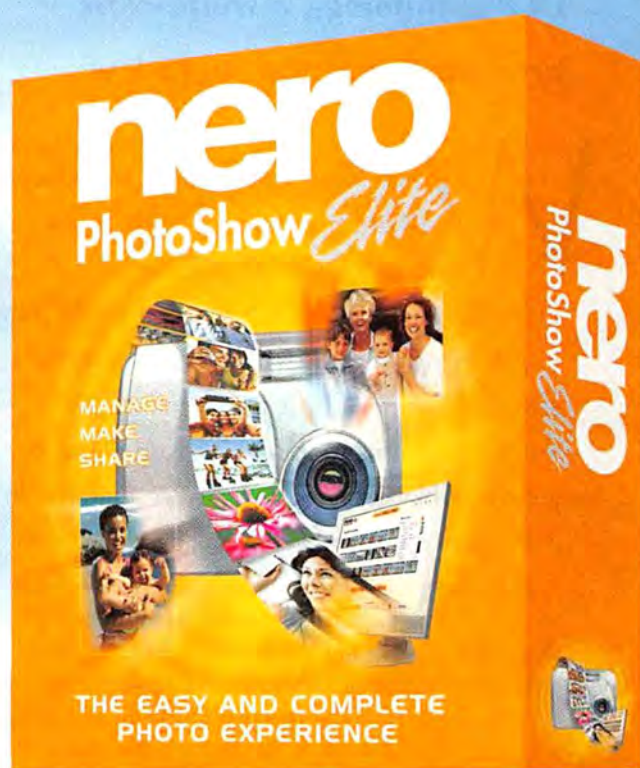
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Sharper Images

With a projector that is driven by DLP technology, a world-class presentation is sure to follow

When Texas Instruments announced in April the shipping of its three millionth DLP—Digital Light Processing—subsystem, it marked a 50% jump in just eight months over the previous milestone of two million. It also signaled the quickening demand for DLP-based digital projectors, which tend to pack more function in a smaller box than competing systems.

DLP systems utilize TI's unique optical semiconductor, the Digital Micromirror Device, which sports an array of 1.3 million tiny hinge-mounted mirrors that can reflect an all-digital image onto a screen or other surface. The mirrors can reflect pixels in up to 1,024 shades of gray, and a single-chip DLP projector filters the light through a color wheel to produce as many as 16.7 million colors. The resulting clarity, brilliance, and color exceed those of LCDs and produce greater contrast, making DLP systems particularly well suited to video images, according to analysts.

Market researcher IDC predicts DLP is on the move to overtake LCD and dominate the market, moving from a 35.7% share in 2003 to 55.3% in 2007, while LCD slips from 63.2% in 2003 to 38.7%. "DLP is always going to do well in the home theater market and will always be dominant in the micro-portable (less than 3 pounds) space," says Eric Haruki, Research

Manager for IDC's Displays and Projectors service.

Small wonder, then, that so many projector makers, such as Dell, continue to drive the DLP bandwagon. There are many reasons why Dell is a global leader in



so many technology products, two of which are consistently high quality and lower total cost of ownership (TCO). Two years ago, Dell took this tried-and-true formula, based on its renowned direct sales model, and extended the benefits to projector buyers.

Understanding the tremendous pressure on businesses to control costs, Dell includes as standard several items that many other projector makers include only as add-ons at extra cost. For example, each Dell projector comes with a durable drop-tested carrying case, designed to protect its precious cargo by being test-dropped from 10 different angles at a height of three feet—just the kind of fall a projector in transit is

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Dell 2200MP
Projector
— January 2004



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Dell's projectors offer consistently high quality and lower total cost of ownership (TCO).

likely to suffer in an airport or a board room.

Dell further helps business fight the TCO battle by including all necessary cables as standard equipment. Included in Dell's warranty is an Advanced Exchange Service whereby a mobile professional can have a working replacement projector delivered on the fly in 24 to 48 hours, and Dell pays the shipping for the replacement and for the returned projector, too. And when businesses buy through Dell, they need to cut just one single purchase order for all purchases, further lowering TCO.

Dell sells all of its projectors, each of which is driven by DLP technology, direct to buyers, not through channels or middlemen. The savings gained from this direct model, along with the legendary efficiencies Dell has realized from its ultra-efficient manufacturing and supply chain system, make Dell projectors among the most aggressively priced, high-quality machines available. For more information, go to www.dell.com now.

LIGHT AND BRIGHT

Because DLP business projectors rely on a single chip, rather than the three panels (one each for red, green, and blue) of an LCD system, manufacturers can either build a box as small as two pounds in weight, or use a larger form factor that accommodates greater features. Vendors are using brighter lamps that generate more lumens and are rapidly shifting from SGA to XGA resolutions.

Last year, according to Current Analysis, the average DLP projector weighed five pounds, the average LCD projector 10 pounds, and the average LCOS (Liquid Crystal on Silicon) projector tipped the scales at 12 pounds. DLP dominates the sub-5-pound category with an estimated 90% of all shipments, and represents 100% of shipments in the sub-2-pound category.

Marry DLP technology with precision engineering, ease of use, and superior performance, and what you get is the creative genius built into InFocus projectors (www.infocus.com).

The InFocus LP600 offers an industry first—the ability to project from a standard USB port, the InFocus LitePort, which allows a user to project .jpg images without a computer or a CD drive. Users can simply copy files onto a USB Flash drive and plug it into the InFocus LP600 to present their content.

An all-round stellar athlete, the InFocus X2 is a dual-duty digital projector that is as functional delivering world-class business presentations by day as it is projecting DVD entertainment at night. The X2 fills a screen or wall brilliantly with 1500 lumens and can be used wirelessly for extra freedom.

For mobile professionals, the InFocus LPI20, at 1.98 lbs., can literally be tucked into the same carrying case used to transport a notebook computer. At 1000 lumens, the wireless-ready LPI20 delivers sharper images than much-larger projectors, while offering true ease-of-use functionality.

X2



The InFocus X2 (top) delivers wireless presentations by day and projects DVD entertainment at night. At under 2 lbs., the LPI20 delivers sharper images than much-larger projectors.



LPI20

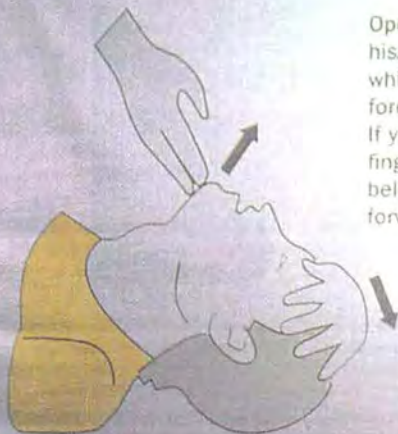
Want to see your sports stars projected life-size with startling clarity on your wall or screen? That's what you'll get with the InFocus ScreenPlay 4805 projector. It redefines video enjoyment with a screen size of up to 9 feet and the ability to hook up to just about any of your favorite home-entertainment devices, including TV systems, DVD players, and game consoles.

For more information on these and many other outstanding projector products, click now on www.infocus.com.

FROM THE OFFICE TO THE LIVING ROOM

The portability and the availability of systems suited to video and even HDTV projection has made these systems more versatile, with the result that they often see use in the home as well as the office, says Amit Mathradas, projector product manager with Dell Computer. As projectors have migrated into the home theater market and DLPs have found their way into

3 OPEN THE VICTIM'S AIRWAY



Open the victim's airway by tilting his/her chin gently with one hand, while pushing back on his/her forehead with the other hand. If you suspect a neck injury, put your fingers behind the jawbone just below the ear, and push the jaw forward to open the victim's mouth.



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rear-projection HDTV sets, the economies of scale can only pull prices down further, analysts say.

More than 50 manufacturers offer imaging products based on DLP, according to TI, which proudly claims it is the only display technology in the world that can enable a sub-2-lb. projector and light up a 75-foot movie screen. Still, projectors for business continue to dominate sales, analysts say, although TI will not break out sales among its business products, home entertainment, and commercial entertainment divisions.

There has been a notable shift to value-pricing in the projector market. The "introduction and now proliferation of sub-\$1,000 and even sub-\$900 projectors marks a watershed in the development history of projectors," market research company IDC declared in its projector worldwide forecast report released late last year. Breaking through that barrier was no surprise, "but the speed at which it has been broadly adopted across the industry is," IDC said. Projector shipments surpassed 2 million units in 2003, and IDC predicts that worldwide volume will reach more than 5.1 million units in 2007.

DLP is not only affordable. It's even hip. Business users setting up and using the HP Digital Projector mp3130 often hear a reaction they never thought a projector could provoke: "That's cool."

For starters, the surprising mp3130 sets up in a unique vertical tower design. This isn't just for looks. In the typical crowded and often cluttered conference room, this vertical format saves space while elevating the presentation above the clutter of coffee cups and other desktop paraphernalia.

Then there are the mp3130's superb portability fea-



The HP mp3130 projects razor-sharp, remarkably clear images of slides or video while remaining compact and weighing under four pounds.

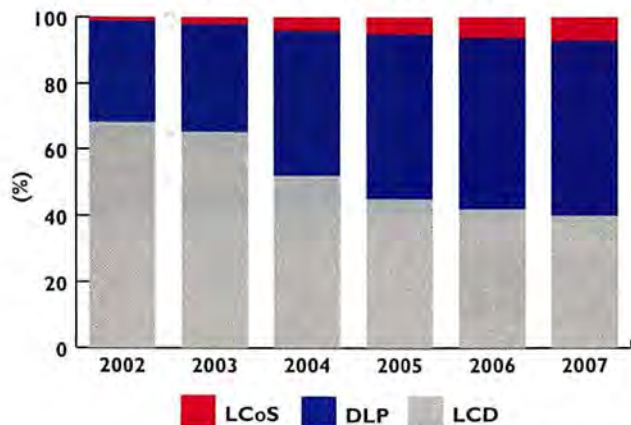
tures. This micro-portable weighs under four pounds—less than most notebook computers. And if presenters are using the CompactFlash or SD card memory, they don't even have to lug that notebook along, saving space and making for fewer things to carry.

But perhaps the mp3130 shines brightest in doing what mobile professionals want the most from a projector: projecting razor-sharp, remarkably clear images of slides or video. This clarity and brightness is partly due to the 1800 lumens of the mp3130 and its high, 2000:1 contrast ratio. With keystone correction, users can expertly adjust images for perfect vertical or horizontal screen placement. XGA native resolution that scales to accept from VGA through SXGA+ enables superior, sharp detail, whether you are presenting to a small, impromptu meeting or to a large and formal business audience.

With these and other outstanding features, it is no surprise that the mp3130 won a *VarBusiness* Technology Innovator Award earlier this year. Learn more about this invaluable tool for the mobile manager—the HP Digital Projector mp3130—by clicking now on www.hp.com/go/projector18.

DLP SHINES!

Worldwide Projector Shipment Share by Technology, 2002-2007



SOURCE: IDC, 2003

A LOOK AT THE FUTURE

DLPs, initially introduced in 1996, now light up a broad range of projection devices, including business-data projectors, home-theater projectors, large-screen tabletop TVs, commercial rental and staging systems, and digital cinema.



View innovative HP technology through an entirely different lens.

HP's complete line of sophisticated digital projectors starts at a highly mobile 2.2 pounds. The more intelligent the projector, the smarter the presentation. It was this thinking that led us to infuse our digital projector line with the most sophisticated image-reproduction technology available. All our projectors feature Digital Light Processing™ technology, which manipulates light to consistently achieve the sharpest, brightest image possible under a wide range of light conditions. Meaning your conference room doesn't have to be perfectly dark for the finer points of your presentation to appear perfectly crisp. And our projectors are easy to use and easy to maintain. So when your company needs to project an image with impact, you'll just get more from HP.



HP vp6110/vp6111 PROJECTOR

\$999

Lease for under \$37 a month*

After mail-in rebate

\$1,299 - \$300 mail-in rebate** = \$999

Rebate Not Available in Connecticut

6.7 lbs
1500 lumens
Native SVGA (800 x 600 pixels)
Automatic image optimization
3-watt speaker
2-year express-exchange warranty



HP sb21 PROJECTOR

\$1,599

Lease for under \$49 a month*

After mail-in rebate

\$1,699 - \$100 mail-in rebate** = \$1,599

Rebate Not Available in Connecticut

2.2 lbs
1000 lumens
Native SVGA (800 x 600 pixels)
Keystone correction
Remote mouse
2-year express-exchange warranty



HP mp3130 PROJECTOR

\$2,599

Lease for under \$77 a month*

After mail-in rebate

\$2,699 - \$100 mail-in rebate** = \$2,599

Rebate Not Available in Connecticut

3.8 lbs
1800 lumens
Native XGA (1024 x 768 pixels)
Automatic image optimization
3-year express-exchange warranty



HP xp8020 PROJECTOR

\$6,899

13.4 lbs

3100 lumens

Native XGA (1024 x 768 pixels)

Advanced connection options included

Automatic image optimization

Remote mouse

3-year warranty



Call 1-800-282-6672, visit hp.com/go/innovation, or contact your reseller to see our complete line of digital projectors.

*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). 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. Visit www.hp.com/go/HPFinancialServices or call 888-277-5942 and ask for the 36-month, 0% FMV lease offer for more information. **Rebate offers good on purchases made between 5/1/04 and 7/31/04 on qualifying HP projectors. Rebates are subject to change; check www.hp.com/go/getmore for most current rebate values. Actual retail prices may vary. HP/HPFSC reserves the right to change or cancel these programs at any time without notice. ©2004 Hewlett-Packard Development Company, L.P.



INTERVIEW WITH RON GILLIES

SENIOR VICE PRESIDENT AND GENERAL MANAGER FOR NEC SOLUTIONS AMERICA, INC.'S VISUAL SYSTEMS DIVISION

WHY CONSIDER NEC FOR YOUR DISPLAY TECHNOLOGY NEEDS?

NEC is a venerable, 100-year-old, \$43-billion global company and a true innovator in the manufacture of visual display technology. Supported by rock-solid engineering, our commercial and professional home entertainment projectors and plasma displays have won numerous awards for excellence. And we back all this up with industry-leading worldwide service and support, including our InstaCare repair and return and TravelCare loaner programs. We pride ourselves on taking great care of our customers.

WHAT IS NEC DOING TO ADDRESS THE TRENDS IN WIRELESS NETWORKS?

Wireless is truly exploding. IDC says that the number of public WiFi hotspots will double worldwide this year, while WiFi adoption in the enterprise continues. NEC's LT200 Series portable projectors include a wireless option enabling users to place their laptops anywhere in

the room and switch seamlessly to the projector with the touch of a button for true collaborative communication. You can even remotely control and monitor the projector using the wireless function. It's no wonder NEC's LT240 was listed as a *PC World* Best Buy.

JUST HOW IMPORTANT IS MOBILITY?

IDC data shows that shipments of notebooks and projectors will continue to grow this year, while the US has one of the highest notebook and projector attach ratios in the world. This direct relationship, coupled with decreasing size and increases in functionality, makes notebooks and projectors the ideal combination for today's mobile professional.

NEC's 2.1-pound LT10 is a sleek, compact dynamo with the kind of stunning data and video display, superior brightness, and ease-of-use that empowers any on-the-road professional. These features also make the LT10 an ideal crossover projector for use both at work and home.

While DLP allows manufacturers to build projectors as small as two pounds in weight, the predominant form factor is in the 5-to-10-pound category, because, says IDC's Eric Haruki, "vendors are able to optimize so many things within that form factor." Dell, which ships models in the 3.9-pound-to-6.5-pound range, finds that for the most part, "Customers value price and performance a little more than they value absolute size," says Amit Mathradas.

In the smaller, sub-3-pound class, average selling prices are currently about \$2,000—down dramatically from \$8,000 in 2001—and will trend downward over the next few years, according to Haruki: "We're not going to break \$1,000, but we'll see prices maybe at \$1,200 to \$1,300 in 2008." Currently, this category accounts for 5.5% of shipments, and it should increase to 14% in 2008.

XGA resolution is expected to dominate shipments, with market share in the 60%+ range over the next few years; SVGA has a declining market share, with 28.6% of shipments in 2003. Although projectors with only a VGA connection still accounted for half the shipments in 2003, by 2007 most projectors are expected to ship with both a VGA and a Digital Video Interface (DVI), which was designed to accommodate digital and



XEROX
DP 1015



XEROX
DP 1011

The Xerox DP 1015 and the Xerox DP 1011 let presenters focus on their presentations and not on the technology driving them.

analog signals through one connection.

DLP is all about world-class presentations, and for mobile professionals, gaining a competitive edge can come down to projecting a flawless image—literally. So when it is time to make business presentations, nothing can match the clarity and brilliance of a presentation

IT'S LIKE...
HAVING THOUSANDS OF
PEOPLE BEHIND YOU
REGARDLESS OF WHAT
LIES AHEAD.

Visual Systems is a division of NEC Solutions America, Inc. ©2004.

You deserve a display device whether it's in your home or at the office, that provides you with the highest level of image quality, simple operation and responsive global support to assist in times of need. NEC wants you to know that our commitment to quality products, award-winning service and to the environment is unmatched in the industry. For details on our robust line of projection and plasma display products, visit our web site at www.necvisualsystems.com or call 1.800.632.4636.



The name you trust. The reliability you deserve.

mobile | wireless

NEC gives you the choices you need to succeed. Put your trust in an industry leader.

LT10. lightweight projector.

At a mere 2.1 lbs., the LT10 will easily slide into any carry-on. Packed with punch, including 1,100 ANSI lumens and DLP technology, your presentations are sure to impress the most critical of audiences.

The DLP™ logo and DLP™ medallion are trademarks of Texas Instruments.



\$100 rebate

LT10 end user mail in rebate
May 1-July 31, 2004



LT220, LT240K, LT260K

LT260K. portable projector.

Bright enough for installation and light enough for travel, the powerful LT200 Series will make your ideas shine. With features including wireless or wired networking capabilities and extensive input options, it's no wonder NEC's LT240K was listed as a PC World Best Buy.

Empowered by Innovation

NEC

driven by DLP projector technology—the kind of technology that drives the market-leading Xerox digital projectors available at www.xeroxprojectors.com.

If what you need is a portable, feature-rich projector that weighs less than most notebook computers, Xerox offers the new DP 1015 for mobile professionals and novice presenters as well, thanks to its remarkable ease of use. The Xerox DP 1015 offers a sparkling 1500 lumens and high 1024x768 resolution to fill up large screens or wall areas with extra-sharp images that reflect well on the presenter. Advanced PC connectivity function makes setup a breeze, so presenters can focus on their presentations and not on the technology driving them. The DP 1015 also features a wireless infrared remote, built-in laser pointer, and full PC and Macintosh compatibility.

For world-class business presentations and for home use, Visioneer also offers the Xerox DP 1011 digital projector. At just over two pounds and offering 1100 lumens, this projector is among the brightest and most portable in the micro-portable class of projectors. Small wonder that *Widescreen Review* columnist Terry Paullin said of this super-versatile projector, "The Xerox DP 1011 has the best colorimetry and video dynamic

range of anything I've seen in this emerging under-\$5000 cross-over (data projector/video projector) market."

To learn more about these outstanding projectors, click now on www.xeroxprojectors.com.

WIRELESS: NOT YET

One area in which projectors have bucked overall technology trends is wireless. Although vendors are shipping 802.11b-enabled systems, IDC's report predicts that "almost all current efforts at providing wireless support in projectors will prove to be fruitless because of their disappointing performance—end users demand a complete replacement for a simple VGA cable—and the complete lack of standardization."

Wireless projection capability, says Eric Haruki, "is still a good idea, but vendors need to do it in a way that's not super-expensive and not brain-dead. We're not even close to being there yet." Until vendors can match the performance of VGA cables and come up with an open system standard for transmitting images wirelessly, wireless is unlikely to appeal to buyers, particularly as the added cost currently amounts to hundreds of dollars.

JUST THE FACTS

LCD projectors rely on three different panels—red, green, and blue. As light is transmitted through the panels, individual pixels open up and modulate the signal. The advantages of LCD are generally believed to be rich color saturation and a sharper image; the disadvantages are that the sharpness detracts from video images and the pixels create a so-called "chicken-wire" effect.

LCD projectors are generally bulkier than DLP units, which rely on a unique chip called a Digital Micromirror Device, or DMD. The DMD contains a rectangular array of up to 1.3 million hinge-mounted mirrors, each of which measures less than one-fifth the width of a human hair. DLP, according to advocates, noticeably reduces the pixellation or chicken-wire effect, and produces a smoother image better suited to video. The knocks against DLP, historically, have been that it requires a brighter light and that, because it uses a color wheel to modulate the reflected light, it can create a rainbow effect, as light shifts in sequence through the three colors.

There have been several advances in DLP technology of late. First, newer devices include a color gate with six panels, rather than four, which spins faster and provides greater color saturation and reduced rainbow effect. Secondly, new TI HD2+ DLP technology delivers improved contrast ratio and uses a revised color-wheel architecture that will increase the number of bits used to process green light. New technology on the horizon is Sequential Color Recapture, a new type of color wheel that arranges RGB dichroic coatings in a "spiral of Archimedes" pattern and creates scrolling color, rather than the sequential color of the older technology.

At the high end—we're talking \$20K-\$30K and up—projection devices use a three-chip DLP technology, with each chip dedicated to one of the three colors. These systems use a prism rather than a color gate, and they can generate a staggering 35 trillion colors, which is more than eight times greater than is possible with film. It's not expected this technology will migrate into general consumer or business projection systems anytime soon.

PROJECT



The Xerox Digital Projector is ultra small, but with its Carl Zeiss® lens and 2000:1 contrast ratio, it'll make your ideas look really big and bright.

There's a new way to look at it.

High standards. Remarkable performance.

That's Xerox for you. At 2.1 pounds, this ultra lightweight Xerox DP 1011 digital projector is the ultimate presentation tool for mobile professionals. With 1024x768 (XGA) resolution, support for up to 16.7 million colors and DLP™ technology, the DP 1011 offers unprecedented picture

quality and color accuracy for both presentations and home theater entertainment. The DP 1011 also includes a credit card-sized wireless remote that will allow you to zoom and adjust the image quality from anywhere in the room. If you care how your image is projected, the DP 1011 is the right tool to place you and your ideas in the brightest light.

Learn more: www.xeroxprojectors.com

THE DOCUMENT COMPANY
XEROX.

Available Online at:

amazon.com

Buy.com

CDW

Insight

PCConnection

[PCUNIVERSE](http://pcuniverse.com)



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PC World editors and a team of tech gurus put their heads together

Best of 2004

BY THE EDITORS OF PC WORLD

PHOTOGRAPHS BY WENDI NORDECK



to crown the year's top hardware, software, sites, and services.

THESE DAYS, WHEN YOU'RE SHOPPING FOR A NEW lightning-fast computer or a slick DVD recorder, you probably don't look to just one source for information. You read *PC World* (naturally!), but you also see what other tech pundits have to say, and you read reviews at Web sites dedicated to the equipment you want.

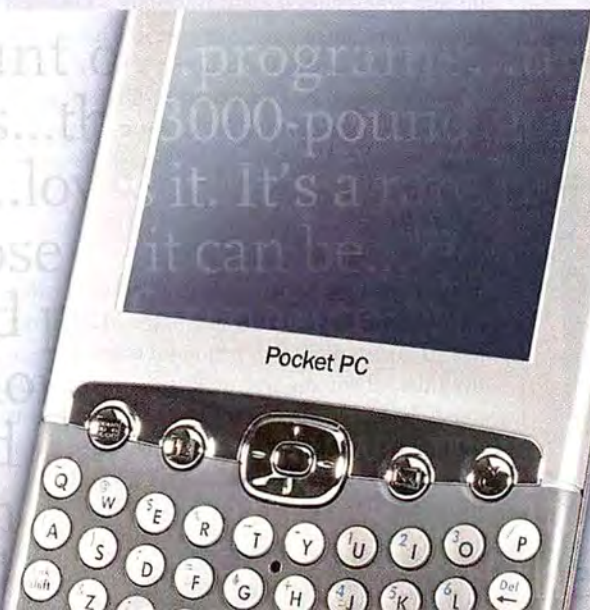
In this 22nd edition of the World Class Awards, we've taken care of that work for you. To choose the best that the world of technology has to offer, we tapped not only the expertise of our own editors and *PC World* Test Center analysts, but also the knowledge of a team of outside experts—industry analysts, reviewers, and leaders at specialty sites. We looked for hardware, software, and services with exemplary usability, design, innovation, features, performance, and value. After considering hundreds of candidates, we chose 68 winners, from powerful notebooks to versatile cameras to hassle-free remote access software.

This year, we're also establishing the World Class Hall of Fame. Which products get in? Only those that consistently show World Class qualities for many years. After all, being great once or twice is impressive, but being great over the long haul is truly exceptional. ▶



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Computers

General-Purpose PC

Dell Dimension 4600

The 4600 line continues Dell's tradition of building strong-performing systems that can be configured to your liking. Dell's range of processors, optical drives, sound systems, and other components let you get a basic or decked-out PC for a reasonable price. \$749 to \$1500, find.pcworld.com/40406



Hush Technologies
Hush ATX

Performance PC

Alienware Aurora Extreme FX 53

You want fast? The AMD Athlon 64 FX-53-based Aurora Extreme obliterated the competition in our tests, notching the fastest-ever PC WorldBench 4 score of 150. Though pricey, our test system (with CRT monitor and speakers) costs less than similar PCs from fellow elite builders Voodoo PC and Falcon Northwest. \$4619, find.pcworld.com/42162



Toshiba Satellite P25

Specialty PC

Hush Technologies Hush ATX

A model of elegant design, the Hush ATX is the first PC to combine good performance and quiet operation. Using today's mainstream processors (we tested a 2.8-GHz Intel Pentium 4-based unit), the Hush ATX uses a unique heat pipe system to dissipate heat through its aluminum-finned case, eliminating the need for noisy fans. Available in



Toshiba Portégé M200



Alienware Aurora Extreme FX 53

business or media-savvy configurations, the Hush ATX should be welcome anywhere silence is golden. \$2264, find.pcworld.com/41651

Desktop Replacement Notebook

Toshiba Satellite P25

The P25 tips the scales at over 10 pounds, but its large frame holds lots of features. It blends entertainment (with a beautiful 17-inch wide-screen LCD, fantastic sound, and Windows XP Media Center), speed (courtesy of a 3.2-GHz Pentium 4), and flexibility (with 80GB of storage and a DVD burner that supports all DVD formats). This powerful configuration makes the P25 the ideal desktop replacement. \$2599, find.pcworld.com/38345

Ultraportable Notebook

IBM ThinkPad X40

With the X40, IBM has perfected the ultraportable. Not only is it extremely thin—barely an inch top to bottom when closed—but it weighs a mere 2.8 pounds. Despite its small size, the X40 has a comfortable keyboard and a bright, sharp 12.1-inch screen. Powered by a low-voltage 1-GHz Pentium M processor, the X40 turns in sprightly performance to boot. \$2024, find.pcworld.com/41357

Tablet PC

Toshiba Portégé M200

A notebook with a twist (that is, the screen twists and folds flat onto the keyboard), the M200 series lets you use a digitizing pen to jot down notes at meetings, or you can type on it as if it were a traditional notebook. Microsoft's OneNote software is included, for keeping your scribbled notes organized. \$2199, find.pcworld.com/42254

Product of the Year

AMD Athlon 64 FX processor series

WHEN YOU WANT TOP PERFORMANCE, the Athlon 64 FX line delivers. But these CPUs aren't important just because of the speed they give you today. The FX is the first desktop PC processor (find.pcworld.com/42216) that will let you upgrade to 64-bit operating systems and applications as they appear in the next few years.

What will a 64-bit future mean to you? Smoother, faster video encoding, speedy rendering in complex programs such as AutoCAD, and movie-quality games.

The FX chip's other technical innovations include integrated memory controllers, larger caches, and a feature to help stop malicious worms.

Don't want to pay a premium for the FX? Then get the less powerful but more affordable Athlon 64 CPU.



Bare Necessities

Operating System

Apple Mac OS X Panther 10.3

Panther's sleek interface and reliable performance are impressive. Although we aren't suggesting that you ditch your hardware and buy a Mac, Apple deserves credit for raising the bar for OSs. And we hope Microsoft is paying attention as it works on the next Windows. \$129, find.pcworld.com/42292

Input Device

Logitech DiNovo Media Desktop

Finally, devices that put some teeth into Bluetooth. This suite of Bluetooth-enabled keyboard, mouse, and MediaPad (similar to a number pad) combines elegant design with high-end functionality. The MediaPad sports a small LCD to show what's playing, and has buttons to control music and video. \$250, find.pcworld.com/40856

Router/Gateway

Netgear WGT624 108 MBPS Wireless Firewall Router

Hassle-free setup and swift performance—thanks to accelerated G technology that can push data at 108 megabits per second, twice the throughput rate of the 802.11g standard—distinguish the WGT624. But what really sold us are its generous security and privacy features. \$85, find.pcworld.com/40148

Web Browser

Opera 7.23

An alternative browser without the bloat, according to Rob Enderle, president and principal analyst of the Enderle Group, Opera is a fleet-footed package that provides innovative ways to view, analyze, and store Web pages. Opera's security options are strong and easy to configure. The beta for version 7.5 looks promising, too. Free (\$39 without the ad banner), find.pcworld.com/34295

E-Mail

Microsoft Office Outlook 2003

Some users might consider Outlook's cornucopia of features overkill, but this PIM's e-mail client is excellent, especially for the corporate set. Version 2003's spam filters kept out virtually all of our test junk mail. \$85, find.pcworld.com/39887

“Opera does a better job of browsing, and with less bloat than IE.”

—Rob Enderle, president and principal analyst of the Enderle Group



Logitech DiNovo Media Desktop



Netgear WGT624 Wireless Firewall Router

Search Engine

Google

Other search engines are giving Google a run for its dominance, but so far none have surpassed it in accuracy and versatility. Free, www.google.com

Stand-Alone Utility

Novatix ExplorerPlus

ExplorerPlus puts Windows Explorer to shame, thanks to features such as built-in file viewers, data management tools, and horizontal or vertical multipane folder views. \$40, find.pcworld.com/42154

Utility Suite

V Communications SystemSuite 5

SystemSuite 5 packs hardware diagnostics, an application uninstaller, a lost data rescuer, and other practical tools into one CD. But some of the apps are inferior versions of the company's stand-alone programs. \$60, find.pcworld.com/37922

Personal Finance

Microsoft Money 2004 Premium

Money's free services (such as two years' worth of bill-pay service) and excellent finance tools make it a better choice than its perennial competitor, Intuit's Quicken. \$80, find.pcworld.com/42164

Business Accounting

ACCPAC Simply Accounting 2004 Pro

A great price, a direct-deposit tool, and easy integration with Excel make Simply Accounting tough to beat. \$99, find.pcworld.com/40862



Apple Mac OS X Panther 10.3

Security

"The amount of malware programs that Spybot Search & Destroy searched for was unbelievable."

—Brian Martin,
security consultant

Antivirus Software

Trend Micro PC-cillin Internet Security 2004

PC-cillin outperformed the competition at removing infections, and its neat interface lets you access components easily. \$49, find.pcworld.com/42012

Firewall

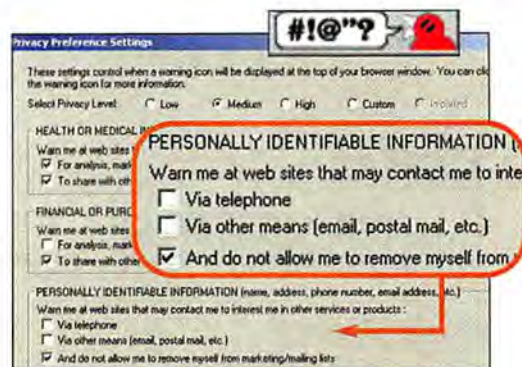
Zone Labs ZoneAlarm Pro 4.5

Continuing to set the standard in the firewall category, ZoneAlarm Pro blocks most incoming and outgoing e-mail viruses, manages cookies, and stops pop-up ads. \$50, find.pcworld.com/42019

Spam Filter

Cloudmark SpamNet

SpamNet delivered a catch rate of 98 percent and an uncanny ability *not* to block legitimate mail. Use it for Outlook and Web-based, POP3, or IMAP e-mail. \$4 a month, find.pcworld.com/31553



AT&T Privacy Bird

Privacy Software

AT&T Privacy Bird

Let Privacy Bird gauge the privacy level of any site with a machine-readable privacy policy. At sites that guard your information, the bird is a calming green. At sites set up to sell your data, the bird turns an angry red. Free, find.pcworld.com/42258

Anti-Spyware Scanner

Spybot Search & Destroy

Search & Destroy scrapes bothersome software from your PC as you would barnacles from the underside of a boat. Free, find.pcworld.com/42052

Storage



PowerHouse
Technologies Migo

Internal Hard Drive

Hitachi Deskstar 7K400

The 7200-rpm 7K400 provides 400GB of storage and some of the fastest performance we've seen in a desktop drive. \$400, find.pcworld.com/41952

External Hard Drive

Maxtor OneTouch 250GB

With an excellent combination of capacity, features, and performance, this drive is the best choice for backing up your PC and expanding your storage easily. \$300, find.pcworld.com/41219

Ultraportable Hard Drive

LaCie Data Bank 40GB

The Porsche-designed Data Bank is one of the few small hard drives that can fit in a shirt pocket. Available in both 20GB and 40GB capacities, the 5.7-ounce hard drive draws all the power it requires from a USB 2.0 or FireWire cable. \$349, find.pcworld.com/41216



LaCie Data Bank 40GB

Rewritable DVD Drive

Plextor PX-712A

The speedy PX-712A is the first drive to write at 12X to DVD+R media and the first to write to CD-R at 48X. \$200, find.pcworld.com/42306

DVD Burning Suite

Roxio Easy Media Creator 7

This suite offers above-average task integration and all the CD/DVD mastering and DVD authoring tools you need. \$99, find.pcworld.com/41429

USB Flash Drive

PowerHouse Technologies Migo 256MB

Migo's on-board data management and synchronization software make parting with your desktop easier. \$200, find.pcworld.com/38648

Backup Software

StompSoft BackUp MyPC 5 Deluxe

BackUp MyPC provides a logical interface, a disaster recovery tool, and the ultimate in set-and-forget automation. \$60, find.pcworld.com/42182

Digital Imaging

Digital SLR Camera

Canon EOS Digital Rebel

It's what photo enthusiasts were waiting for: a lightweight digital SLR that mere mortals can afford. Though the Rebel was the first sub-\$1000 digital SLR, it's no longer alone. Nikon's D70 carries a similarly modest price, but the Canon is the better of the two. \$999, find.pcworld.com/38810

Advanced Digital Camera

Olympus C-8080 Wide Zoom

The C-8080 has a sweet combination of advanced controls and an intelligent design that makes it a pleasure to use. "Its image quality will satisfy even the pros," says Steve Sanders of Steves-Digicams.com. We agree: It earned top scores in our photo-quality tests. One knock is that the 5X zoom is short for its class. \$899, find.pcworld.com/41860

Point-and-Shoot Digital Camera

Sony Cyber-shot DSC-W1

The 5.1-megapixel W1 has almost everything you'd want in a point-and-shoot: low cost, small size, an impressive 2.5-inch LCD, fast startup, and a quick trigger. The photos we took looked sharp, colorful, and true-to-life. \$400, find.pcworld.com/42288

"For price and performance in SLRs, nothing comes close to Digital Rebel."

—Steve Sanders
Steves-Digicams.com



Olympus C-8080
Wide Zoom



Sony Cyber-shot DSC-W1



Canon EOS Digital Rebel

Photo-Management Software

Adobe Photoshop Album 2

Every photo organizer we've seen brims with features—tagging, fixing, burning, and sharing. Choosing the best among a strong lot wasn't easy, but we like Photoshop Album 2's beautiful interface; its snazzy, unique tagging system; and its sophisticated online photo gallery tool. But the program is a little slower than we would like. \$50, find.pcworld.com/42374

Image Editing Software

Adobe Photoshop CS

Just as it's easy to pick a Porsche as a world-class sports car, it's easy to pick Photoshop as our World Class image editor. Handy new layers management, an improved file browser, a creativity-enhancing filters browser, and expanded 16-bit editing capabilities are only a few of its improvements. A hidden gem: the Shadow/Highlights tool buried in the Image>Adjustments menu. \$649, find.pcworld.com/42308

Photo Printer

Canon i960

In addition to printing glossy photos quickly, the i960 produces sharp text and attractive color graphics on plain paper. It lets you print directly from a PictBridge-compatible digital camera, and a paper feed accommodates 4-by-6-inch photo paper. \$200, find.pcworld.com/40490

Scanner

Canon CanoScan 9900F

Want to make quality scans without having to master arcane software? The CanoScan 9900F delivers great-looking scans from both printed photos and transparencies. It automatically fixes dust and scratches, and its software is a breeze to use. \$400, find.pcworld.com/37163

Hall of Fame

IBM ThinkPad series

IN THE COMPETITIVE PC INDUSTRY, few products stay at the top for a year, let alone for over a decade. IBM's ThinkPad line earns our first Hall of Fame award because it has embodied World Class qualities—innovative design, excellent reliability, powerful features—since 1992. The first in the series, the ThinkPad 700, had revolutionary features such as a 10.4-inch screen and a red pointing device that became a signature element. Fast-forward 12 years to the current ThinkPad X40, crowned this year's best ultraportable notebook (see page 88). It bears the same black case (though pleasantly slimmer), solid construction, and comfortable keyboard, and it has an improved eraserhead. Big Blue also backs its notebooks with stellar service. No wonder ThinkPads have been going strong—and winning World Class awards—since day one.



Printing and Publishing

Inkjet Printer

Canon i455

For everyday use, this sturdy, compact printer produces sharp text and attractive graphics on plain paper. Not so long ago, only six- and seven-ink photo printers could print natural-looking glossy photos with vivid color. But the i455 prints exceptional glossy photos with only four inks—and for a very affordable price. \$80, find.pcworld.com/41812

Business Color Printer

Oki C7300n

If you need business-quality text and color graphics from the same printer, buy the C7300n. This LED model printed text quickly, had a low consumables cost per page in our test, and bears a low price for what you get. \$1889, find.pcworld.com/33929

Monochrome Laser Printer

HP LaserJet 1300

The LaserJet is fast enough to satisfy a small office, is a snap to install, and prints clean-looking line art and sharp text. \$400, find.pcworld.com/37646

Workgroup Printer

Dell M5200n

At its price, Dell's M5200n can't be beat for high print quality and fast performance. This mono-



Canon i455



Oki C7300n



Adobe InDesign CS

chrome laser printed text at a sizzling 22.9 pages per minute in our tests. The printer is easy to operate, and it offers many expansion options. \$999, find.pcworld.com/37643

Multifunction Printer

Canon MultiPass MP730

The MP730 is about as close to "no compromises" as we can imagine. It makes great prints, turns out pages quickly, and comes loaded with extras such as an automatic document feeder that can scan batches, slots that read five types of media card, and faxing that works even when your PC is off. \$300, find.pcworld.com/35018

Desktop Publishing Software

Adobe InDesign CS

In this two-horse race (with the \$995 QuarkXPress 6), InDesign CS wins by a nose. Its Separations Preview and Flatten Preview palettes take the guesswork out of print previews, and its Story Editor word processor makes fitting copy easier. "Once the underdog, InDesign is now the 3000-pound gorilla," says graphics guru and book author Deke McClelland. \$699, find.pcworld.com/42310

Web Development Software

Microsoft Office FrontPage 2003

Whereas FrontPage 2002 focused on Office XP integration, Microsoft concentrated on improving this version's overall tools. The HTML engine generates much cleaner code that loads pages faster and simplifies HTML editing. Though FrontPage's features are playing catch-up with Web designers, who favor Macromedia's \$399 Dreamweaver MX 2004, it's the better, lower-cost choice for casual developers. \$199, find.pcworld.com/37307

Loser of the Year

Smart Watches



A WRISTWATCH THAT DOES wireless news, instant messaging, and reminders? We're not saying it's a bad idea. But the first watches based on Microsoft's SPOT technology—from Fossil (including a Dick Tracy model, at left) and Suunto—turned out to be as underwhelming as they were overhyped. Their interfaces are illogical. Their batteries last only a few days. If you venture far from home, you need to alert the MSN Direct service to continue to get relevant information. And Microsoft's ad blitz touted features that weren't available at first. Call these timepieces miracles of miniaturization: Rarely have so many hassles been packed into devices this small.



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"The Rio Karma has just a little bit more function over form than Apple's iPod."

—Peter Rojas,
editor, Engadget.com



Lite-On LVW-5005



NEC LT10



Eizo Nanao FlexScan
L767



Logitech Z-680

Sound and Video

Digital Video Camera

Panasonic PV-GS200

This camcorder packs a lot into its small case, with a three-CCD imaging system that yields sharp, bright, color-rich video and 2.3-megapixel still images. \$900, find.pcworld.com/42192

Video Editing Software

Adobe Premiere Pro 1.5

Though it faces some stiff competition from programs like Vegas 5, we like the powerful new features in Premiere Pro 1.5; it makes organizing and editing video easier, and adds support for editing HD video. \$699, find.pcworld.com/42174

DVD Recorder

Lite-On LVW-5005

The svelte LVW-5005 impressed us for a number of reasons, starting with its ability to record to your choice of DVD-R/RW or DVD+R/RW media. The minimalist design is appealing, too: Its interface guides you through the recording process, and the remote is convenient and uncomplicated. Plus, the LVW-5005 is the first DVD recorder that lets you record MPEG-1 video to CDs, and record audio CDs from any audio input including over-the-air broadcasts and digital music stations distributed by cable operators. \$380, find.pcworld.com/42312

Network Streaming Device

Rockford Omnifi DMS1 Home Digital Media Streamer

Funky setup, clunky interfaces—some of the gadgets that let you shuttle digital music from a PC to a stereo system aren't worth the bother. But the Omnifi DMS1 is easy to install and offers intuitive access to your music library via a wired or wireless net. Bonuses include integration with Real's Rhapsody music service. \$300, find.pcworld.com/39605

Digital Audio Player

Rio Karma

It's not as pretty as Apple's much-adored iPod (which finished a hotly debated second in our polling), but what the Rio Karma lacks in sex appeal, it makes up for in clever, usable features. It supports numerous audio formats (including Ogg



Rio Karma

Vorbis and FLAC), ships with a slick docking station that includes ethernet capabilities, and offers the pleasantly addictive Rio DJ, an on-board feature that generates playlists based upon your own listening habits. Add to that a long-lasting rechargeable battery and a reasonable price, and you have what Peter Rojas—editor of Engadget.com—calls the best player currently available for the power user. \$300, find.pcworld.com/40943

Portable Projector

NEC LT10

For a 2.2-pound projector, the LT10 generates impressive image quality. Rated at 1100 lumens, it's best suited for small conference rooms that seat about 20 people. Text is sharp, even at a super-small, 7-point font size. It also does a great job of reproducing colors, with warmth that makes flesh tones and colors look accurate. \$2200, find.pcworld.com/40865

19-Inch LCD

Eizo Nanao FlexScan L767

The L767 defies the stereotype that LCDs can't handle graphics work. In our tests it displayed rich colors, with precise transitions. For further picture refinement, Eizo includes its excellent Screen-Manager Pro adjustment software, which (among other things) lets you specify custom screen settings for each application on your PC. The L767 comes at a premium price, but the results are worth it. \$900, find.pcworld.com/35768

17-Inch LCD

Samsung SyncMaster 173P

The 173P looks great and offers a lot of flexibility. You can set the silver-framed panel in almost any position, and you make screen adjustments via an intuitive control application rather than by pressing clunky buttons on the bezel. The stylish design alone might justify paying a bit extra, but the 173P is also a top-notch performer, producing bright, vibrant colors in graphics and extrasharp text in documents. \$660, find.pcworld.com/39383

22-Inch CRT Monitor

ViewSonic P220f

LCDs are sexy, but a 22-inch LCD that matches the resolution of the P220f costs about three times more. Put a couple hundred dollars of those savings toward a calibration kit, and the flat-tube P220f will provide professional-grade shading and color quality for graphics or video. And the P220f offers swift response for smooth movie watching or gaming. \$550, find.pcworld.com/39233



Panasonic PV-GS200



ATI All-in-Wonder
9600 XT

Graphics Board

ATI All-in-Wonder series

The All-in-Wonder series proves that graphics cards have gone beyond gaming. Besides fast 3D-gaming acceleration, the ATI All-in-Wonder 9600 XT is capable of recording and playing back live FM radio. Adding ATI's \$29 HDTV adapter, you can hook up an HDTV display to your computer. If your interest lies in the latest hardware, though, keep an eye out for the next-generation boards from ATI and competitor NVidia. Using beta drivers, ATI's X800 board and NVidia's GeForce 6800 Ultra delivered impressive results in our preliminary tests. \$299 to \$399, find.pcworld.com/41940

Software Newcomer of the Year



Apple iTunes

Apple makes Windows apps about as often as Microsoft ships bug-free products, and if iTunes for Windows (free, find.pcworld.com/42314) is any indication, that's a crying shame. The iTunes media player works on PCs the same way it does

on Macs, right down to the handy feature that lets you share your music library with other PC or Mac iTunes users on your network. It looks great, it's easy

to use, and it has a surprising number of useful features, like the abilities to generate rules-based Smart Playlists and to trim individual tracks.

Meanwhile, Apple's complementary iTunes Music Store (99 cents per track, album prices vary, find.pcworld.com/35474) started the party last year on subscription-free digital tunes, pioneering the 99-cents-per-track model that most online music stores now use. With easy navigation, an impressive exclusive track selection, and such innovative offerings as audiobooks and radio show archives, iTunes Music Store is going strong. Competitors like RealPlayer Music Store made this a tough choice, but it's hard to beat a store that's built into the best media player software around. We do have one major complaint: iTunes tracks are incompatible with digital audio players other than Apple's own iPod. How selfish!

Sound Card

Creative Sound Blaster Audigy 2 ZS Platinum

Creative's sweet-sounding 24-bit/192-KHz sound cards remain the only ones that play DVD-Audio recordings right out of the box. The THX-certified Audigy 2 ZS line excels at surround sound, with Dolby Digital EX and DTS-ES support for movies, EAX4 for games, and CMSS 3D audio that expands stereo music tracks to play in surround sound. The Platinum version of the Audigy 2 ZS comes with a front-panel I/O box that includes digital-in and -out ports, along with FireWire and MIDI connections. \$180, find.pcworld.com/39275

PC Speakers

Logitech Z-680

Last year's World Class Speaker System looks even better a year later. Newer units such as Klipsch's ProMedia Ultra set and Creative's GigaWorks line might sound just a trifle better; but for digital input with those models, you'll need to add an external decoder at \$75 to \$100. Logitech's speakers sound great, they're digital right out of the box, and reputable online dealers are selling them for under \$300—a terrific bargain for a high-quality 5.1-speaker system. \$280, find.pcworld.com/42316

Mobile Tools

PDA

HP IPaq Pocket PC H4350

We haven't always seen eye to eye with Microsoft on handheld OSs, but HP's take on Windows Mobile 2003 for Pocket PCs is particularly elegant in the H4350. You'll pay top dollar for this corporate companion, but it doesn't stint on features—built-in Wi-Fi, Bluetooth, and a small keyboard. \$500, find.pcworld.com/39008

PDA Software

PDApps VeriChat

VeriChat manages IM with panache on both Palm and Windows Mobile (Pocket PC) handhelds. The service works on the major IM networks, and it lets you toil away in another app while swapping messages with buddies. \$25, find.pcworld.com/42320

Camera Phone

Motorola V600

The V600 takes 640-by-480-resolution snapshots, plays downloaded video clips, simplifies photo sharing, and “comes in a design that everybody knows and loves,” says IDC's Kevin Burden. \$300 (carrier-dependent), find.pcworld.com/42318

Web-Based E-Mail

Mailblocks

Mailblocks' system of challenging messages from unknown senders just plain works. 5MB free, 15MB \$10, 100MB \$25, find.pcworld.com/37280

The Treo 600 is a “PDA with a design that's as close as it can be to a cell phone.”

—Kevin Burden,
IDC analyst



Motorola V600



Garmin StreetPilot 2620



HP IPaq Pocket PC H4350

Video Instant Messaging Software

SightSpeed Video Messenger

Some video IM services have such poor voice sync that you may as well look at a photo while talking on the phone. But SightSpeed keeps up with the back-and-forth banter of a fast-paced conversation. \$5 per month, \$50 per year, find.pcworld.com/41904

Remote Access Software

Citrix Online GoToMyPC

With a GoToMyPC account, you can turn any Web-connected PC into a clone of your distant machine, affording access to remote programs, files, and networks. Though pricey, the service's speedy, secure, and hassle-free approach remains unbeatable. \$20 per month per PC, find.pcworld.com/33143

Collaboration Tool

Groove Networks Groove 3

No other collaboration tool matches Groove's safety, simplicity, and low cost—all within Windows Explorer. \$69, find.pcworld.com/42372

Web-Based Application

Evite

This dot-com-era survivor has only improved over time, with new party invitation tools, including ones for public events. Free, www.evite.com

GPS Navigation Device

Garmin StreetPilot 2620

The expensive StreetPilot calculates routes within seconds and supplies accurate, detailed maps and directions. Better still: It puts safety first by requiring that you stop the car before entering a new location. \$1300, find.pcworld.com/42322

Hardware Newcomer of the Year

PalmOne Treo 600

NOT TOO BIG FOR A CELL PHONE and not too small for a handheld, PalmOne's breakthrough Treo 600 (\$450 to \$699, depending on carrier and plan; find.pcworld.com/39590) has raised the bar for Palm/cell phone hybrids. We especially like the ease of single-handed phone use, the built-in VGA camera, and the small but usable domed keyboard that in many cases is smart enough to know when it's being used as a numeric keypad. Says IDC's Kevin Burden: “Everyone who has [a Treo 600] loves it. It's that rare product that has found a good balance between delivering the functionality that comes with a PDA with a design that is as close as it can be to a mobile phone.”



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-- J.W. Young from Seneca Falls, New York

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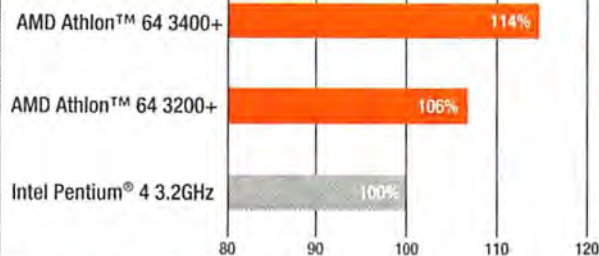
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A

AMD Athlon™ 64 Processor Performance Benchmark

Desktop Performance Overall



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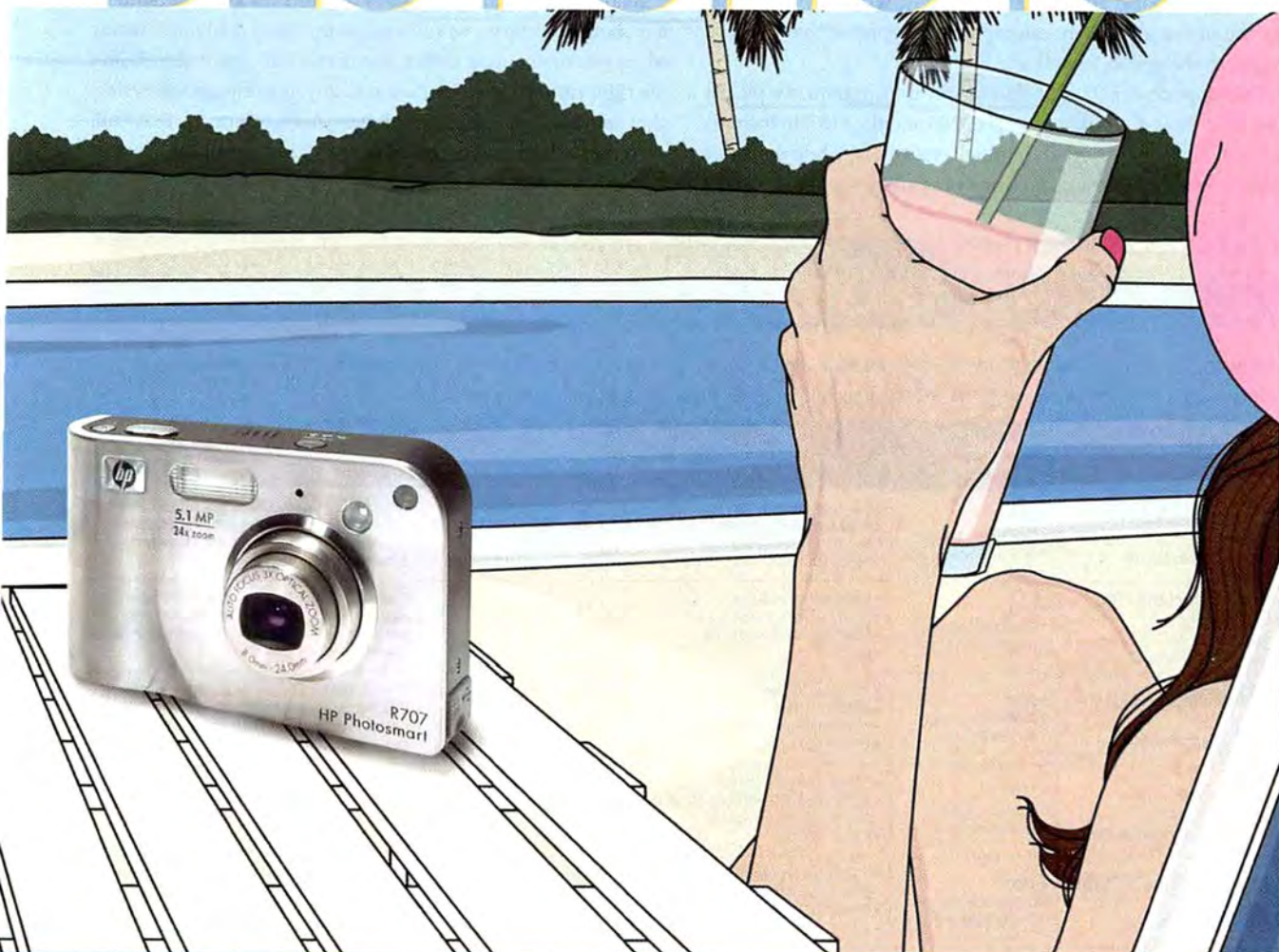


It's summertime and the snappin' is easy. We show you how to get better photos out of any camera—and how to find the best vacation-ready models for your budget. **BY PAUL JASPER**

INSIDE

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BEST SHOTS



THE WARM DAYS OF summer are here and it's high time to take a break. Whether you're jetting off to an exotic beach locale or relaxing at a local leisure spot over a long weekend, you'll likely be thinking of these pleasant times when the cold, dark days of winter return. And there's no better way to recall summer travel than with a digital camera. Today's models come in an incredible array of sizes, capabilities, and prices, but they all let you print and share your memories quickly and simply.

To help you decide on the best camera to pack in your bag, we tested 13 of the latest models. Most of them are small and easy to carry wherever you go. We looked at a wide range ▶

READY-TO-GO CAMERAS

Best BUY SMALL, LIGHT, AND PRICED JUST RIGHT: Our two Best Buys have what it takes to be ideal travel companions. The **Nikon Coolpix 3200** (shown above left) combines a sturdy design with easy-to-use controls, and shoots attractive photos. It doesn't have manual modes, so it's a good camera for taking quick shots. And at \$249, it's a great deal. **HP's Photosmart R707** (above right) has a sturdy feel, too, and its black rubber backing makes it easy to grip. It has well-designed menus and a few advanced features, which should appeal to casual users and to more-advanced shooters. Its photos look nice, as well. For \$349, it's well worth checking out.

of point-and-shoot cameras, from basic models to relatively sophisticated units that should appeal to experienced shooters. We put the cameras through a barrage of tests to gauge image quality, battery life, and hands-on usability. When we were done, we found that all of them can capture great photos that you'd be happy to share with friends and family.

Taking price, capabilities, and quality into account, we picked two Best Buys: the Nikon Coolpix 3200 and the HP Photosmart R707. The former is great for quick snapshots, while the latter combines a slew of advanced features in an easy-to-tote package.

But if price were no object, our favorite would be the Sony Cyber-shot DSC-T1—a slim, elegantly designed camera that takes handsome photos and easily fits into a shirt pocket.

Snapping great summer photos is as much about technique as it is about gear. So we've collected 36 tips that could prove handy when you're shooting under less-than-ideal conditions. Using the right camera accessories can help you compose the perfect shot, as well as helping you protect your camera. To that end, we've assembled a collection of 16 useful add-ons that you might want to carry along on your travels. Happy vacation!

FEATURES COMPARISON

HOT CAMERAS FOR SUMMER

A MODEL SUCH AS THE FUJIFILM FINEPIX A330 would be a good choice for buyers seeking a basic point-and-shoot. Meanwhile, a camera like the Panasonic Lumix DMC-FZ10, though more expensive, offers a much wider array of features.

CAMERA	Price, image quality, and usability	Features ¹	Battery life, camera weight, and camera size ²	Comments
Canon PowerShot S1 IS ★★★★☆ find.pcworld.com/42038	• \$499 • Good image quality • Very good ease of use	• 3.2-megapixel resolution • 32MB CompactFlash card • 36mm to 380mm focal range • 1.5-inch LCD	• Fair battery life/ 144 shots • 17.6 ounces • 4.4 by 2.6 by 3.1 inches	The S1 IS has a nice feel and is well designed, but it includes an odd combination of high-end features (including image stabilization) and relatively low 3.2-megapixel imaging.
Canon PowerShot S500 Digital Elph ★★★★☆ find.pcworld.com/41916	• \$499 • Good image quality • Very good ease of use	• 5-megapixel resolution • 32MB CompactFlash card • 38mm to 108mm focal range • 1.5-inch LCD	• Fair battery life/178 shots • 8.0 ounces • 3.4 by 1.1 by 2.2 inches	This latest addition to the Digital Elph line takes nice shots and will fit easily in your pocket when you're out and about. It doesn't include very many manual settings.
Fujifilm FinePix A330 ★★★★☆ find.pcworld.com/42044	• \$200 • Good image quality • Fair ease of use	• 3.2-megapixel resolution • 16MB XD-Picture Card • 38mm to 114mm focal range • 1.5-inch LCD	• Good battery life/ 253 shots • 6.9 ounces • 4.1 by 1.2 by 2.4 inches	Nicely priced for a camera with a 3X optical zoom lens. With no advanced controls and most settings located in the menus, it's best for someone looking for a very simple point-and-shoot.
Best Buy HP Photosmart R707 ★★★★☆ find.pcworld.com/41998	• \$349 • Good image quality • Good ease of use	• 5.1-megapixel resolution • 32MB internal memory plus SD card slot • 39mm to 117mm focal range • 1.5-inch LCD	• Very good battery life/ 270 shots • 7.4 ounces • 3.8 by 2.4 by 1.4 inches	Designed for flexibility and simplicity, the compact R707 has a built-in help system for novices, and advanced features—such as white-balance calibration and manual focus—for more experienced shooters.
Kodak EasyShare DX7630 ★★★★☆ find.pcworld.com/42264	• \$500 • Good image quality • Very good ease of use	• 6.1-megapixel resolution • 32MB internal memory plus SD card slot • 39mm to 117mm focal range • 2.2-inch LCD	• Outstanding battery life/ 355 shots • 9.6 ounces • 4.0 by 1.6 by 2.7 inches	Kodak has packed a lot of features into a relatively small camera, including aperture-priority, shutter-priority, and full manual-exposure controls. The 2.2-inch LCD is a nice plus.
Konica Minolta DiMAGE Z2 ★★★★☆ find.pcworld.com/42290	• \$449 • Good image quality • Good ease of use	• 4-megapixel resolution • 16MB SD card • 38mm to 380mm focal range • 1.5-inch LCD	• Good battery life/ 251 shots • 14.7 ounces • 4.3 by 3.2 by 3.1 inches	The DiMAGE Z2 has an unusual look that will appeal to some and turn off others. Its photos came out only so-so, and many of its extensive controls are buried in deeply layered menus.
Best Buy Nikon Coolpix 3200 ★★★★☆ find.pcworld.com/42054	• \$249 • Good image quality • Good ease of use	• 3.2-megapixel resolution • 14.5MB internal memory plus SD card slot • 38mm to 115mm focal range • 1.6-inch LCD	• Good battery life/ 220 shots • 6.7 ounces • 3.5 by 1.5 by 2.6 inches	Small, inexpensive, and easy-to-use, the Coolpix produces fine images for a 3.2-megapixel model. Includes 15 scene modes—far more than most cameras in its class—and has white-balance calibration.
Olympus D-580 Zoom ★★★★☆ find.pcworld.com/41948	• \$299 • Good image quality • Good ease of use	• 4-megapixel resolution • 16MB XD-Picture Card • 35mm to 105mm focal range • 1.8-inch LCD	• Fair battery life/ 127 shots • 17.6 ounces • 4.2 by 1.6 by 2.2 inches	Bargain-priced for a simple, 4-megapixel snapshot camera. Most of the D-580's controls are accessed through its well-designed menu system. The rocker zoom control feels a bit awkward.
Panasonic Lumix DMC-FZ10 ★★★★☆ find.pcworld.com/42260	• \$600 • Very good image quality • Good ease of use	• 4-megapixel resolution • 16MB SD card • 35mm to 420mm focal range • 2-inch LCD	• Very good battery life/ 277 shots • 20.8 ounces • 5.4 by 3.4 by 4.2 inches	An advanced point-and-shoot with a 12X zoom lens that has image stabilization, the Lumix takes impressive photos. Its creative controls are not as easy to use as those on its competitors.
Sony Cyber-shot DSC-T1 ★★★★☆ find.pcworld.com/42324	• \$550 • Very good image quality • Very good ease of use	• 5.1-megapixel resolution • 32MB Memory Stick • 38mm to 114mm focal range • 2.5-inch LCD	• Fair battery life/ 175 shots • 6.3 ounces • 3.6 by 2.4 by 0.8 inches	Sony's ultraslim DSC-T1 doesn't have an eye-level viewfinder, but its extra-large, 2.5-inch LCD more than makes up for it. It's also easy to use and extremely pocketable.

¹ Focal ranges are in 35mm equivalents. ² Camera size dimensions are expressed as width by depth by height.

IN THE BAG

Lightweight camera accessories like these can help you capture great travel photos—and protect your gear. Go to find.pcworld.com/42518 for more information on these products.



1. L.L. Bean Aquapac camera bag, waterproof to 15 feet (\$44)



5. Hoodman HSK-2 Hoodskins for protecting LCD screens (\$10)



2. Pedco Ultrapid II mini-tripod (\$15)



6. Delkin EFilm PicturePAD portable hard drive (40GB: \$490)



3. Pedco Ultra-clamp (\$24)



7. Hoodman H-DCR rubber LCD hood with magnifier (\$20)



4. Cokin Digital Creative Filter Kit (shoe and two filters: \$35)



8. Cokin Magne-Fix wide-angle adapter and lens (\$70)



Lowepru Rover AW II backpack with removable padding (\$115)

Hoodman FlashPack belt-clip memory card case (\$15)

Lowepru D-Res 25AW digital camera pouch (\$20)



Plus: Visual Departures Steadybag Jr. bean bags, a tripod alternative (\$16 each)



Lens cleaning paper, lens cleaner fluid, and blower brush (\$8)



REI Hiker Antishock Staff and camera monopod (\$58)

MAKING THE CHOICE

BEFORE YOU LAY down your money, think about the type of photographer you are. Do you want to snap pictures of the kids in front of a statue with minimal fuss? Or do you want to produce carefully composed shots of tranquil sunsets and charming portraits to print, frame, and hang on the wall?

Basic point-and-shoot cameras like the Olympus D-580 lack advanced features, but give you pleasing pictures simply and reliably. If you're willing to take more time to compose your shots, choose a model with numerous scene modes, such as Kodak's EasyShare DX7630 or Nikon's Coolpix 3200.

For photography buffs, choosing a camera that offers users lots of hands-on control needn't mean going big and heavy. Models such as the Canon PowerShot S1 IS have manual modes, including aperture- and shutter-priority. (Three models we

looked at—the Canon PowerShot A75, the Olympus Stylus 410, and the Pentax Optio S4i—fell short of the others and didn't make the cut.)

Whichever camera you choose, experiment and learn its subtleties before you head out on the road. To compose and capture fleeting photo ops successfully, you have to know your camera.

CANON POWERSHOT S500 DIGITAL ELPH

THE LATEST ADDITION to Canon's pocket-size Digital Elph line, the \$499 Canon PowerShot S500, retains its predecessors' elegant, pocket-size design but adds 5-megapixel resolution.

You don't get any scene modes or full manual settings options on the S500. But it's designed to be carried everywhere and be ready to go the moment you spot something image-worthy. In the camera's automatic mode, you get the basic adjustments for image size, flash setting, continuous ▶



Canon PowerShot S500 Digital Elph

This small but capable camera doesn't include scene modes.



Canon PowerShot S1 IS

This point-and-shoot has the traditional shape of an advanced camera.



Fujifilm FinePix A330

This basic model took some impressive photos.

shooting, self-timer, macro focus, and infinity modes. The S500's manual mode includes controls for exposure metering and compensation and for white balance to help you get more out of complicated shooting conditions.

Despite its simplicity, the S500 did well in our photo-quality lab tests. (To score image quality, the PC World Test Center sets all point-and-shoot digital cameras to their default, fully automatic mode.) We awarded the S500 high scores in both the flash and the outdoor tests, its main strengths being accurate exposure and color.

You may need a little time to get used to the S500's dual menu system (now standard on most Canon point-and-shoot digital cameras), but you should soon become familiar with the menus' logical organization and find them easy to navigate. By today's standards, the 1.5-inch LCD seems small: 1.8-inch and larger panels are now common.

UPSHOT: Tough, sophisticated looking, and frill-free, the Canon PowerShot S500 should be most attractive to intermediate and advanced photographers who want a camera they can take anywhere.

CANON POWERSHOT S1 IS

DESIGNED TO RESEMBLE a scaled-down SLR camera, the Canon PowerShot S1 IS brings together a lot of advanced features for its \$499 price tag. We could argue that 3.2 megapixels is not enough for a camera with full manual settings, a fold-out LCD, and the ability to accept accessory telephoto and wide-angle lenses. But the modest resolution is one compromise that helps keep it under \$500.

The S1 IS has a solid hand-grip on the right side

and the lens center-left. Its eye-level viewfinder's image tends to lag slightly as you pan the camera, but otherwise the camera is a pleasure to operate. A dial on top lets you select from among six scene-assist modes and one that holds your own custom settings. Alternatively, you can use full manual modes, including aperture- and shutter-priority settings. A four-way selector on the back of the camera simplifies navigating the menus.

The S1 IS scored slightly above average in our photo-quality tests, delivering correct exposures and excellent color accuracy, especially in our still-life shot. It faltered slightly in capturing sharpness and detail, however.

UPSHOT: Yielding fine photos for a 3.2-megapixel camera and offering many advanced features at a very reasonable price, the S1 IS is a good choice for hobbyist photographers on a limited budget.

FUJIFILM FINEPIX A330

PRICED AT JUST \$200, the Fujifilm FinePix A330 is the least-expensive camera in our roundup. And though relatively sturdy, the camera has an economy feel to it. There are no covers on the USB, video-out, and power ports, and the LCD screen is a smallish 1.5 inches. Also, the sliding lens cover didn't always latch properly when we closed it; it flexed outward slightly when pressed too hard.

An XD-Picture Card with a capacity of only 16MB comes with the A330. The camera has some usability flaws, too. The zoom control is a button that you rock up and down. It feels uncomfortable under your thumb and is difficult to adjust accurately. It also serves as a menu selector button, ▶

SETTINGS

Action Shots: Reduce Lag Time

SNAPPING PICTURES in a foreign city can be highly rewarding—and very challenging. One minute, you're photographing an unusual mailbox or phone booth, and the next you're privy to a parade of horses, a rickshaw, a double-decker bus, or some other moving cultural oddity. But to get the photo of a

lifetime, you have to be ready. If you expect to have to switch quickly between action shots and static portraits or architecture



For fast action, focus beforehand, and use shutter-priority mode.

photos, consider investing in a digital camera—like the Konica Minolta DiMAGE Z2—that has a shutter-priority exposure control. If you leave your camera in shutter-priority mode all the time, you can switch from low to high shutter speeds in a heartbeat. Some cameras (such as the Canon PowerShot S1 IS) let you

store favorite exposure settings and then quickly recall them. If your travels include a lot of action photography, you'll want to

minimize the shutter lag that digital cameras are infamous for. You can turn off automatic white-balance selection by manually choosing a white balance for each new photo situation (morning, afternoon, indoor, outdoor, and so on) that you encounter. Most important, you can minimize shutter lag by prefocusing before you take each shot: Simply hold the shutter release halfway down prior to snapping the picture. Manually setting the exposure could improve shutter response, as well.

—Dave Johnson

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HP Photosmart R707

This model includes seven scene modes, and it lets you save your favorite settings.

and controls panning and zooming when you play back your photos. We weren't thrilled with the camera's power-off function, either. At its default setting, the unit automatically turns itself off after 2 minutes of inactivity, to save power. You might expect the button marked "on" to turn it back on, but instead you have to close and reopen the lens cover.

For a camera that costs \$200, the A330 took surprisingly good photos. In our lab tests, its exposure and its color balance stood up well to those of competitors priced twice as high. It earned very good scores in our flash-photo test, as well.

Using the A330 might frustrate photographers who like to cull their photos immediately. Took a shot that came out poorly? You'll have to work through at least five steps to delete it.

UPSHOT: If you're looking for a simple camera that you can use to take quick snapshots of your family vacation, the FinePix A330 is worth a look. At \$200 with a 3X optical zoom, it's a bargain.

HP PHOTOSMART R707

THE \$349 HP Photosmart R707 looks different from most of the cameras in our roundup. Its black body has a rubberlike texture that feels secure in the hand, and a polished metal plate covers its front. Though only slightly larger than the Canon

PowerShot S500, the R707 is lighter, has more advanced controls (such as rudimentary aperture-priority and manual focus), and costs about \$150 less. (Both have at least 5-megapixel resolution.)

An innovative help menu offers tips on using the camera and explains its various features. Once you've taken a shot, you can get advice on problems that might arise in the image based on the camera settings you used. It would be better to get this information before you took the shot, but you can always take another, using what you've learned.

A button on top of the R707 lets you select from among seven different scene modes, including panorama. The limited aperture-priority mode gives you a choice of two aperture values at each zoom level, but there is no shutter-priority setting. The camera's My Mode lets you save and instantly recall a collection of favorite settings—very useful, once you figure out how to use it.

In our image quality tests, the R707 scored moderately well. It rated below Canon's S500 and nearly tied Kodak's 6.1-megapixel EasyShare DX7630, both of which cost about \$150 more. The R707 produced relatively sharp pictures with bright, accurate colors. It performed a little below average in the flash test, however: Our test photo had muted colors and overexposed skin tones. ▶

LAB NOTES

IMAGE QUALITY—LOTS OF VARIATION

TEST Center IN OUR IMAGE quality tests, we used a combination of outdoor and indoor shots with daylight lighting and flash lighting to determine how well each of the digital cameras captured sharpness, color, and light values (exposure). We've selected a few representative shots from the 13 cameras tested for this roundup to demonstrate their varying levels of suc-

cess in delivering memorable images.

In our flash test, the Pentax Optio S4i (which didn't make the chart) had a difficult time rendering skin tones: The mannequin's face has an ashen cast, and the colors look dark. Canon's PowerShot S500 Digital Elph, on the other hand, delivers more lifelike skin tone, as well as accurate colors on the model's shirt.

Outdoor shots present a different set of challenges—notably, high contrast and pure colors (the blue sky). The Konica Minolta DiMAGE Z2 delivered an overexposed image that brought out details in shadows, but washed out the sky. The photo taken by the Panasonic Lumix DMC-FZ10, preserved accurate sky color and easily visible sharp lines.

FLASH PHOTO OF MANNEQUIN



BEST: Canon S500

WORST: Pentax Optio S4i

OUTDOOR SHOT TAKEN IN THE AFTERNOON



BEST: Panasonic DMC-FZ10

WORST: Minolta DiMAGE Z2

HOW WE TEST: We take a series of shots at the camera's highest resolution and at its default, automatic settings. In addition to taking a complex still life shot lit with daylight-balanced floodlights and a flash-photo of our mannequin, we shoot a test target to measure a camera's ability to replicate fine detail. A panel of judges reviews the on-screen and printed photos and assigns image quality scores to each; we then average those scores. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Digital Cameras

Kodak



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EasyShare CX7430

- 4.23 Effective Megapixel CCD
- 12x Total Zoom for Sharp Close-ups
- Multi-zone Auto-Focus w/ 7 Programmed Scene Modes
- Auto Picture Rotation

Canon

EOS REBEL



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- 6.3 Effective Megapixel CMOS Sensor
- Exclusive DIGIC Imaging Processor
- 7-point Wide-Area AF System
- 2.5 Frames-per-second Continuous Shooting



Kodak \$399.95

EasyShare LS753

- 5.0 Megapixel
- 2.8x Optical Zoom
- 3.6x Digital Zoom



Nikon \$220.00

Coolpix 3200

- 3.2 Megapixel
- 3x Optical Zoom
- 4x Digital Zoom



Nikon \$299.00

DiMAGE XG Ultra-Thin

- 3.2 Megapixel
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OLYMPUS \$299.00

D-580 Zoom

- 4.0 Megapixel
- 3x Optical Zoom
- 4x Digital Zoom



Canon \$549.00

PowerShot S500

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- 3x Optical Zoom
- 4x Digital Zoom
- Coach Special Edition



Nikon \$330.00

Coolpix 4300

- 4.0 Megapixel
- 3x Optical Zoom
- 4x Digital Zoom



Nikon \$999.00

DiMAGE A2

- 8.0 Megapixel
- 7x Optical Zoom
- 2x Digital Zoom



OLYMPUS \$549.00

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- 4x Digital Zoom



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FinePix A330

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- 3x Optical Zoom
- 4.8x Digital Zoom



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**Kodak EasyShare
DX7630**

Despite loads of buttons,
this model is easy to use.



**Konica Minolta
DiMAGE Z2**

Though slightly difficult
to operate, this camera
has advanced features.

The R707 seemed slow to process our shots. If you hold your finger down, you can capture a burst of three images; but the camera then takes about 20 seconds to write them to its 32MB of built-in memory before you can take another photo.

UPSHOT: The HP Photosmart R707 attractively combines low price, small size, and capable imaging, and it throws in a few advanced extras.

KODAK EASYSHARE DX7630

AT \$500, KODAK's entry in the megapixel wars is easily the least-expensive 6.1-megapixel camera we have ever seen. It garnered average scores for color and exposure accuracy. Our outdoor test shot, although crisp and sharp, was slightly underexposed (causing a loss of shadow detail), had somewhat flat colors, and showed moderate speckling in the pure blue sky. The colors in our flash test were noticeably warmer (with a distinctly reddish cast) than the colors produced by any of the other cameras in our roundup.

Though it looks a bit chunky, the Kodak EasyShare DX7630 fits snugly in your hand, which helps you take pictures easily. Our favorite feature: The camera's large 2.2-inch, high-resolution LCD screen is very easy to use, even in bright sunlight.

The DX7630 has a wealth of buttons and controls. The power switch sits on the mode selection dial, and a lock prevents you from turning it on accidentally. The tiny, stubby joystick in the center of the dial lets you navigate menus and browse your shots, though it's a bit hard on the thumb. We liked the thumbwheel dial for adjusting settings in the manual modes, but it serves no purpose when you use an automatic mode or when you're reviewing photos; also, it seemed a bit too sensitive.

Sixteen scene modes cover everything from floral studies to night scenery. The camera gives experienced photographers four advanced modes, including aperture- and shutter-priority, plus a custom mode for saving and quickly recalling personalized settings separately from other modes.

UPSHOT: With a wide range of useful features, the EasyShare DX7630 has broad appeal. A few rough edges aside, it's a capable camera.

KONICA MINOLTA DIMAGE Z2

THIS CAMERA HAS a space-age look. Its big, round, silver body houses a 10X zoom lens and is attached to the large battery-compartment-cum-handgrip by a short stalk. Unfortunately, the handgrip's size and the zoom control's placement ▶

ACCESSORIES

Capturing Cathedrals and Museums

SOME OF THE most stunning places to photograph—the insides of cathedrals, galleries, and museums, for example—are among the most difficult to shoot well. Many of these institutions prohibit flash photos—and even if they permit them, the tiny flash that's built into most digital cameras can't illuminate the buildings' vast interiors. The best way to take attractive pictures in these settings is



A Velcro strap adds versatility
to the Ultrapod II mini tripod.

with a tripod. Even a small, lightweight tripod will stabilize your camera during the several-seconds-long exposure you'll need. And since few digital cameras accept cable releases, the best way to eliminate unintended camera shake when you trip the

shutter is to use your camera's self-timer. Models such as the Canon PowerShot S1 IS have wireless trigger releases as well.

But what if tripods are forbidden, as they are at some famous European landmarks? One possibility is to brace yourself against a wall or doorway to keep the camera as stable as possible during a lengthy exposure. If you're very still, you should be able to

get a steady picture with a shutter speed as slow as 1/30 second—but only if your camera's zoom is set to wide-angle. (Telephoto tends to exaggerate camera shake, increasing the likelihood of a fuzzy shot in dim lighting.) Controlling your breathing

can help, too: First inhale; then slowly exhale as you press the shutter release.

To minimize the length of the exposure you need, set the camera to its highest ISO level; this will make the sensor more sensitive to light. (If you often shoot in low light, look for a high ISO setting on the next camera you purchase. The ISO rating of Kodak's EasyShare DX7630, for example, tops out at a relatively high 800.)

Another option is to buy a tiny tabletop tripod, such as Pedco's Ultrapod II, for taking long exposures. Some photographers carry a small beanbag to set the camera on; this helps steady the camera on the back of a pew or on top of a table, railing, or banister. Even a monopod (a one-legged tripod) can improve your camera's stability, and certain models double as a walking or hiking stick when you're not shooting pictures.

— Dave Johnson

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Nikon Coolpix 3200

It's simple to operate, but this camera doesn't throw in a lot of frills.



Olympus D-580

This basic point-and-shoot is ideal for quick photo opportunities.

(at the back of the grip) make operating the Z2 with one hand tricky. The controls, though poorly labeled, are logically placed and easy to work with.

The Z2 has a relatively small 1.5-inch LCD panel, but reading it in sunshine is easy enough. Interestingly, when you switch to using the optical viewfinder, a curtain slides over the LCD screen and the image is projected into the eyepiece.

Most of the Z2's higher-level exposure controls are located in the neatly organized menu system. Oddly, though you can set the instant photo review period to up to 10 seconds, you can't erase an image instantly. Instead, you have to wait until the camera finishes processing it, and then switch to the quick-view mode before deleting it. In continuous mode you can take five consecutive shots, but then you have to wait for 25 seconds or so while the camera writes all the images to the memory card.

The Z2 complements its fully automatic capabilities with five scene modes. It also has four manual modes that will appeal to more-experienced photographers. Aperture sizes and shutter speeds are easy to adjust with the camera's left/right and up/down buttons. A live histogram display helps you to set the correct exposure. We see this feature

more and more frequently on digital cameras, but it remains probably the least-understood digital camera feature among photographers.

In our image quality tests, the Z2 achieved mixed results. It did very well in our flash test, producing natural-looking color and faithful skin tones with good overall exposure. In our still life shot, however, the Z2 turned out dull colors; the image lacked sharpness, and some objects looked fuzzy.

UPSHOT: The Z2 delivers a wealth of features for a \$449 camera and turns out fairly nice photos. With a little practice, you should be able to get better images using its manual modes.

NIKON COOLPIX 3200

NIKON'S 3.2-MEGAPIXEL Coolpix 3200 is compact and light—it weighs just 6.7 ounces—and it's nicely designed for point-and-click simplicity. We found it very easy to grip, and its controls were not difficult to operate with just one hand. In particular, composing our shots with the smooth and precise 3X optical zoom control was a breeze.

The 3200's menus take a little getting used to. Though they aren't deeply nested, we sometimes felt as though we had done a lot of scrolling ▶

BACKING UP

Storing and Protecting Your Images

THESE DAYS, IT'S not unusual for a visitor touring a strange city to carry a camera that can hold hundreds of pictures on a single memory card. You don't want to take the chance of losing all those photos of a once-in-a-lifetime trip. To preserve them, you could lug a laptop along and transfer the pictures to its hard disk. If you can tolerate the weight, a laptop would offer a convenient way to view, edit, and prune your images while you're on the road. In addition, you could send photos home while sipping coffee at some remote Internet café.

A lighter option is a portable hard disk drive, like the Delkin PicturePad (www.delkin.com). This gadget is so small that it almost fits in your pocket; it has a slot that accepts most common memory cards, and it holds up to 60GB of data. Your only wor-



Use Belkin's Media Reader (left) or Digital Camera Link (top) to store photos on an iPod.



ries would be accidentally dropping and jarring the hard drive enough to damage it, and losing the drive or having it stolen. For greater security you can burn your photos onto disc with a portable CD-RW drive. Nixvue's Vizor (www.nixvue.com) is a battery-powered CD-RW drive that writes the data from your camera's memory card to a multisession CD. But to verify that the drive successfully copied your pictures to

the CD, you have to put the disc into a computer and view its contents. For even more security, make two copies of each disc and mail one home. Or store your photos on an iPod: the Belkin Digital Camera Link (www.belkin.com) connects the MP3 player to a digital camera's USB port; the Belkin Media Reader transfers files from memory cards.

Some folks worry that it's unsafe to run memory cards through airport security systems. The good news: Unlike traditional film, pictures on a flash memory card are in no danger of being damaged by X-rays.

Finally, to ensure good-quality photos, always shoot at your digital camera's highest resolution: You'll be able to print your pictures at any size. And avoid using an in-camera effect like sepia mode, because the effect is irreversible. You can always add it later on a PC—and you'll likely have more control and achieve better results.

—Dave Johnson

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Keep the Juice Flowing

**TEST
Center**

WE'VE REVAMPED OUR digital camera battery tests this month, to reflect changes in digital cameras and in how they're used. Besides taking a series of shots with and without flash, we operated the optical zoom and switched the camera off and then back on.

According to PC World Test Center performance analyst Tony Leung, zooming and powering off and on use a lot of juice. Kodak's EasyShare DX7630, which uses a rechargeable lithium ion battery, earned top honors, with over 3 hours (355 shots) of battery life. The loser: Olympus's D-580 Zoom petered out after just over an hour (127 shots). (See the chart below for battery life specifics.)

On the other hand, the D-580 Zoom runs on AA batteries, which are available even in the backstreets of Bangkok. Don't let dead batteries kill a busy photo session: Swap weak cells for fresh ones whenever the action pauses.

If your camera requires a rechargeable battery, never travel with just one. And make sure that you have at least enough power to get you through a full day of shooting. You probably won't have time to plug in your charger except at night and when driving.

You need to ensure that the battery charger will plug into the power systems you'll encounter along the way. When you travel to a country that doesn't use 120-volt power (the standard in the United States), it's a good idea to pack a universal international power converter. For less than \$50, you can carry a single gadget (such as the Maha World Adapter from www.thomas-distributing.com) that will keep you connected to juice no matter where you are. Another option is to charge your camera in your rental car. With a miniature power inverter like those made by Digipower (www.digipowersolutions.com), you can charge your camera—or any other electronic device that has a standard plug—while you go motoring down the highway.

BATTERY LIFE

CAMERA	Battery type	Total number of shots per battery charge
Kodak EasyShare DX7630	Lithium ion	355
Panasonic Lumix DMC-FZ10	Lithium ion	277
HP Photosmart R707	Lithium ion	270
Fujifilm FinePix A330	AA	253
Konica Minolta DiMAGE Z2	AA	251
Nikon Coolpix 3200	AA	220
Canon PowerShot S500 Digital Elph	Lithium ion	178
Sony Cyber-shot DSC-T1	Lithium ion	175
Canon PowerShot S1 IS	AA	144
Olympus D-580 Zoom	AA	127

because only three options appear per page. The smallish 1.6-inch LCD screen was extremely difficult to use in bright sunlight. You can reduce the LCD's brightness, but that washes out the colors.

To complement its full-automatic setting, the 3200 offers 15 scene shooting modes to assist in capturing everything from sunsets to beaches to fireworks, plus a setting that lets you use Nikon's included image management software to stitch shots into a panorama. If you want anything more advanced, such as aperture- or shutter-priority controls, you'll want to look elsewhere.

A feature unique (in our roundup) to the 3200 is its Best Shot Selector mode. By holding down the shutter release, you can take up to ten shots of one subject. The camera then commits the sharpest one to memory. This might help you obtain a better photo when you're shooting in low light conditions, where slow shutter speeds and a shaky camera tend to yield blurry images—such as inside an art museum where using a flash is prohibited.

The 3200 earned high scores in our still life test. It was less sharp than some higher-resolution cameras, but we saw remarkable exposure accuracy and color reproduction. The shot it took of our outdoor San Francisco rooftop scene was somewhat less impressive: well exposed; fairly good detail in the shadows; noticeable speckling in the blue sky; and natural, albeit somewhat muted colors.

UPSHOT: Easy to carry and easy to use, the Nikon Coolpix 3200 is an excellent choice for casual photographers who don't care about fine-art imaging but who want to take great-looking snapshots.

OLYMPUS D-580 ZOOM

OLYMPUS's \$299 D-580 Zoom falls into the same class as Nikon's Coolpix 3200 and Fujifilm's A330: few frills, easy to operate, and inexpensive. To power up the D-580, you slide open its lens cover; its 3X zoom lens pops out, and you're ready to start shooting. You won't be taking many photos, however, unless you purchase more media. You can capture only five or six shots at this 4-megapixel camera's highest quality setting before the included 16MB XD-Picture Card reaches full capacity.

The D-580's control buttons place the most common functions at your fingertips. The camera's more complex controls are located in menus we found fairly easy to navigate. You can select any of five simple scene modes from a novel graphical carousel displayed in the LCD; the carousel mimics the rotating dial found on many other cameras. ►

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Top Tips From a Pro



David Barron's photographs (www.oxygengroup.com) have appeared in many magazines, including National Geographic and Discover. He has traveled the world, from Iceland to Zimbabwe, for his work and has had to protect and maintain his gear under extremely difficult circumstances. We asked him how you might do the same while traveling with a digital camera.

What's the best way to protect your gear from damage?

I always try to use padded cases; I usually travel with a backpack. There are the Domke bags, which are not padded—I wouldn't recommend that for any of the digital cameras. I think the extra padding

is so worth it. The other thing to look for, if you can afford it, is something water-resistant, not necessarily waterproof.

How about theft?

The nice thing about the backpack I use is that people don't know for certain what's in it—it's a camera backpack. When you have a traditional camera bag, people know what's in it, so you have to be extra vigilant in watching it.

What works best for backing up your images?

Get an external device that you can download the images to. Then keep that device in your hotel room so, if someone walks away with your camera bag, you have your images in two places. Bring enough cards (if you can) to hold all the images you will shoot on a particular trip, and keep your cards in the little plastic containers they come in so they're protected while you're traveling. You really should have two cards with you at all times, in case one malfunctions.

How many batteries should people carry?

Bring three batteries. If you have just two, and leave one charging at the hotel, then you have only one in the field. If it goes dead while you're shooting, it's like, "uh-oh!" Or you forget which battery you've charged and bring the wrong one with you—and spend the whole day on a tour without your camera working.

What accessories are most valuable to you?

The two most important accessories that I take with me are polarizer filters and a mini-tripod. It's a very small tripod, almost like a table tripod. Not only can you put it on the ground or hold it against the wall if you want to do a long shot, but you can also put it on the bottom of your camera and hold it against your chest—that's one of the coolest things I learned from another photographer. And I'll tell you, it's been just wonderful for so many applications where you want to keep something steady. I'd guess it will allow you to shoot approximately two stops slower.

— Eric Butterfield

Annoyingly, the display often disappeared before we had decided which mode we wanted to use.

Another frustration: There's no way to lengthen the instant review period. If you don't like a shot, you must change to the quick-view playback mode and use the menu system to delete it. A total of six button presses are necessary to review a shot, delete it, and return to shooting. (Deleting a series of photos takes four steps for each photo.)

The zoom control is an oddly shaped rocker that sits next to the shutter release on top of the camera. Stretching our finger to use it was almost painful. It's all too easy to slide the lens cover accidentally—thereby turning off the camera—as you grip it with your right hand. And the 1.8-inch LCD screen is a little difficult to see in bright sunlight.

The D-580 earned an average overall score in our image quality tests. Outdoor images showed realistic colors and plenty of detail in areas of shadow. Color accuracy and skin tone quality looked good in our still life test. Our flash portrait shot was somewhat overexposed, however, unduly highlighting our model's skin tone.

Our biggest gripe with this camera relates to its battery life—the shortest in our roundup. Running on two AA alkaline cells, the D-580 lasted for only 127 shots, which translates into a little over an hour. That's barely more than half the average battery life of the other cameras we tested.

UPSHOT: Capable and reasonably priced, the D-580 Zoom has a few usability blemishes. Its weak battery life makes it a better choice for a now-and-then snapper than for a passionate photographer.

PANASONIC LUMIX DMC-FZ10

AT \$600, THE 4-megapixel Panasonic Lumix DMC-FZ10 is the most expensive camera in our roundup—but you get a lot for your money, including a fairly good selection of advanced creative controls and an amazingly powerful 12X Leica zoom lens that has built-in image stabilization. The Lumix's molded alloy body is lighter than it looks; and though it's fairly large in comparison to other models, you can grip it with one hand remarkably easily for single-handed shooting.

Still, the Lumix has some design shortcomings. Its mode dial, for example, has a single setting for aperture-priority, shutter-priority, and full-manual shooting modes. You have to delve into the menus to select among the three. The Lumix has an old-style hot shoe, too, with the most rudimentary connections—in other words, no through-the-lens ▶

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SAFETY

How to Avoid Damage or Theft

WHEN TRAVELING, treat your camera like family. Checked baggage is often handled roughly (and may be searched when you're not around), so always carry your camera onto the plane. If your camera ends up in the overhead compartment, make sure it's well padded so that another passenger

won't damage it by clumsily knocking it to the floor or carelessly crushing it with an overstuffed wheeled bag.

Unless your camera gear looks as though it has been around the world a few times already, consider bringing proof of ownership with you. No one wants to pay customs

duty on a camera purchased back home, or to be accused of smuggling or theft.

In some locales, rental car break-ins are frequent. You may think you've secured your camera by putting it in the trunk, but in fact you might be saying goodbye to it forever.

— Dave Johnson



Panasonic Lumix DMC-FZ10

This big, bulky model suits advanced users.



Sony Cyber-shot DSC-T1

This slim dream weighs just over 6 ounces.

metering with an external flash, and camera and external flash settings must be matched manually.

The DMC-FZ10 has five automatic scene modes and includes an unusual panning mode that imparts a sense of motion by blurring the background as you track a moving subject, such as a car. We used the camera on the street on a sunny day to snap the passing cars, with disappointing results. (The manual says this feature works better out of bright sunlight.) We got better photos when we used shutter priority at a slow speed.

Once you discover the exposure button, you can use the arrow buttons to adjust the aperture and shutter settings. We liked the smooth manual focus ring, located on the lens.

The DMC-FZ10 received the highest image quality scores in our roundup. We saw natural colors and good skin tones in flash photographs of our mannequin. The Lumix compared favorably with 5-megapixel cameras, rendering accurate colors and details in the still life and in outdoor shots.

Our original Lumix unit developed a fault during testing in which both the LCD display and the electronic viewfinder acquired a magenta cast, though photos still came out fine. The replacement unit we received functioned perfectly.

UPSHOT: The Lumix's nicest feature, its 12X optical zoom lens with image stabilization, would make it ideal for low-cost sports photography.

SONY CYBER-SHOT DSC-T1

SONY'S 5-MEGAPIXEL Cyber-shot DSC-T1 is an engineering marvel. About the size of a deck of cards, it has rounded edges that help it slide smoothly into your pocket or purse. The 3X zoom lens is mounted completely inside the camera—so when you slide down the panel on the front, nothing pops out of the body. But probably the DSC-T1's most attractive feature is its stunning 2.5-inch LCD. It makes a great viewfinder (the camera does not have an optical eye-level viewfinder) and an

outstanding photo-playback screen for showing off your photographic work to anyone around you.

We had two criticisms of this camera. The first is design-related: The camera is so thin that it won't stand securely on its bottom edge, which means that it will spend most of its time resting on its front or on its back. The former risks scratching the lovely brushed-metal lens cover; the latter puts the LCD in jeopardy. Sony should have provided a slip case with the camera for protection. (One is available as a \$30 extra.) Our second complaint: \$550 is a very high price—even for Sony—for a point-and-shoot with few high-end features.

The LCD takes up about two-thirds of the camera's back panel, but Sony managed to fit very usable controls into the remaining space. There is even a specific spot to place your thumb while gripping the camera, though it's also where the camera's speaker is located.

In our lab tests, the DSC-T1's overall scores were up and down. It earned top scores for image sharpness and detail, and it excelled in a still-life shot that uses daylight-balanced lighting and in our outdoor shot. In lower-light conditions, however, the camera may suffer from its relatively small lens aperture. Its scores fell slightly below average in our flash tests. Still, after a little effort adjusting the camera's white-balance control or flash-power setting, you should be able to achieve pleasing results.

UPSHOT: If money is no object, the Cyber-shot DSC-T1 is an exceptionally enticing camera. It packs a lot of functionality into its tiny case, and the 2.5-inch LCD will give other digital camera owners display envy. The photos aren't bad, either. ■

Paul Jasper is a technology consultant and freelance writer based in San Francisco. Dave Johnson writes the "Digital Focus" e-mail newsletter for PCWorld.com. Eric Butterfield is an associate editor for PC World. Testing was performed by Performance Analyst Tony K. Leung of the PC World Test Center.

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- 43,000 GB of data stored and backed up. 255 million e-mails each month.

THE MOST EXPERIENCE

- 12 years experience and one of the first companies to offer web hosting.
- Long-time profitable company, over 1,100 employees.
- Part of publicly held United Internet, an industry leader with over 3,600 employees and \$500 million in revenue.

THE MOST COMPLETE HOSTING SOLUTIONS

- All the new 2004 features to make your website truly interactive.
- One-stop shopping and upgrading from feature-rich shared hosting to dedicated servers.
- eShop packages to start you selling online.



Just one Data Center alone contains 11 rooms with space for over 660 racks for a total of 26,400 servers.



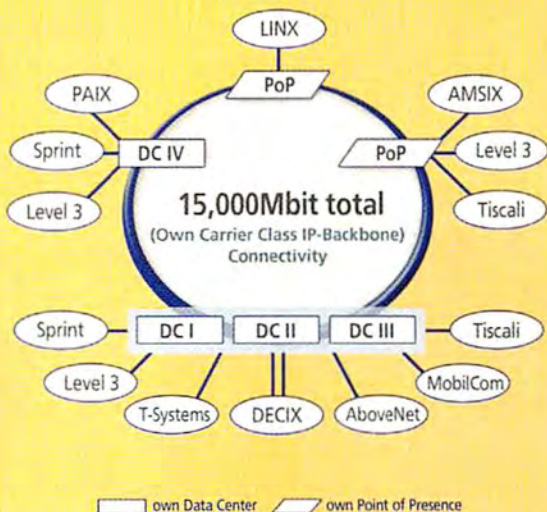
Lead gel batteries guarantee continuous power without interruption.

1.877.GO1AND1

GOOD AS ITS DATA CENTER, EATS 1&1.

THE BIGGEST CONNECTIVITY IN THE INDUSTRY

- 15,000 Megabits versus the competition's limited bandwidth means more visitors get to your site faster.
- Nine fiber optic carriers piped in at different points gives us real redundancy. Multiple direct peerings.
- 1&1 Network Operations Center features 24/7 monitoring and administration by a dedicated team.



THE ONLY WEB HOST THAT CONTROLS ITS ENTIRE VALUE CHAIN

- Operate 4 Data Centers globally.
- A research and development team of over 150.
- Own backbone – We do not rely on third parties.



Powerful diesel generators supply constant, reliable power.

THE STRONGEST PARTNERSHIPS AND SUPPLIERS

- A select partner of the Microsoft Technology Adoption Program (TAP).
- Multiple Juniper M40s, Multiple Cisco GSR 12000.
- Part of the global Linux developer community from the onset.

Microsoft
CERTIFIED
Partner

Juniper
NETWORKS

CISCO SYSTEMS

FOR MORE DETAILS GO TO **1AND1.COM**

1&1

DOMAINS

THE ULTIMATE SOLUTION FOR DOMAIN REGISTRATION.

With the 1&1 Group, registering or transferring your domain is straightforward and fast. In minutes, you will have a professional web address plus lots of features you'd pay extra for with other providers. And when you're ready, you can add-on to send professional e-mail or even build your own homepage. So, if you want to take your ideas to the next level, 1&1 has everything you need to get started.

.COM
.NAME
.INFO
.NET
.ORG

**BEST DOMAIN PRICE
IN THE U.S.!**

Afilias
Co-leader & Accredited Registrar

ICANN
Accredited Registrar

dot name

ROHN ENGH
www.photosource.com

"Switching my existing domain to 1&1 was fast and uncomplicated and I wasn't charged any transfer fees. When I required technical assistance, the 1&1 tech team was outstanding. They are extremely customer service oriented and walked me through web processes step-by-step. All in all, with 1&1 I have a better website at one-third of the price I was paying with my prior host. I'm so glad I made the switch to 1&1!"



1.877.GO1AND1

THREE INGENUOUS SOLUTIONS YOU DON'T HAVE TO BE A GENIUS (OR A MILLIONAIRE) TO USE.

1&1 INSTANT DOMAIN REGISTRATION

REGISTER YOUR NEW DOMAIN.

It's fast, it's easy, and it's only the beginning of what you can accomplish online with 1&1. DNS management gives you full control over your domain. What's more, the most affordable domains in the industry come without hidden charges and binding contracts.

TRANSFER YOUR DOMAIN TO 1&1.

Quickly and easily transfer unlimited existing domains to 1&1 at no additional cost. We only charge you the regular low cost to register a domain – just \$5.99 per year! Or if you have a domain that you'd like to keep with another Registrar, DNS transfer allows you to simply point your domain to 1&1 name servers – also at no additional cost!

.COM
.NET
.INFO
.NAME
.ORG

REGISTER DOMAINS FOR

\$5⁹⁹
PER YEAR

ENJOY THESE GREAT FEATURES AND MORE:

- 1 free e-mail address (alias)
- Masked forwarding
- DNS management
- Domain parking for future use

1&1 INSTANT MAIL

PUT YOUR DOMAIN TO WORK. Easily arranged through your Control Panel, this add-on package gives you the power to send and receive e-mail from your domain name.

\$0⁹⁹
PER MONTH

ENJOY THESE FEATURES AND MORE:

- 5 POP3 e-mail accounts (50 MB each)
- 10 e-mail aliases
- 1&1 WebMail



1&1 INSTANT WEBSITE

CREATE YOUR OWN WEBSITE in just 20 minutes. Instant Website is ideal for anyone building a first website or experienced users looking for a quick additional site with no programming hassles.

\$2⁹⁹
PER MONTH

ENJOY THESE FEATURES AND MORE:

- Includes WebsiteCreator with 12 pages
- Over 100 customizable templates
- Online is just 5 easy steps



SETUP FEE WAIVED FOR A LIMITED TIME

FOR MORE DETAILS GO TO **1AND1.COM**

1&1

HOSTING

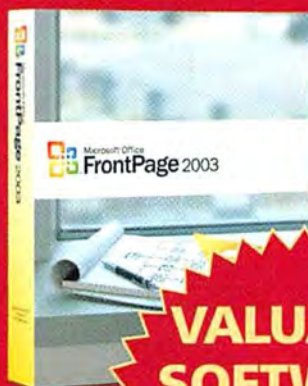
THE LATEST SOFTWARE TO CREATE, PUBLISH AND PROMOTE YOUR WEBSITE.

Sign up for Microsoft or Linux shared hosting and we'll include a software bundle, featuring NetObjects FUSION 7.5, PhotoImpact 8 SE, Hello Engines Professional 4.1, Ranking Toolbox 3.0 and WISE.FTP.* Plus, with all Microsoft plans you'll also receive FrontPage 2003! And these are not limited-time trials – you'll be shipped a CD with full-version software plus manuals.

FRONTPAGE 2003

Sign up for any 1&1 Microsoft Shared Hosting plan and you'll receive FrontPage 2003.

Quickly and easily create a sophisticated, dynamic website. Customize your web presence by controlling the site layout and adding interactive features with the built-in scripting tools. Plus, powerful coding tools allow you to expand the power of your HTML and generate better code, faster.



**VALUABLE
SOFTWARE
INCLUDED WITH ALL
1&1 SHARED
HOSTING PLANS**

RANKING TOOLBOX 3.0



Arrange the way your site is registered and develop your own assessment criteria. A keyword database informs you of the most frequently searched keywords.

\$128 VALUE

WISE.FTP



WISE.FTP is ideal for transferring files and directories to the 1&1 server. This new edition contains all the latest functions to manage your files.

\$40 VALUE

* Plus \$6.99 shipping and handling

PHOTOIMPACT 8 SE



Ideal for digital photography, artistic design, and web graphics, PhotoImpact concentrates on the needs of web users and offers a wide choice of single and multiple image enhancement options.

\$90 VALUE

HELLO ENGINES! PROFESSIONAL 4.1



Register your website with hundreds of search engines like Google, Alta Vista and Fireball with Hello Engines! Generate more traffic by advertising your site to the world.

\$170 VALUE

NETOBJECTS FUSION 7.5



One of the most popular development programs available! High performance tools like wizards, drag-and-drop functions and more make webpage production faster and easier than ever.

\$130 VALUE

ONLINE WEBSITECREATOR

You're 20 minutes away from your own professional website! Website-Creator is a browser-based, powerful do-it-yourself solution with over 120 attention-grabbing, professionally designed templates to choose from. Create and amend your site in just 5 easy steps!



1.877.GO1AND1

INCLUDING THE LATEST SOFTWARE AND INTERACTIVE TOOLS TO CREATE THE ULTIMATE WEB PRESENCE.

ADD PERFORMANCE FEATURES FOR A TRULY INTERACTIVE WEBSITE.

Once you have created your new website, add exciting features that will connect you with your visitors to give them exactly what they are looking for. These features are included with the Business and Developer shared hosting plans – at no additional cost.

1&1 WEBDATABASE



Easily create and integrate customized databases into your website with no programming knowledge needed. Just select the fields you'd like and you're ready to go!

Membership List

First Name	Last Name	Address	Email
Alan	Bishop	634 E. 29th Street, New York, NY 10019	alanb@myhost.com
Stephen	Bradshaw	1954 Corgan Street, Hudson, OH 44236	bradshaw@myhost.com
Catherine	Leonard	64 Stanhope Drive, Pittsburgh, PA 15237	family@myname.com
Carl	Brown	651 Liberty Avenue, Wilmington, NC 28403	brown23214@ycs.com
Tom	Stowe	26 N. Hills Road, Chandler, AZ 85226	stoweunit@msn.net
Helen	Mcweeney	817 Providence Hwy., Boston, MA 02116	helenmcweeney@hotmail.com

IN2SITE DIALOGUE



The closest thing to selling one-on-one, live and in person, with dialogue in real time. Offers site visitors a live consultant, at your discretion. Informs you of a new visitor by a visual indication or auditory alert.



1&1 NEWSLETTER TOOL



Share your news and important information via e-mail newsletters. No special programming is needed! Track your newsletter's performance and store previously published newsletters.



1&1 WEBSTATISTICS



Comprehensive numerical and graphical statistics let you understand the dynamics of your visitors so you can fully optimize your website.



1&1 WEBELEMENTS



Make your site interactive by adding contact forms, online polls, complex Q&A scenarios and more. Ideal for gaining qualified leads. Data is delivered to you easily by e-mail.



CHAT & FORUMS



Great for making your site a meeting place for customers and vendors. Chats in private rooms are possible. You can even trade experiences, interests, and views with a simple step-by-step forum. (Chat feature is not included with Microsoft packages.)



FOR MORE DETAILS GO TO **1AND1.COM**

1&1

HOSTING

AFFORDABLE ALL-INCLUSIVE LINUX AND MICROSOFT SHARED HOSTING FROM 1&1.

1&1 feature-rich Microsoft and Linux shared hosting packages offer the best value for your money. And now, for a limited time only, you'll pay one low price per package level for Microsoft or Linux hosting! With six fully-loaded hosting solutions to choose from, we provide everything you need to create a high-performance website and realize the full potential of the internet.

**VALUABLE
SOFTWARE
INCLUDED WITH ALL
1&1 SHARED
HOSTING
PLANS**



**PLUS, GET FRONTPAGE 2003
WITH ALL MICROSOFT
SHARED HOSTING PLANS!**

SEAN SCHWABENLANDER
www.cubeapps.com

"1&1 has provided our company with an incredible range of tools for delivering our web presence. 1&1 has been continuously reliable in their delivery of our web content. The value 1&1 provides has far exceeded that of any other webhosting provider we have used."



1.877.GO1AND1

LIMITED TIME OFFER: MICROSOFT OR LINUX HOSTING. YOUR CHOICE – SAME LOW PRICE.



90-DAY MONEY BACK GUARANTEE

100% SATISFACTION OR
YOUR MONEY BACK

#1

Budget
Hosting

WEBHOST
DIRECTORY
AWARD
WINNER

– Linux packages

– Microsoft packages

HOME PACKAGE

\$4⁹⁹

PER MONTH

INCLUDES 1 DOMAIN

DOMAIN NAMES

• Included domains at no additional cost	1	1
• Manage unlimited domains with one account	✓	✓
• Point external domains to 1&1	50	50
• Sub domains	5	5

WEBSITE/CONNECTIVITY

• Web space	500 MB	500 MB
• FTP accounts, unlimited access	1	1
• Included bandwidth/month	5 GB	5 GB
• Protected by up-to-date firewall	✓	✓
• Daily backups	✓	✓

APPLICATIONS

• 1&1 Control Panel	✓	✓
• WebsiteCreator	12 pgs	12 pgs
• Full version software worth \$550	✓	✓
• Frontpage 2003	–	✓

E-MAIL

• POP3 e-mail accounts	50	50
• Aliases, auto-responders, forwarding	✓	✓
• 1&1 WebMail	✓	✓
• Included virus scanner	1 POP3	1 POP3

WEBSITE FEATURES

• Logfiles	✓	✓
• CGI library (counter, guestbook, etc...)	✓	✓
• FrontPage 2002 extensions	✓	✓
• Password protected directories	✓	✓

CRM/E-COMMERCE

• 1&1 WebStatistics	✓	✓
• 1&1 Chat channel	1	–

EXPRESS SUPPORT

• 24/7 support by phone and e-mail	✓	✓
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BUSINESS PACKAGE

\$9⁹⁹

PER MONTH

INCLUDES 3 DOMAINS

DOMAIN NAMES

• Included domains at no additional cost	3	3
• Manage unlimited domains with one account	✓	✓
• Point external domains to 1&1	100	100
• Sub domains	50	50

WEBSITE/CONNECTIVITY

• Web space	1000 MB	1000 MB
• FTP accounts, unlimited access	5	5
• Included bandwidth/month	15 GB	15 GB
• Protected by up-to-date firewall	✓	✓
• Daily backups	✓	✓

APPLICATIONS

• 1&1 Control Panel	✓	✓
• WebsiteCreator	18 pgs	18 pgs
• Full version software worth \$550	✓	✓
• Frontpage 2003	–	✓

E-MAIL

• POP3 e-mail accounts	150	150
• Aliases, auto-responders, forwarding	✓	✓
• 1&1 WebMail	✓	✓
• Included virus scanner	3 POP3	3 POP3

WEBSITE FEATURES

• Logfiles	✓	✓
• CGI library (counter, guestbook, etc...)	✓	✓
• FrontPage 2002 extensions	✓	✓
• Password protected directories	✓	✓
• Perl, PHP3 and PHP4	✓	–
• Database	1 MySQL	MS Access
• SSH shell access	✓	–
• SSI (Server side includes)	✓	✓
• Cron Jobs / Scheduled Tasks	✓	✓
• Directory Protection	✓	✓
• Shared SSL	✓	✓
• Active Server Pages	–	✓

CRM/E-COMMERCE

• 1&1 WebStatistics	✓	✓
• 1&1 Chat channels	5	–
• in2site Live Dialogue	✓	✓
• Newsletter Tool	✓	✓
• 1&1 WebDatabase	✓	✓
• 1&1 WebElements - Sophisticated Form Editor	✓	✓

EXPRESS SUPPORT

• 24/7 support by phone and e-mail	✓	✓
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DEVELOPER PACKAGE

\$19⁹⁹

PER MONTH

INCLUDES 5 DOMAINS

DOMAIN NAMES

• Included domains at no additional cost	5	5
• Manage unlimited domains with one account	✓	✓
• Point external domains to 1&1	200	200
• Sub domains	200	200

WEBSITE/CONNECTIVITY

• Web space	2000 MB	2000 MB
• FTP accounts, unlimited access	25	25
• Included bandwidth/month	30 GB	30 GB
• Protected by up-to-date firewall	✓	✓
• Daily backups	✓	✓

APPLICATIONS

• 1&1 Control Panel	✓	✓
• WebsiteCreator	25 pgs	25 pgs
• Full version software worth \$550	✓	✓
• Frontpage 2003	–	✓

E-MAIL

• POP3 e-mail accounts	300	300
• Aliases, auto-responders, forwarding	✓	✓
• 1&1 WebMail	✓	✓
• Included virus scanner	6 POP3	6 POP3

WEBSITE FEATURES

• Logfiles	✓	✓
• CGI library (counter, guestbook, etc...)	✓	✓
• FrontPage 2002 extensions	✓	✓
• Password protected directories	✓	✓
• Perl, PHP3 and PHP4	✓	–
• Database	3 MySQL	MS Access
• MS SQL	–	–
• SSH shell access	✓	–
• SSI (Server side includes)	✓	✓
• Cron Jobs / Scheduled Tasks	✓	✓
• Advanced developer tools	✓	–
• Dedicated SSL Certificate	✓	✓
• ASP, ASP.NET, .NET Framework	–	✓

CRM/E-COMMERCE

• 1&1 WebStatistics	✓	✓
• 1&1 Chat channels	10	–
• in2site Live Dialogue	✓	✓
• Newsletter Tool	✓	✓
• 1&1 WebDatabase	✓	✓
• 1&1 WebElements - Sophisticated Form Editor	✓	✓

EXPRESS SUPPORT

• 24/7 support by phone and e-mail	✓	✓
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SETUP FEE WAIVED FOR A LIMITED TIME

FOR MORE DETAILS GO TO **1AND1.COM**

1&1

SERVERS

**WHATEVER YOU NEED FROM A DEDICATED SERVER,
1&1 HAS THE DEFINITIVE SOLUTION.**

1&1 Managed Servers deliver the ease of shared hosting, but with the power and space of a dedicated server. 1&1 Root Servers offer the same power and space, but you are in total control. Windows Server 2003 provides a solid foundation for the latest Microsoft technologies that help connect people, information and systems.

\$25 MILLION DATA CENTERS

- 99.9% uptime guaranteed
- 15,000 MBit connectivity
- 500 peerings with 250 different providers for optimized routing
- Connection to nine leading carriers for real redundancy

WINDOWS SERVER: WEB EDITION

- Included with Server I & II
- Designed for dedicated web serving and hosting
- DNS Server
- ASP, ASP.NET, MSDE

WINDOWS SERVER: STANDARD EDITION

- Included with Server III
- Designed to support sophisticated and demanding applications
- Exchange Server installable
- Includes Active Directory, Streaming Media Server, Terminal Services

PLESK 7 INCLUDED WITH ALL ROOT SERVERS

- Use, create and manage your Linux-based system
- Create new e-mail accounts
- Manage web spaces plus up to 100 domains
- Become your own host by segmenting your server into shared web space

FULLY MANAGED SERVERS

- As easy as shared hosting but with added power and performance
- Complete monitoring, management and maintenance by 1&1
- Security updates and system maintenance
- Server configured and installed by 1&1

VALUABLE SOFTWARE
INCLUDED WITH ALL
1&1 SERVERS



PHILLIP ELLIS
www.humanearhost.com

"A year ago, I decided to start my own hosting service as a complement to my web design, programming, and other internet-related services. Unfortunately, I chose a cheap, less reliable service to host my site. After enduring a painful year of downtime, almost non-existent tech support and tons of aggravation, I switched to a dedicated server from 1&1. The difference is unbelievable. I have ample drive space, speed and bandwidth and I get questions answered immediately from real people who understand the products they support. 1&1 has given me a tool that I can use with confidence to build my client base and expand my business."



1.877.GO1AND1

**POWER. FEATURES. AFFORDABILITY.
EVERYTHING YOU NEED FOR A
SERIOUS PRESENCE ON THE WEB.**

**90-DAY
MONEY BACK
GUARANTEE**

100% SATISFACTION
OR YOUR
MONEY BACK



PLESK7

1&1 ROOT SERVERS

**FOR MAXIMUM
FLEXIBILITY & CONTROL**

- Full Root access via SSH
- Plesk 7 Control Panel pre-installed
- RedHat Linux 9 Operating System
- Advanced Recovery Tool lets you instantly reboot



1&1 MANAGED SERVERS

**FOR PERFORMANCE
& CONVENIENCE**

- All the features of shared hosting with the power of a dedicated server
- Continuously updated fire-wall protection
- 1&1 user-friendly Control Panel for easy administration
- Includes Dedicated SSL Certificate at no extra cost

1&1 WINDOWS SERVER 2003

**FOR SECURITY
& RELIABILITY**

- Windows Server 2003 Standard Edition with Server III (Web Edition with Server I & II)
- Includes FrontPage 2003
- Unlimited administration access
- .NET Framework already integrated



SERVER I

- Intel Celeron 2.0 GHz
- 256 MB DDR-RAM
- 40 GB IDE hard drive
- 500 GB bandwidth included

\$49
PER MONTH

\$59
PER MONTH

\$69
PER MONTH

SERVER II

- Intel Pentium 4, 2.4 GHz
- 512 MB DDR-RAM
- 40 GB IDE hard drive
- 500 GB bandwidth included

\$69
PER MONTH

\$79
PER MONTH

\$89
PER MONTH

SERVER III

- Intel Pentium 4, 3.06 GHz Processor with Hyper-Threading
- 1 GB DDR-RAM
- 120 GB IDE hard drive
- 500 GB bandwidth included

\$99
PER MONTH

\$109
PER MONTH

\$129
PER MONTH

■ \$99 ONE-TIME SETUP FEE

■ 24/7 EXPERT SUPPORT INCLUDED

1&1

FOR MORE DETAILS GO TO **1AND1.COM**

eSHOPS

SIMPLE E-COMMERCE WITH HIDDEN POWER.

1&1 eShops are as powerful as any major online retailer, but with no software or hardware to install. Online wizards and professionally designed templates offer such simplicity that your online shop can be up and running in less than an hour.

**VALUABLE
SOFTWARE
INCLUDED WITH ALL
1&1 eSHOPS**



MICHAEL HEIFEZ
www.flowergallery.net

"1&1 has given us all the tools needed to easily set up our Professional eShop and we were online and doing business in no time. One of the reasons we chose 1&1 to host our eShop was that everything is included in one package and at one great price, including the ability to accept secure online payments. The shop templates are fully customizable, giving us the ability to showcase our unique artistry in floral design in the perfect way for our business."



1.877.GO1AND1

EASY TO HANDLE. EASY TO USE. BEING PROFITABLE HAS NEVER BEEN EASIER.

90-DAY MONEY BACK GUARANTEE

100% SATISFACTION
OR YOUR
MONEY BACK



LOADED WITH 30+ TEMPLATES

If you want to start selling online without a big budget, lots of time and know-how – start off with one of our 30+ professional shop templates ready to be loaded with your products. They've been designed by experts in optimizing online results. You can even customize them to your liking by changing fonts, colors, and positioning.

8 EASY-TO-USE WIZARDS

With eight well-designed wizards to guide you through the shopping basket, order process, delivery methods and, of course, payment settings, configuring your eShop is simple.

HOSTED SOLUTION – ALL INCLUSIVE

There's no software to install – traffic and webspace are included. We even take care of all updates and enhancements, leaving you to concentrate on your business.

FULLY CUSTOMIZABLE

eShops use PHP-based templates and rules so you can change styles, edit all text modules, and even run an eShop in a different language on your completely private skin. Using PHP scripts you can even edit context-sensitive rules.

ACCEPT ONLINE PAYMENTS WITH PAYPAL AND WORLDPAY

1&1 Professional or Developer eShops deliver you secure and easy-to-use e-commerce solutions via PayPal or WorldPay. With PayPal – an eBay company – you don't even need a special merchant account. Just sign up, and without any paperwork or any bank applications, you can accept all payments from 35,000 loyal PayPal users. WorldPay, a member of the Royal Bank of Scotland, provides you with everything you need to securely accept credit card payments.



SSL SECURED

Vital for customers who shop in an SSL-secured environment. All shop-based settings you make on the webserver are in SSL-secured pages for maximum integrity of your confidential data. Third parties cannot access these areas.

STAND-ALONE SOLUTION
**WORKS WITH
ALL WEBSITES**

BUSINESS

\$9⁹⁹ PER MONTH

- 50 MB web space
- Full version software worth \$550
- 50 item product catalog
- 2 shipping methods
- 10 GB bandwidth/month included
- SSL (Secure server)
- Free support by mail and phone
- Money Back guarantee

PROFESSIONAL

\$29⁹⁹ PER MONTH

Features as above, in addition to:

- 300 MB web space
- Unlimited item variants
- 200 item product catalog
- 30 GB bandwidth/month included
- Product categories/sub-categories
- Product data import/export
- Multi-currency support
- Offer customer discounts
- 5 shipping methods
- Customer account management
- Newsletter administration
- Import/export customer data
- Self-administration for customers
- Customize images/color/fonts
- Shopping cart integration
- Online credit card clearing with PayPal and Worldpay (charges apply)
- Tax clearing server included (calculates taxes by state, city and country)

DEVELOPER

\$49⁹⁹ PER MONTH

Features as above, in addition to:

- 1200 MB web space
- FTP access
- Unlimited item product catalog
- 60 GB bandwidth/month included
- Discounts for customers, and specific customer groups
- Unlimited shipping methods
- Export of orders & append customer data
- Customer account management, including customer groupings
- Fully customizable templates
- 1 Dedicated SSL Certificate included
- In2site Live Dialogue

■ SETUP FEE WAIVED FOR A LIMITED TIME ■ 24/7 EXPERT SUPPORT INCLUDED

FOR MORE DETAILS GO TO **1AND1.COM**

1&1

COLLABORATE WITH YOUR TEAM EASILY AND EFFICIENTLY

MICROSOFT EXCHANGE HOSTING

ACCESS YOUR DATA ANYTIME, ANYWHERE

Microsoft Exchange Hosting lets you enjoy the communication and collaboration features and benefits of Microsoft Exchange without the hassles of maintaining your own Microsoft Exchange server. Read, send and receive e-mail and access your public folders, contact data, tasks and calendars anytime, anywhere via Microsoft Outlook or any web browser.

\$6⁹⁹
PER MONTH

- ✓ Access your most up-to-date information anytime and anywhere
- ✓ Share information with your entire team via public folders
- ✓ Synchronize your data using your mobile device via ActiveSync
- ✓ Microsoft Exchange Hosting from 1&1 includes 1 Exchange account with 200 MB, Virus Scanner and Outlook Web Access

*\$6.99 shipping and handling charge applies.

FrontPage 2003 not included.

**OUTLOOK
2003 INCLUDED
WITH 1&1
MICROSOFT
EXCHANGE
HOSTING!**



MICROSOFT SHAREPOINT HOSTING

TAKE FILE SHARING TO NEW LEVELS

Microsoft SharePoint is the ideal communication platform for teams that need to share information. It works as an Intranet which makes it convenient for team collaboration. Microsoft SharePoint Hosting allows you to share documents, tasks and contacts. Plus store calendars, web links, discussions, issues lists and announcements. Increase individual and team productivity!

- ✓ Collaborate on documents via a secure website from any location
- ✓ Keep your information secure on the internet with your private login
- ✓ Manage multiple teams and projects with sub sites
- ✓ Microsoft SharePoint Hosting from 1&1 includes 50 user accounts and 100 MB web space.

\$19⁹⁹
PER MONTH



FrontPage 2003 not included.

1&1

**CALL 1.877.GO1AND1 OR
VISIT 1AND1.COM
AND MAKE THE SWITCH TODAY**

Member of
**united
internet**



Misadventures in Tech Support

We've all experienced it: the moment your PC (or some vital part of it) just up and quits on you, at the worst possible time. Mine was last December, when I fired up my four-month-old laptop to finish a project due the next day, only to have the screen display the dreaded Windows Blue Screen of Death.

Fortunately, an astute tech support rep recognized the symptoms of faulty RAM. Rather than have me send back the system—and my precious data—he shipped me fresh RAM modules to replace those in my notebook. Less than 24 hours later, my problems were solved.

Alas, not all tech support tales end so happily. In fact, in recent years our annual Reliability and Service survey has shown a groundswell of dissatisfaction among *PC World* subscribers with the support they receive from their technology vendors (although satisfaction with ►

As companies move service offshore and online, are you still being served? We went undercover to put major vendors to the test. Not everyone gets a passing grade. By Michael Desmond

service generally improved in the most recent survey; go to find.pcworld.com/42218 for the "Reliability and Service Report Card"). Whether it's interminable hold times, clueless technicians, the difficulty of understanding the heavy accents of some offshore reps, or just plain bad advice, PC users aren't getting the quality of service they expect from tech vendors.

We went undercover to try out support for PCs, software, and ISPs. The PC World Test Center concocted two failures—one simple and one more complex—for three PCs, one notebook, three software packages, and three broadband ISP accounts. For example, the PCs suffered a loose power plug (easy) and a bad hard-drive cable (difficult).

We then tried to solve the problems using all the support options the vendors offer. Most of our interaction with vendors took place on the phone, but we also used their FAQ pages, knowledge bases, and other online support resources.

Based on the 21 calls we made, there are still some support stars out there. We found knowledgeable and experienced technicians manning the phones at Dell, and one of the reps for budget-PC vendor Polywell wowed us with his spot-on advice and cool demeanor. Unfortunately, we also found that there's no shortage of bad advice emanating from call centers, wherever they happen to be located. Please take our limited, first-

hand experiences with a grain of salt, however. We set out to get a reality check on the state of tech support in general, not to damn or praise specific vendors. Your experiences with the companies we dealt with may not mirror ours.

'YOUR CALL IS IMPORTANT'

TOPPING MOST PEOPLE'S tech support complaint list is long hold times. We were pleasantly surprised to find our wait times sufferable, especially for our calls to PC vendors and ISPs. We waited less than 2 minutes to get through to HP and IBM (Dell had us listening to canned music for an average of 12.5 minutes, however).

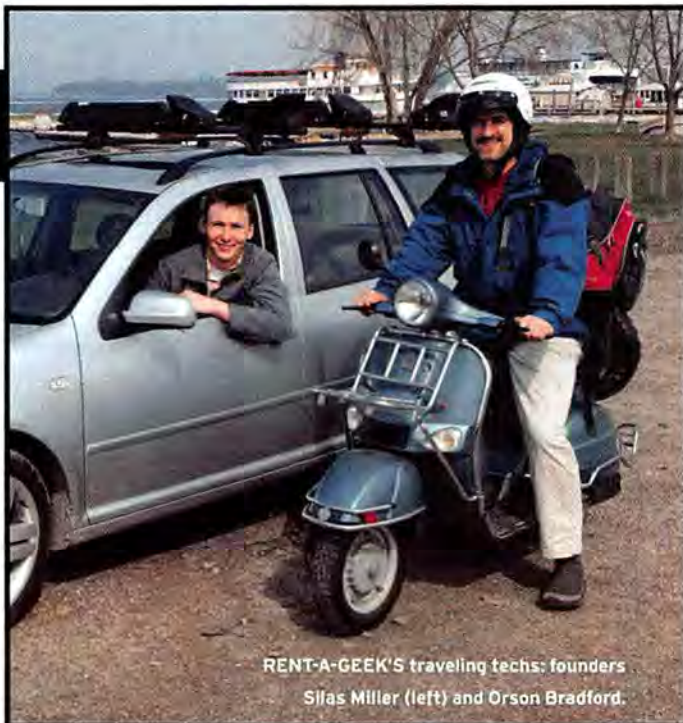
THIRD-PARTY SERVICES

Tech Support Home Delivery

IF YOUR AILING PC puts you in desperate straits, you might consider calling in a consultant to perform a home or office visit. Computer service companies such as Panurgy (www.panurgy.com) have offices across the country that serve clients with everything from small, five-system networks to sprawling enterprises with thousands of PCs. Costs generally start at about \$150 an hour. Home users, however, may be better served with firms specializing in domestic setups. These services usually cost less than their business counterparts, and they're likely to have more experience with games and other nonbusiness applications on home systems.

To get a sense of what a PC house call is like, I phoned a Burlington, Vermont-based outfit with the memorable name of Rent-a-Geek (www.sos-geek.com). Founded by a pair of former University of Vermont students in 1997, the small firm now has four employees who address the home, home-office, and small-business markets in the Burlington area. At 4:45 p.m., I placed a call complaining that my system was producing an 'Operating system not found' error. (For this call, I used our "difficult" PC problem and installed a bad hard-drive IDE cable in the machine.) I booked a consultation for 10 the next morning.

The technician, Marc Leone, showed up a half hour late, but he got right down to work. Within minutes he confirmed that the problem was with the hard drive and not the operating system. He opened the case and reseated the IDE cables. When the system still failed to detect the hard drive, he removed the hard-drive cable, which we had doctored to prevent disk access. In its place he plugged in the cable that used to connect the DVD-ROM drive.



RENT-A-GEEK'S traveling techs: founders Silas Miller (left) and Orson Bradford.

Just like that, the system booted up. It cost me \$75 and under an hour to get my problem fixed (subsequent hours would have cost \$75 each). If I had been in a real pinch, the house call would have been money well spent.

My experience shows that a competent support technician on the scene can get a lot more done than someone talking to you over the phone. Rather than relying solely on a phone-directory ad, however, ask your friends and colleagues for referrals. Also, search online for local PC-repair listings (assuming your PC is functioning), and follow up on customer referrals or testimonials by checking out contenders with your local Better Business Bureau.

The three ISPs we called had us talking to a human after only a few minutes on hold. The news isn't so good on the software side: Microsoft made us wait a half hour—twice—whereas our two calls to Symantec were answered in 12 and 13 minutes, respectively. We waited 24 and 10 minutes on our two calls to Adobe.

During our calls we chatted up the support techs to find out where they were located, whether they worked for the product's vendor or a third party, and how long they had been working in tech support. Only three of the reps we spoke to acknowledged being located overseas—all in India. Whether overseas or in the U.S., several other reps spoke with foreign accents. In our limited experience, the techs with identifiable accents were as likely as those who spoke standard American English to give us good advice.

Offshore reps were generally more difficult to get off script as they diagnosed a caller's problem. A script serves as a decision tree for technicians, but it can also keep them from doing any critical thinking about the problem. Too often the script is a crutch for someone without technical experience. Luckily, most of the reps we dealt with dropped the script soon enough (or at least appeared to).

Hardware Support: Trial and Error

- **Products:** Desktop PCs from Dell, HP, and Polywell; a notebook computer from IBM
- **Easy problem:** Unplugged power cord
- **Difficult problem:** Bad hard-drive IDE cable (loose drive link in the notebook)
- **Good news:** On our first call, the Polywell rep was efficient and knowledgeable—and from a third-party contractor, no less.
- **Bad news:** HP's tech agent nearly had us ship our PC back to HP to fix a bad IDE cable. Polywell's contractor took 2.5 hours to call us back about our second problem.

OUR THREE DESKTOP machines were midrange Pentium 4–based systems with between 512MB and 1GB of RAM. The laptop came with a 1.4-GHz Pentium M processor and 256MB of system memory.

It usually didn't take too long for us to get through to the hardware vendors: IBM and HP answered in less than 2 minutes, while Dell picked up after 12 and 13 minutes, respectively. Polywell's call-back service responded to our first phone call after 29 minutes, but took 2.5 hours to answer our second call.

Dell, HP, and Polywell aced the "Oops, I left the computer unplugged" chal-

lenge—all immediately asked us to check the power cord. For the IBM notebook, we weren't so lucky. We unplugged the system's AC converter block to mimic what might happen if you repositioned it on your desk. When we called IBM's tech support to complain of a battery that seemed to be draining, the agent was quick to suggest that we check both the wall outlet and the back of the machine for loose connections. However, he never thought to ask us if the converter block itself had come unplugged.

Instead, he assumed we had somehow undercharged our battery, which was not the case. His solution: Remove the battery and hard drive from the laptop, press the power button ten times in a row, and then hold the power button down for 15 seconds. This bizarre routine apparently drains the PC's capacitors, at which point we were to run the PC for a couple of hours to see if the battery held a charge. Of course, that didn't solve our problem, so we called IBM the next day. The second IBM technician resolved the situation in less than a minute.

Our second problem proved more difficult for the support reps to solve, because they had to diagnose a system that would not boot up. Our goal was to have the support rep discover the bad cable and send us a replacement. With our three desktops, the reps for Dell, HP, and Polywell immediately recognized that the problem was related to the hard drive. However, this task separated the script readers from the true technicians, in part because broken IDE cables are a rare thing, especially in new computers. As a hint, we offered that we may have tugged on or clipped the IDE cable when working inside the case.

HP's rep, located in India, offered some wooden readings from a script. She barreled through corporate boilerplate about having a new drive sent out or possibly having us ship the PC back to HP for repairs. Communication sometimes broke down with this agent: She tended to speak at a rapid-fire clip, and she was lost by our attempts at humor. Our conversation included a lot of repetition. ▶

SUPPORT SOURCES

PC SOS: CALL HOTLINES FOR HELP

WHEN YOUR PC gear acts up, give the vendor a shout (literally or virtually).

COMPANY	Support URL	Phone
ABS	www.abspc.com/support	800/685-3471
Amax	find.pcworld.com/42382	800/889-2629
Dell	support.dell.com	800/624-9896
EMachines	find.pcworld.com/42384	801/401-1419
Fujitsu PC	find.pcworld.com/42516	800/838-5487
Gateway	support.gateway.com	Small office or home: 800/369-1409; business: 888/888-1094
Hewlett-Packard	find.pcworld.com/42386	HP: 800/474-6836; Compaq: 800/652-6672
IBM	www.ibm.com/pc/support	800/426-7378
Micro Express	find.pcworld.com/42388	800/989-9900
MPC	find.pcworld.com/42390	877/894-5693
Polywell	www.polywell.com/us/support	800/300-7659
Sony	find.pcworld.com/42392	888/476-6972
Sys Technology	www.sys.com	800/613-9963
Toshiba	www.pcsupport.toshiba.com	800/457-7777

The news wasn't much better at Polywell, where the tech had us reseal drive cables and attempt a disk restore from a hidden partition—neither of which solved the problem—before giving up.

Our calls to Polywell show that two calls to the same company at the same location can yield very different results. Our first call to Polywell's third-party provider, Integrated Automation International, was arguably the best of the entire test. That technician was friendly, energetic, funny, and—most important—knowledgeable. He happened to be a hardware nut who builds his own systems. Though he handled only the no-brainer question, his tech knowledge, confidence, and calm manner came through loud and clear.

Two days later, however, our second call to Polywell went unreturned for 2.5 hours. When a technician did call back,

failure by removing the hard drive from the Ultrabay housing. This time, the IBM tech quickly diagnosed the problem—a possible loose drive connection—and had us remove and reseal the hard drive.

HARDWARE ANSWERS ONLINE

ALL FOUR OF THE hardware vendors we dealt with recommend that their customers search for solutions to their problems on the companies' Web sites prior to calling tech support. These sites offer step-by-step troubleshooting guides, as well as searchable knowledge bases. Unfortunately, the volume of information they offer can be daunting, especially for novice users. The online troubleshooters are still more time-consuming and difficult to use than calling the vendors' support lines. Also, if your machine isn't working, the sites' automated troubleshooting tools won't do you any good.

Of the company sites we visited, IBM's provides the most proactive online support, including browser-based diagnostics that detect your PC model and steer you toward relevant troubleshooting solutions. The site's Hints and Tips page helps guide users to solutions for problems with specific products or situations.

Neither Dell nor HP can match the helpers on the IBM site, but their support sites provide detailed information for all of their PC models. Dell's support pages are easier to navigate than those on HP's

Web site (see **FIGURE 1**). Among the useful resources on the Dell site are a knowledge base, online tutorials, and several discussion forums. Polywell's online support is sparse by contrast, consisting primarily of a brief FAQ section, a driver download page, and a technical support request form.

So-So Support for Software

➔ **Products:** Adobe Acrobat 6, Microsoft Office Outlook 2003, and Symantec Norton AntiVirus 2004

➔ **Easy problem:** Missing Start shortcut

➔ **Difficult problem:** Missing system file

➔ **Good news:** Adobe was the only software vendor to recognize and remedy both our easy problem and our difficult one.

➔ **Bad news:** Microsoft twice put us on hold for more than half an hour, and both times opted for using the repair/reinstall tools on the Office CD rather than simply restoring the missing file to the app's system folder.

FOR OUR SOFTWARE TESTS we used the fee-based support services offered by Adobe and Symantec, but relied on Microsoft's free service. Adobe's service costs \$39 per call, while Symantec's is \$30 per call. Note that both Adobe and Symantec waived the fees for our second calls to them; Adobe identified the problem as an "installation issue."

We waited longer for the three software firms to answer than we did for the four hardware vendors and three ISPs to pick up. Symantec answered in 12 minutes and 13 minutes, respectively, while Microsoft saddled us with half-hour hold times twice. Adobe's support staff picked up in 24 and 10 minutes, respectively.

In both of our problem scenarios, we



FIGURE 1: BROWSE SUPPORT topics and resources by category on Dell's support site.

he seemed reluctant to work with us.

Only Dell came through with flying colors in this test. The knowledgeable tech identified a bad cable as a possible culprit, prompting us to say that we had an old one lying around. Ten minutes later, the "good" cable was installed and the problem was solved. One plausible reason for Dell's success: The two techs we talked to at the company said they had nine years and six years of tech support experience, respectively. Their expertise bore that out.

Since we couldn't swap IDE cables in the IBM ThinkPad, we simulated a disk

SUPPORT SOURCES

SOFTWARE SOS

TRY THESE CONTACTS when your apps go on the blink.

COMPANY	Support URL	Phone
Adobe	www.adobe.com/support	206/675-6304
Corel	support.corel.com	877/662-6735
Intuit	www.intuit.com/support	Quicken: 800/811-8766; QuickBooks: 800/320-7276
McAfee	find.pcworld.com/42394	888/847-8766
Microsoft	find.pcworld.com/40814	800/936-4900
Peachtree	www.peachtree.com/support	800/247-3224
Symantec	www.symantec.com/techsupp	800/927-3991 or 900/646-0007
Ulead	find.pcworld.com/42396	310/896-6391
Zone Labs	find.pcworld.com/42398	877/365-9663 or 900/988-9663

explained to the support reps that our computer was in an area where children and cats could get at it, making accidental file deletion a distinct possibility. We hoped the techs would have us re-create the app's Start menu shortcut manually to solve the easy problem, and restore the missing file to the program's system folder.

Only Adobe diagnosed both the deleted Start menu shortcut and the missing application file. A rep out of Oregon nearly ached the first problem right out of the chute, guiding us to the Acrobat 6 application folder before putting us on hold to consult with someone offline. He eventually talked us through the process of creating a shortcut to the `acrobat.exe` file and moving it to the Start menu. The Symantec rep also recognized the missing shortcut, but after putting us on hold for a couple of minutes, he had us reinstall the entire application, which took longer than simply restoring the missing system file.

For the missing Start menu shortcut,

"If they take too many calls, it will kill their [profit] margins."

— Bob Igou, Gartner

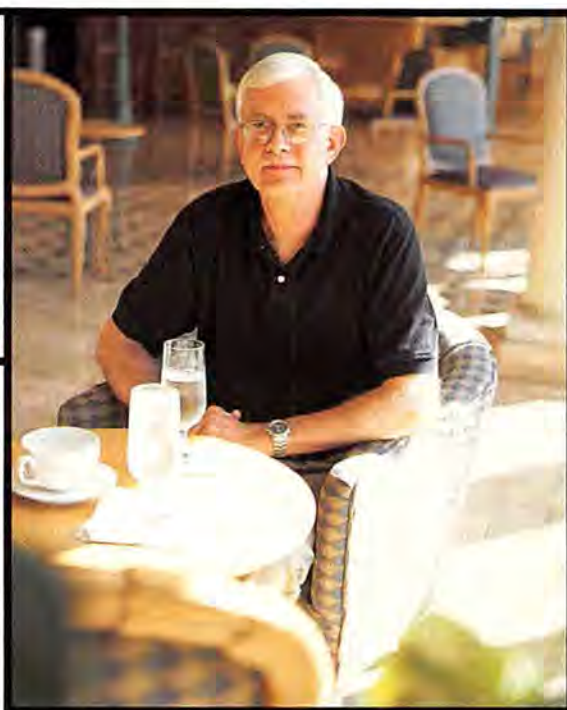
based in India, had a hard time understanding our Outlook problem. She put us on hold, and then told us to use our Office CD to repair our installation. This restored the missing system file, but it wasn't as fast as restoring the file manually.

Keeping tech-support call centers in the U.S. doesn't guarantee a successful solution. Both our calls to the Symantec support center based in Oregon were marred by technically unsure agents who repeatedly put us on hold to work out relatively simple Windows file-navigation issues.

Only half the software reps would divulge how much experience they had in tech support, but those who did had been working for their company only a few months. The result: questionable answers, multiple stints on hold as reps called for help, and a whole lot of application reinstalls.

The software vendors pushed their free online support and fee-based

phone support as a way to cut costs. They often subjected us to a customer-service interview to assess our call before putting us on hold to speak to an actual technician. We also weathered pitches: Symantec burned a lot of phone time pushing its \$159 yearly phone-support program.



WEB-BASED SOFTWARE HELP

ALL THREE SOFTWARE vendors offer searchable knowledge bases, remote diagnostic applications, and user forums on their support sites. The Symantec site features a browser-based utility that warned us that our virus profiles were out of date (see **FIGURE 2**). However, when we ran the utility to restore our missing AntiVirus system file (our difficult problem), the software failed to recognize the issue.

Microsoft's online support site is dominated by the company's Knowledge Base, a vast repository of information and articles addressing the complete range of Microsoft products. Unfortunately, a simple search can turn up so many hits that it's difficult to find the specific item you need to solve your problem. For example, we couldn't resolve either our missing-shortcut problem or our missing-file one using the Knowledge Base.

Adobe's Acrobat support page is also search driven, though visitors can get help by running a series of step-by-step tutorials and by accessing the product's user forum. Still, we didn't find the solutions to our problems on Adobe's site. ►

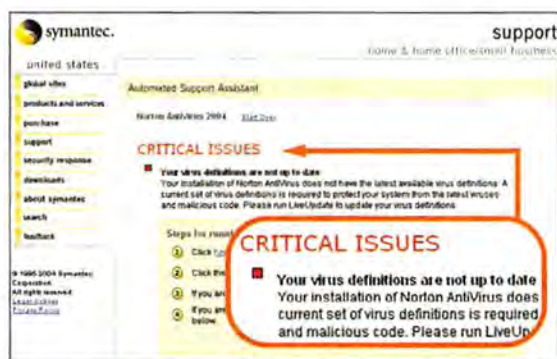


FIGURE 2: THE AUTOMATED support assistant on Symantec's site starts by prompting you to update your virus definitions.

the India-based Microsoft tech insisted that corruption during an Office upgrade was the culprit. She had us run Office's Add or Remove Features function, which brought the shortcut back, but it took longer than re-creating the shortcut manually. The second Microsoft rep, also

ISPs Get Passing Grade

- **Services:** Adelphia Communications, Comcast Cable, and SBC Yahoo DSL
- **Easy problem:** Unplugged modem
- **Difficult problem:** Altered IP setting
- **Good news:** Calls to all three providers were answered quickly, and their reps were generally on the ball.
- **Bad news:** Adelphia's support tech came *that* close to solving our complex technical issue, then reversed course and told us to call our system vendor.

IN CONTRAST TO THE software firms, cable-Internet providers Adelphia and Comcast, and DSL provider SBC Yahoo, responded quickly: Adelphia averaged 3.5 minutes for our two calls, Comcast answered each call within 2 minutes, and SBC Yahoo picked up within 3 minutes both times. The technicians we dealt with

appeared to be in the U.S. or Canada.

The ISP reps had an advantage: They could tell if we were on the network. This made it easy for the agents to diagnose both our problems.

The technician at SBC was friendly, knowledgeable, and fast—he resolved the unplugged-modem challenge within a few minutes. Both of the Canada-based Comcast support reps we spoke with helped us solve our problems, although the first, who found our unplugged modem in just a few minutes, was much more efficient (and confident) than the second, who led us down a few blind alleys before discovering our misconfigured IP setting. Adelphia's tech rep was

every bit as quick in resolving our simulated failure. He also surprised us by asking if we had a cat.

"In winter, some cats like to sit on the modem because of the warmth," he told us. "One lady had a cat that slapped at the modem because

it didn't like the lights. It was slapping at the power button to make the lights turn off. We finally caught the cat in the act."

Our second call to Adelphia about the IP setting was answered by a support rep who quickly ascertained that the modem was properly logged on and working. Some adroit questioning revealed that we had an active connection and that the problem wasn't in the cabling between the PC and the modem.

Unfortunately, the tech, who said he had a year and a half of experience, failed to close the deal. We told him that someone had hooked the PC to a friend's system while gaming the night before. But the rep failed to follow up on this piece of evidence, though he did mention that changes to our network settings could disable our Internet connection. In the end, he advised us to contact our PC maker. Surprisingly enough, the solution to our second "failure" is posted right on the Adelphia support pages (see **FIGURE 3**). Alas, the Adelphia technician didn't suggest that we check the company's Web site for a fix—or check it himself. ▶

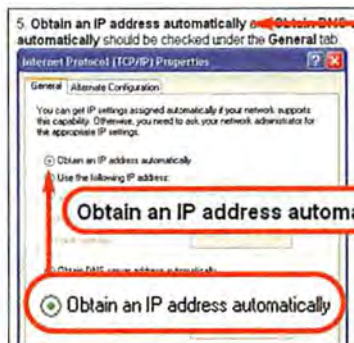
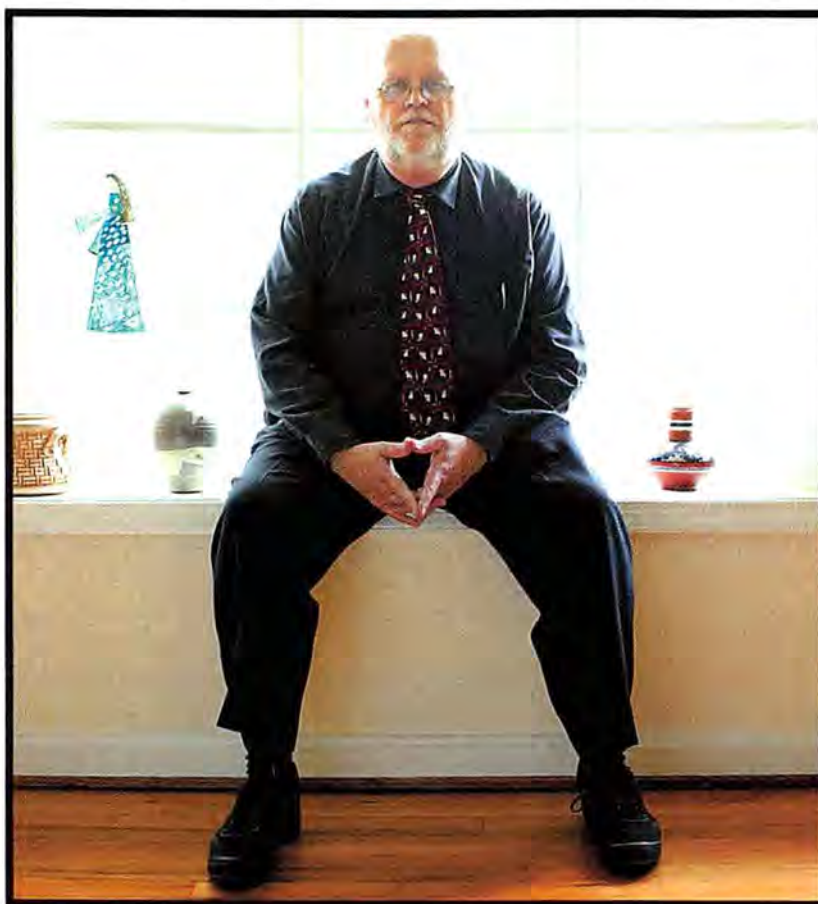


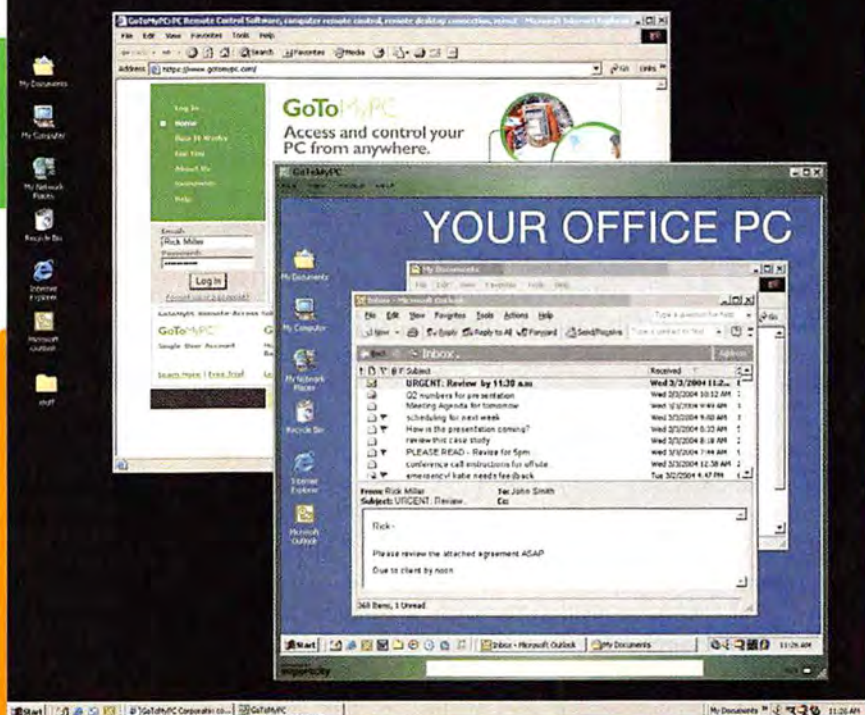
FIGURE 3: CABLE ISP Adelphia's site had the solution to our problem, even though the company's tech rep didn't.



"Just because [it's via] e-mail doesn't mean it's not urgent."

— Ron Silliman, Gartner

YOUR HOME PC



You're at home working on tomorrow's presentation and suddenly...

you remember there's a document you need from your **office PC**.

Choose wisely:

Option #1: Call the office, no one is there. Call colleagues at home. They don't have the file you're looking for. Get in your car and drive to the office. Email the file to your home PC. Drive back home. You sent the wrong file.

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ONLINE ISP SUPPORT

IF YOUR Internet link is down, your ISP's online support may not be your most convenient source for help. Still, you might find the solution to your problem in the ISP's FAQ pages or its knowledge base.

Adelphia's FAQs cover installing and securing your connection, but the site doesn't offer any speed-check tools such as those at BroadbandReports.com, for example. Comcast's support page (find pcworld.com/42402) includes step-by-step instructions for restarting your modem, setting up an e-mail account, and other common activities. The site's FAQs have information on troubleshooting a dodgy Internet link, but most of its support-related links simply refer you to the company's toll-free support line.

SBC Yahoo's support page includes a DSL Internet Throughput Test (find

pcworld.com/42404). The company's help site also features an extensive section explaining how to set up and troubleshoot your DSL modem.

PAYING THE SUPPORT PRICE

BOB IGOU, PRINCIPAL analyst in the IT Services and Management group for industry research firm Gartner, says shabby support is due to simple economics. "It's pretty tough for these companies to offer free technical support," Igou says. "If they take many technical support calls, it will just kill their [profit] margin."

Igou says vendor call centers are ill-equipped to field diverse complaints from consumers and small businesses. Unlike a company's help desk, the people supporting commercial products can't predict your hardware and software configuration, he says.

Ron Silliman, principal analyst in Gartner's Infrastructure Support Service group, says online service is catching on with business users, but vendors have not committed to serving consumers. "Just because something comes in on e-mail doesn't mean it's not urgent," he says.

Whether by Web site, phone, or pony express, support must improve—or else tech vendors may find that their telephones stop ringing altogether. ■

Michael Desmond is a freelance writer based in Vermont. PC World Test Center Senior Performance Analysts Jeffrey Kuta and Elliott S. Kirschling, Senior Editor Aoife M. McEvoy, Senior Technical Editor Karl Koessel, and freelance writer Jeff Bertolucci contributed to this article.

TECH-CALL SMARTS

Win the Support Game

HERE ARE A FEW THINGS THAT you can do to help tilt the support odds in your favor.

Time your calls: A technician for Dell advised us to call support in the late morning or early afternoon to avoid being routed to international call-overflow centers. He also singled out Mondays, holidays, and the back-to-school season as bad times to call.

Know your problem: Telling a tech that your system is broken won't help them resolve your issue. Take the time to write down any error messages that appear on screen when the problem arises. Also, try repeating the failure before you call so you can jot down exactly what happens and when.

Consider what changed: Things usually happen for a reason. If your Internet access is out, could it be that a circuit breaker was tripped during a storm? Perhaps a drive cable got knocked loose when you moved a PC. Or maybe your children got into the office and mucked with your software.

Keep it simple: Many problems are astonishingly easy to fix—like the unplugged power cord that virtually all our technicians confirmed is a frequent source of calls. Before you spend time on hold with a hardware or Internet service company, check that your system's power and data cables are firmly seated.

Have all your system info handy: Pull together any documentation you have on the affected product. Software vendors will almost certainly ask for a product ID code, while most PC vendors

About Microsoft Office Word

Microsoft® Office Word 2003 (11.6113.5703)
Part of Microsoft Office Professional Edition 2003
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Product ID: 70145-745-0726767-57589

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PC World
Product ID: 70145-745-0726767-57589

HAVE THE PRODUCT'S serial or ID numbers handy before you call.

require the system's serial number and/or the invoice number.

Get in front of your system or software: The biggest advantage to phone support is being able to perform trial-and-error troubleshooting. Before you call, make sure you have the ailing hardware or software immediately accessible. You don't want to have to set down the phone every time you perform an action.

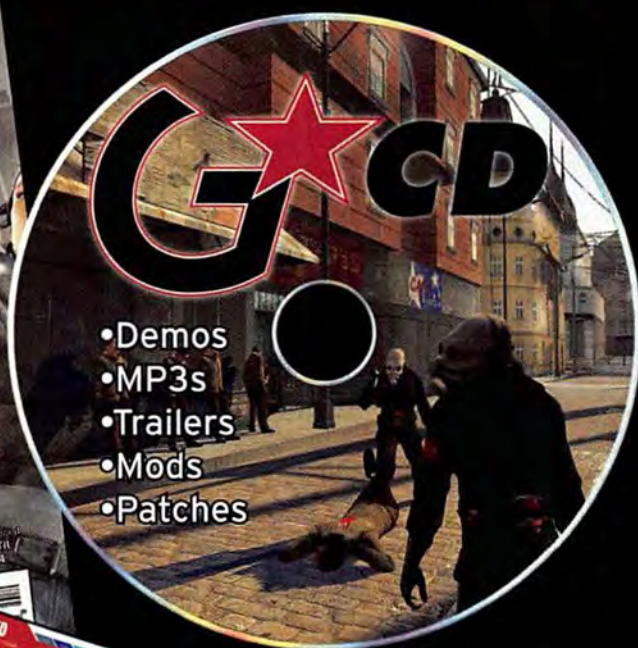
Dodge fees: Software vendors in particular like to charge for phone support, but technicians may have latitude to waive fees if they deem the call to be related to an installation problem. If you can present your glitch as being associated with your software installation, you may be able to save a few bucks.

If you own cats, reveal it up front: Technicians from Adelphia, Dell, and IBM all asked if we had cats in the house. Apparently, rampunctious felines—especially those with a thing for blinking lights—are a significant source of tech support call traffic. Who knew?

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NEWS ON DEMAND

Tired of browsing around the Web for timely information? RSS readers deliver exactly the news you need—fast. **BY BOB STEPNO ▶**

MOST OF US KEEP a mental list of our favorite Web sites—perhaps 10 to 15 destinations that we swing by every day. But usually only a few of them contain new stories that are worth reading immediately, so a habit of loading and scanning each of these sites daily can waste a lot of time.

Fortunately, you can make such time sinks a thing of the past, thanks to a Web standard called RSS. This standard lets sites publish a simple listing of headlines and story summaries (for more background, see find.pcworld.com/42222). Using a simple program called an RSS reader, you can subscribe to different news feeds and rapidly sift through condensed news. When you find an item you like, you click the headline to open the Web page containing the full story.

Along with breaking-news headlines from online versions of publications like the *New York Times*, feeds can deliver everything from Weblogs and weather

alerts to listings of new arrivals at your favorite record store or auction gallery. Feeds arrive in various formats, but the most common are RSS (which can stand for a number of things such as Really Simple Syndication or RDF Site Summary) and a new standard called Atom that

services, permitting you to access them from any browser. The type that will suit you best depends on your work style.

Most of these applications work very similarly, but a few go above and beyond the call of duty. After rounding up 24 RSS readers for this article, we picked the best representative of each type; there are five in all (see the features comparison chart below). Visit find.pcworld.com/42234 for brief reviews of the other 19 apps.

After you've selected a

reader, go to find.pcworld.com/36725 to subscribe to PC World's own RSS feeds.

ICONS to Look For

How do you find out whether your favorite site has an RSS feed? Simple: You look for an icon like those displayed here. Some link directly to a feed; others go to a feed list.



expands on the capabilities of RSS. Both can be read by most available readers.

Also called "feed readers" or "RSS aggregators," RSS readers are one of the biggest new categories of software in recent memory. A quick online search will find more than 50 programs designed to scan subscription news feeds, and each one works a little differently than the others. Some are stand-alone applications; others plug into your e-mail client or your Web browser; and still others act as Web


NEWS IN YOUR E-MAIL

IF OUTLOOK ALREADY organizes your e-mail, calendar, and life, a reader like the \$29 **NewsGator 2** will deliver your news in the same place. NewsGator works as an Outlook plug-in, creating an area in your mail folders where you can store news feeds. Each feed appears as a folder, and you can organize the folders into topics as

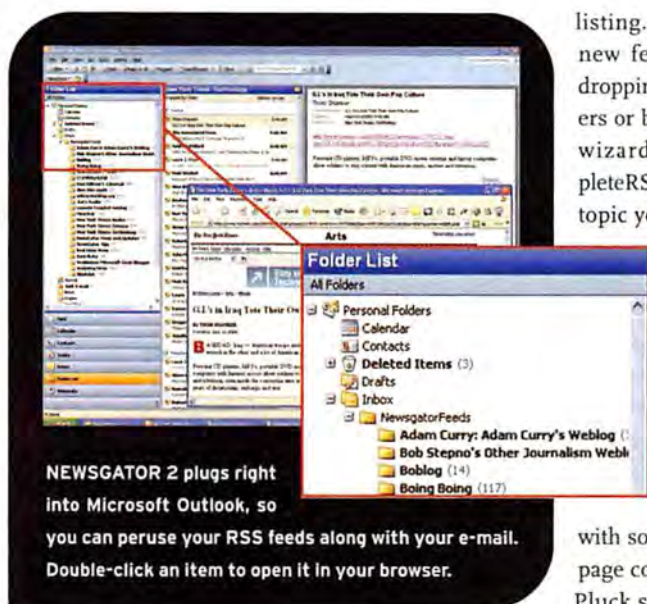
FEATURES COMPARISON

RSS READERS: Diverse Ways to Get News to Your Desktop

OF THESE BEST-OF-BREED selections from five types of apps, our Editor's Pick, FeedDemon, is flexible, while Pluck is beginner-friendly.

RSS READER	Price	Atom support ¹	Pros	Cons	Comments
Bloglines bloglines.com (Web-based subscription)	Free	Yes	<ul style="list-style-type: none"> • Works with any Web browser and OS • Easy to use • Imports and exports feed lists 	<ul style="list-style-type: none"> • Uncertain future as a free service 	Bloglines offers a lot of configuration options for a Web service, and it houses them in a pretty slick site. Helpful features let you search through past postings. (★★★★☆)
FeedDemon  www.bradsoft.com (stand-alone, embedded browser)	\$30	Yes	<ul style="list-style-type: none"> • Flexible layout • Can filter feeds based on searches • Helps find feeds on pages you're browsing 	<ul style="list-style-type: none"> • Needs better documentation of advanced features • At press time, support forums required a Usenet news reader 	Flexible placement of browser window helps on smaller screen. You can group channels and display their headlines on a "newspaper," a page controlled by your choice of styles for quick skimming. (★★★★☆)
NewsGator 2 newsgator.com (Outlook plug-in)	\$29	Yes	<ul style="list-style-type: none"> • A right-click lets you subscribe to feeds from Internet Explorer • Subscription version lets you check feeds in many more ways 	<ul style="list-style-type: none"> • Outlook integration can be confusing; message windows still have reply buttons 	Unmatched add-on capability as part of subscription-based online service, which includes synchronized versions for cell phones, PDAs, and even TV sets (via Windows Media Center Edition). (★★★★☆)
Pluck RSS Reader www.pluck.com (Explorer sidebar)	Free	Yes	<ul style="list-style-type: none"> • Customizable update frequency • Clean layout and Add a Feed wizard are beginner-friendly 	<ul style="list-style-type: none"> • Internet Explorer limits options for tweaking the interface • Beta version had problems displaying some blog entries 	Pluck plans to pay the bills with PowerSearch features for Amazon and eBay, with more specialized search engines to follow. (Pluck pledges to be spyware- and adware-free.) (★★★★☆)
Radio Userland radio.userland.com (stand-alone, in-browser editing)	\$40 per year	No	<ul style="list-style-type: none"> • Serves as a blogging tool • Price includes space for a blog • Also works with Netscape, Mozilla • Includes premium feeds 	<ul style="list-style-type: none"> • Bare-bones news reader display • No long-term storage of news feeds • Can't sort new postings by feeds or categories 	This reader is showing its age, but its integration of an aggregator and desktop-based Weblog content management tool is hard to beat. Access to New York Times feeds is nice, too. (★★★☆☆)

¹ Atom is a new format that extends RSS in a number of ways. All readers here support RSS .9, .91, .92, 1.0, and 2.0. See find.pcworld.com/42432 for more on differences between the standards.



NEWSGATOR 2 plugs right into Microsoft Outlook, so you can peruse your RSS feeds along with your e-mail. Double-click an item to open it in your browser.

you like. You can configure the multipane display in the same two- or three-column layouts that Outlook uses, sort messages, hide or display previews of the full story, and add or remove columns.

Adding new feeds is easy. When you discover one you like while browsing the Web with Internet Explorer, simply right-click the link and then choose 'Subscribe in NewsGator'. If you want more options, \$6- to \$50-per-month plans from NewsGator Online Services offer exclusive content and the ability to create custom feeds that search the Net for new information. Other subscription features let you read your news feeds from any Web browser, e-mail client, or Web-ready mobile device. A new plug-in even hooks into Microsoft's Windows XP Media Center Edition.

BROWSING FOR HEADLINES

AS NEWSGATOR IS to Outlook, a more-modest free application called **Pluck RSS Reader** is to Internet Explorer. Pluck adds an icon to IE's main toolbar. Clicking that icon opens an Outlook-like left panel containing folders that house its default collection of feeds. Click a feed name, and headlines and summaries appear in the top half of the main IE window. When you click a headline, the item's full content pops into view below the headline

listing. You can subscribe to new feeds by dragging and dropping XML icons into folders or by using a subscription wizard that searches CompleteRSS.com for feeds on the topic you want. A Pluck icon in your Windows system tray offers news alerts when your Web browser is closed.

Though it worked fine with brand-name news summaries, the beta release we tested ran into problems with some blogs that put full-page content in their feeds. A Pluck spokesperson said this

shortcoming would be fixed in a subsequent release that also promises a couple of new features to let you use search terms to filter a feed or group of feeds and create public folders so a group of people can easily subscribe to the same set of feeds. The Pluck folks hope to pay the bills with specialized search services (starting with Amazon's and eBay's) that will be tucked into a corner of the screen.

RSS FOR ROAD WARRIORS

A WEB SERVICE like the free **Bloglines** can help you stay in touch if you do a lot of traveling or work on more than one computer every day. If you log in to the service at the office and read a few stories, you can check in later at home and pick up where you left off—without having to backtrack over already-read news. Bloglines can export your subscription list in a format that other aggregators can import, in case you decide that you'd prefer a plug-in or stand-alone app.

The Bloglines layout resembles the layout of desktop applications: a two-pane arrangement with your subscription list on the left and item headlines on the right followed by a summary of each. Items appear in alternating bands of white and light blue in the right frame. Each feed display can be set to show just titles or summaries, or complete entries (on feeds

that support the feature). Bloglines also lets you view items in a feed from the previous hour, day, week, month, or longer increment of time. The service currently checks feeds for updates once per hour.

Plenty of other Web services perform similar functions. NewsIsFree.com, for example, has more feeds, but it also has ▶

Which FEEDS Do You Need?

EVERY READER INCLUDES a list of sites to get you started—sometimes hundreds of them, usually organized into categories like the sections of a newspaper. Here are some places where you can find more news feeds, followed by a few of our favorites.

GREAT SITES FOR FINDING FEEDS:

- Topix, which calls itself "the largest publisher of non-weblog RSS," combs through news sites and provides feeds for 150,000 categories of information. www.topix.net
- Feedster searches RSS feeds and saves the results as a custom feed. Its Top 100 list is a good starting place. www.feedster.com
- NewsIsFree boasts 9000 channels, ranging from high-profile news sources to Weblogs. www.newsisfree.com
- You'll find more than 45,000 feeds in 47 languages at syndic8.com. www.syndic8.com
- The Weblogs Compendium at Lights.com collects a fine list of news sources, companies, and government agencies with RSS feeds. Visit it at find.pcworld.com/42226.
- PubSub can perform a continuous search on blogs, newsgroups, and SEC/EDGAR filings and can create a custom feed to send you the results. www.pubsub.com

GREAT FEEDS:

- Rolling Stone find.pcworld.com/42228
- Tech Bargains www.techbargains.com
- The Washington Post find.pcworld.com/42230
- Yahoo News feeds news.yahoo.com/rss
- Local weather forecasts rssweather.com
- News about RSS find.pcworld.com/42232
- BBC News find.pcworld.com/42486

pop-up ads galore. MyFeedster.com is another strong contender, especially for inveterate bloggers and for IS types.

ADVANCED RSS

STAND-ALONE APPLICATIONS like Bradbury Software's \$30 **FeedDemon** can give you more control over your news feeds. FeedDemon's strength is its flexible layout options. Want your news to appear in two columns, or with a retro "terminal" look? FeedDemon provides a number of ways to collect the items in a feed on one handy page called a *newspaper*. Just click one of the 13 style choices, or create your own. You can configure the program in one, two, or three columns or select an Outlook-style three-pane layout.

The program's name doesn't rhyme with "speed demon" by accident. You'll save time with FeedDemon's one-window approach. The text-display pane is a full-featured Web browser. A feed's properties are configurable—you can specify, say, how often to check for new items. Fourteen groups of feeds come preinstalled. (The sports group, for example, includes feeds from Moreover.com, The New York Times, Yahoo News, and even PR Web.)

Further custom features: Watches are special channels that search incoming news items for keywords; News Bins are storage areas for items that you want to

FUTURE: Ads Are Coming to RSS

WHAT STARTED AS A TECHNIQUE enabling bloggers to share links, comments, and original content has caught the eye of professional information providers and entrepreneurs. As RSS goes mainstream, publishers have started experimenting with ways to make their feeds pay for themselves. Here are a few examples of what the future may bring.

- **Interstitial page ads:** The New York Times partnered with Userland to provide ad-free news summary feeds; but when you click a summary, you often encounter a sponsor's ad before being redirected to the Nytimes.com story page.
- **In-feed advertising:** InfoWorld.com and some other publications have begun inserting plain text ads immediately after the text of their RSS feed items, much as Yahoo Groups mailing lists do with e-mail subscriptions.
- **Sponsors' links as feed items:** Daypop.com—a current-events search engine that crawls major news sites and Weblogs—paid its bandwidth bills for the year simply by placing ads on its front page and inside its RSS Top News feed.
- **Value-added services:** A number of sites sell custom RSS feeds based on searches. For example, RSSJobs.com will monitor the results of your job searches on HotJobs, Monster.com, and other sites, and deliver the results in an RSS feed.



come back to; Auto-Discovery pops an icon into FeedDemon's status bar when a Web page in its browser has one or more RSS feeds, to permit easy subscribing.

TWO-WAY RSS FOR BLOGGERS

IF YOUR JOB—or passion—is to keep up with the news and comment on it, you'll appreciate an application like Userland Software's \$40-per-year **Radio Userland**, which puts a full Weblog system on your desktop. Radio Userland (or Radio) descends from an aggregator that helped launch the RSS format in 1999, but it's much more than a feed reader.

Its subscription price covers, among other things, hosting at Weblogs.com. All feed reading and blog editing are done in your browser.

Each element of the interface is a Web page that lets you control Radio through menus, buttons, check boxes, and text-entry

fields. The aggregator page stacks the latest feeds in reverse-chronological order, each with a button that enables you to delete the item or post it to your Weblog. Preference pages let you set how often to poll sites and how many items to display on a page. New items on feeds you subscribe to appear chronologically on the same page: You can't reorder the items or sort them according to source.

A subscriptions page shows your feed list; a preinstalled collection includes New York Times and BBC pages and a sampling of blogs. You can subscribe to a blog from another Radio user with a single click, instead of performing the multistep process of copying and pasting into the subscription page required for outside feeds. With RSS 2.0, Radio supports feed attachments. For example, early adopter Adam Curry, a former MTV VJ, has been experimenting with many-megabyte video clips in his RSS feed. Radio sets the clips to download after midnight. ■

Bob Stepno is a freelance technology writer based in Boston.



BRADBURY

SOFTWARE'S FeedDemon helps speed up your browsing by collecting the contents of multiple feeds on a single attractive page called a newspaper.

KVMs Perfected!

**Control More Computers for Less Money, in Less Space
and in Less Time with Tripp Lite KVM Switches**

Tripp Lite KVM Switches offer the most economical and convenient solutions available for controlling up to 512 PCs or servers with a single keyboard/video/mouse console. Save money, space and time by eliminating unnecessary consoles, removing cable clutter and avoiding the need to move between multiple consoles.



16-Port 1U Rackmount

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- Built-in on-screen display gives you control over all ports
- Daisy-chain capability and two-level password security
- 2 models available (one features integrated console KVM switch as shown)

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- On-screen display gives you control over all ports



4-Port Desktop

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- Notebook and wireless-ready



2-Port Desktop

- Compact desktop design with individual port selection button
- Notebook and wireless-ready
- Includes 2 cable kits



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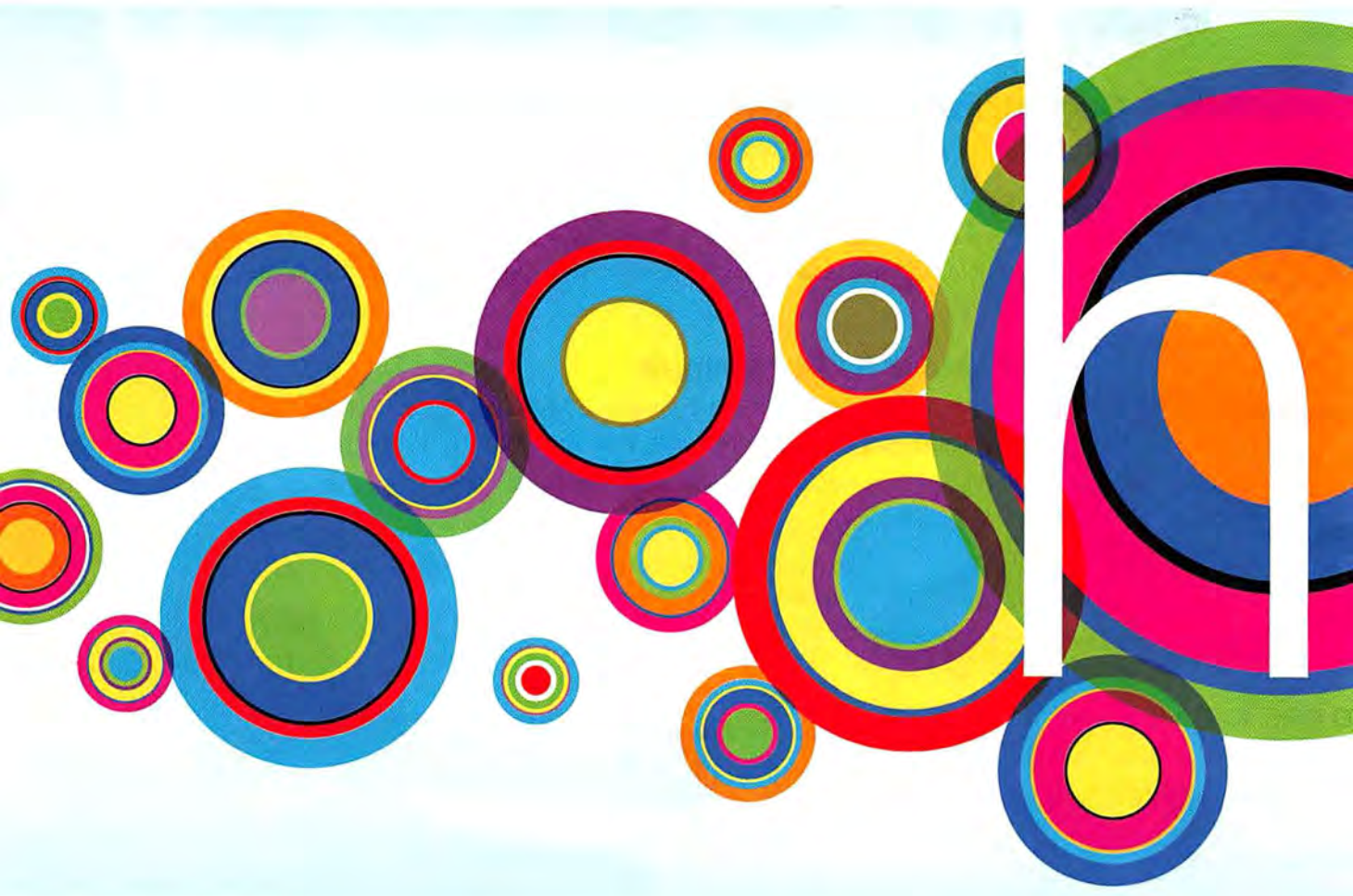
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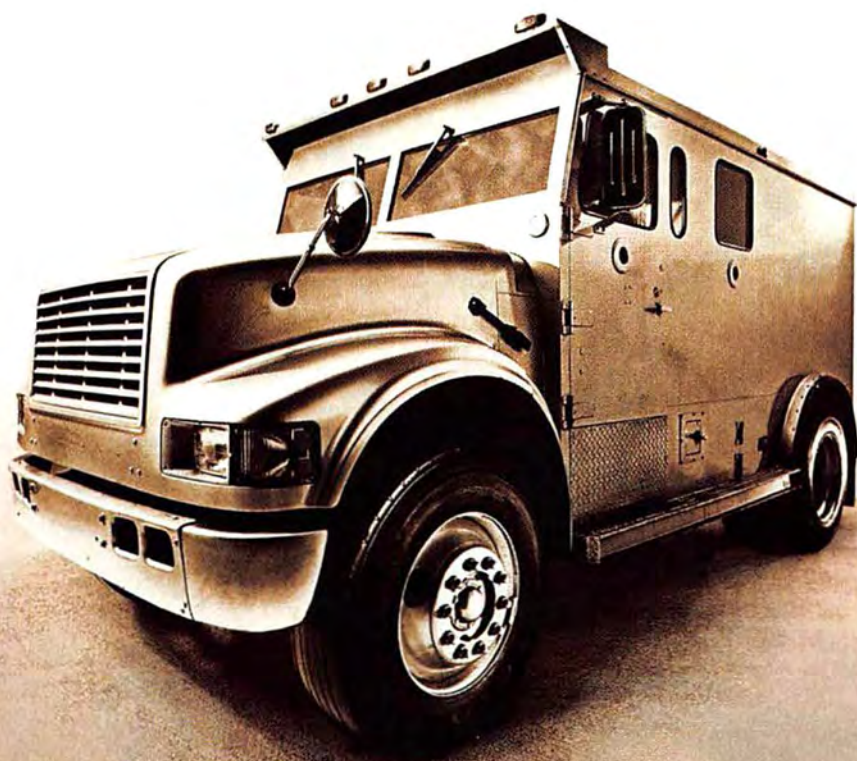


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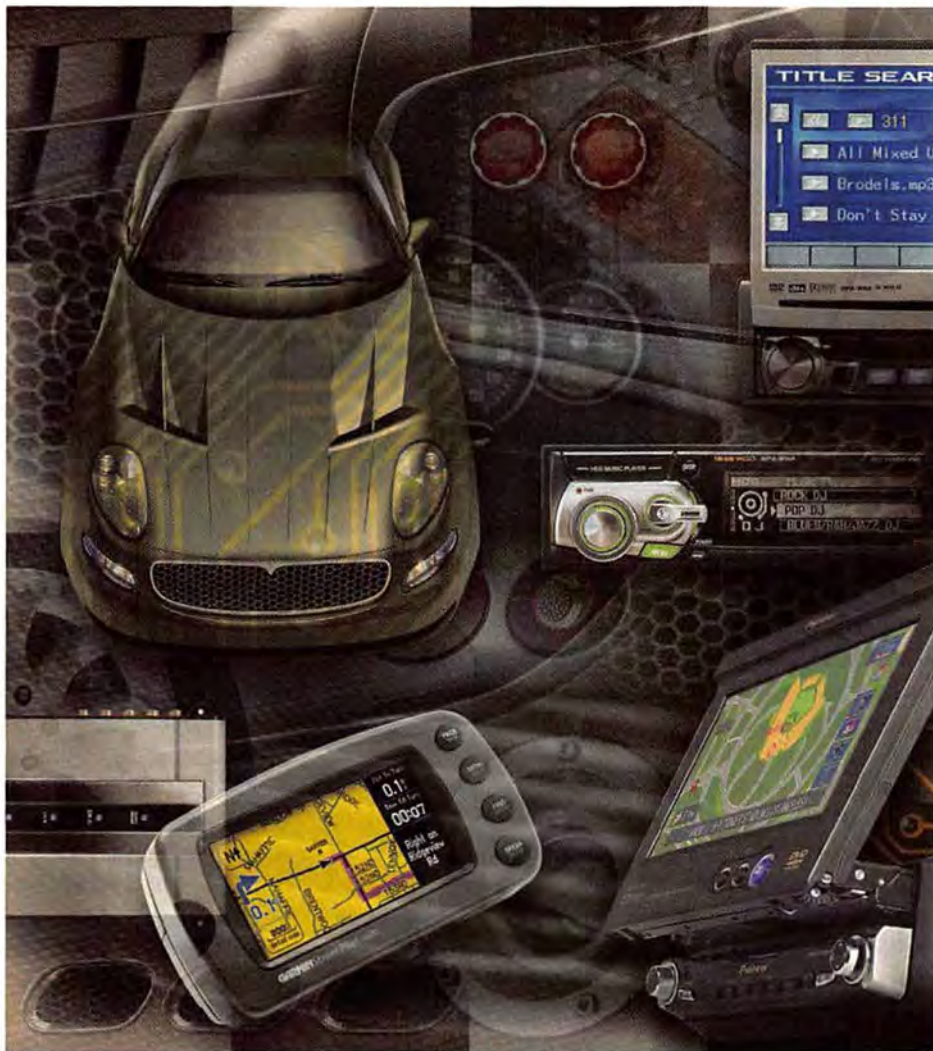


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NEXT GEAR

EDITED BY ALAN STAFFORD

THE DIGITAL DRIVER

NEW GADGETS FOR CARS OFFER EVERYTHING FROM DRIVING DIRECTIONS TO CUTTING-EDGE ENTERTAINMENT. OUR AUTHOR TAKES THE LATEST TOYS FOR A TEST SPIN. **BY DENNIS O'REILLY**

SKY-HIGH GAS PRICES and bumper-to-bumper highways? Forget about 'em. We love our cars—always have and always will. New navigation devices, audio and video entertainment systems, and satellite-based trackers help smooth even the bumpiest of byways. Whether you live behind the

wheel or drive only when necessary, these gadgets and services put the joy in your ride.

There are lots of good reasons to buy a Global Positioning System navigation device for your car. It can save time and reduce your gasoline bill by getting you to your destination without wrong turns and

backtracking. It can help you find gas stations, restaurants, parks, and other points of interest along the way. But for me, the number one reason is never having to hear my wife say, "Maybe we should stop and ask somebody."

GPS devices work by coordinating a signal they receive

from one or more satellites with their internal map database. They display your position on an on-screen map as you drive, and when you enter the name of a destination or point of interest, they provide directions to that location on the device's screen (and with a prerecorded voice). ▶

Most new GPS devices for cars store their maps on an internal hard drive such as the 5GB drive in Garmin's StreetPilot 2620 (\$1300) or the 10GB drive in Thales Navigation's Magellan RoadMate 700 (also \$1300). The StreetPilot contains maps and points of interest for all of North America (and Hawaii); the RoadMate 700 holds data for the 48 contiguous U.S. states and for most Canadian cities.

In contrast, just a few states' worth of maps and data fit on the flash memory cards used by lower-cost devices such as Navman's \$700 ICN 630. The ICN 630 has 64MB of internal memory, and it supports cards with capacities up to 512MB. During long road trips you'll likely have to swap cards. For example, I had to take along two 128MB cards to hold the maps I needed for a Northern California-to-Los Angeles road trip using the Navman ICN. I can only imagine how many cards you'd have to juggle for a cross-country drive.

Still, it didn't take me long to get used to having a map on my dashboard. The RoadMate 700 and ICN 630 sent me on slower tourist routes through San Francisco, but the StreetPilot 2620 seemed to know at least some "locals-only" shortcuts. The touch screens on the RoadMate and the StreetPilot made entering data easy, especially compared to the Navman's clunky button controls.

Try as I might, I couldn't faze any of the three navigators. Whenever I ignored their instructions and drove off the prescribed route, they recalculated in a matter of seconds and put me back on target.

The devices' voiced instructions were like having a very

clever but overly talkative navigator. For example, the RoadMate 700 often chirped out of nowhere that I should "continue on the current road," when I had no intention of doing otherwise. And when I parked just yards short of my destination, the Navman continued to bark advice like a frantic ringside announcer: "Left, right, right, left, right, left!"

MOVING PICTURES

YOU'LL OBTAIN A broader view of the road ahead using the 6.5-inch touch-screen LCD that pops out of Pioneer's AVIC-N1 automatically. The device (street price \$1800) combines a DVD-based navigation system with digital video and audio playback, and AM/FM/XM satellite radio (you must subscribe to the XM service, of course). The AVIC-N1 uses two DVD-ROM discs to store maps and the locations of 12 million restaurants, hotels, gas stations, and other places in all 50 states and Canada. You can even take a gander behind you by using the optional ND-BC1 Backup Camera (\$250 street).

The AVIC-N1's Memory Navigation feature automati-



IN-CAR NAVIGATORS (clockwise from top): Thales Navigation's Magellan RoadMate 700, Garmin's StreetPilot 2620, and Navman's ICN 630.

cally stores the map and route data for your trip in its 64MB of internal memory. Then you can eject the navigation DVD and play a CD (or a DVD movie on the optional \$500 AVD-W6200 backseat display) while you access information about the route. The AVD-W6200 has a 6.5-inch LCD and attaches to a front-seat headrest. For safety's sake, DVD video playback is blocked in the front seat while the vehicle is moving. The AVIC-N1's Vehicle Dynamics Display shows data for acceleration, lateral G-force, angular velocity, slope, voltage, and other performance

measures on digital displays and on older-style analog needle gauges.

Touch screens used by the in-car DVD players are key to making the devices convenient and safe to use on the road. Alpine goes one step better with the Pulse-Touch screen technology in its new

IVA-D300 Mobile Multimedia Station. PulseTouch provides tactile feedback as you push buttons or move sliders on the screen, so you keep your eyes on the road. You can feel the edges of on-screen controls, and the feedback varies as you tap, slide, or hold down a button. You can also adjust the screen brightness, color, contrast, and other controls via the touch screen.

The IVA-D300 plays DVDs and CDs as well as MP3 and WMA files on DVD-R/RW and CD-R/RW discs. The device includes an AM/FM/XM-ready satellite radio. It retails for \$1500. Add Alpine's MRA-D550 Digital Theater Amplifier to get DTS surround sound and 5.1-channel sound for Dolby Digital; you can buy the two together for \$2500.

The 7-inch TFT LCD monitor included in Blaupunkt's \$1600 IVDM-7002 automobile DVD player (aka Chicago) is another eye-opener. The player supports Dolby Digital and DTS for powerful 5.1-channel sound. The unit features three audio/video outputs and two



THE ALPINE IVA-D300's touch screen lets you "feel" button pushes and slider moves.

inputs to accommodate game boxes and other components (which need to have their own power source).

PHAT MP3 PLAYER

YOU'VE GOT A WICKED MP3 collection on your PC; how do you play those tunes in your ride? Several new MP3 players for cars hold MP3 files on regular desktop or notebook hard drives. Alpine's HDA-5460 in-dash MP3 player, for example, contains a removable 16GB hard drive. Use the included software to organize your MP3 collection on your PC, and then download the recordings to the hard drive via USB 2.0. A switch on the device's panel lets you search your collection by song title, folder, singer, or album. The HDA-5460 costs \$800.

Another candidate, the PhatNoise Digital Car Audio System, stores recordings on an external hard-drive cartridge that shuttles from the PhatBox player in the trunk of your car to a cradle on your desk. The cradle connects the cartridge to your PC via USB 2.0. Organize your music collection with the PhatNoise software, and then transfer the recordings to the cartridge. You can use your stereo's CD-changer controls to search for and play MP3, WMA, and other digital

music files on the cartridge. A 20GB cartridge ships with the system, and you can purchase add-on cartridges in three different capacities: 20GB (for \$179), 40GB (\$249), and 60GB (\$349).

The PhatNoise system will cost you \$699 as a dealer-installed option available with new Volkswagens and Audis. If you're not ready for car payments, consider Kenwood's \$450 Excelon Music Keg KHD-C710; but you'll have to pay extra to have it installed by a professional. See find.pcworld.com/42356 for more information.

IN-CAR CONCERT HALL

IF YOU FAVOR quality over quantity, you'll be delighted to hear that DVD-Audio is ready to come along for the ride. The new format combines a 5.1-channel surround-sound version of the recordings with traditional stereo tracks; still, the discs require a DVD player (by comparison, Super Audio CDs also provide 5.1-channel sound, and they have a traditional stereo track that plays in existing car CD players). Many DVD-Audio discs add video, images, and other material along with the music tracks.

Hearing just a few minutes of DVD-Audio recordings on the Alpine system in a demo Honda Element made it very clear to me why audiophiles

love the format. Regular stereos just can't match the depth and definition of this high-quality multichannel standard.



PLAY SWEET music with Alpine's DVI-9990 DVD-Audio player.

Combining Alpine's new DVI-9990 DVD-Audio player with its PXI-H990 DVD Multimedia Manager gives you Dolby Digital EX, Dolby Pro Logic II, and DTS ES multichannel playback. The DVI-9990 is the first DVD-Audio player that supports the IEEE 1394-Audio (FireWire) standard for linking to digital-audio sources. It retails for \$2400, and its PXI-H990 relative costs \$2600.

ROADSIDE AID

THERE'S NOTHING like the automobile club. If you lock your keys in the car, leave your lights on and come back to a dead battery, or shred a fan belt on the interstate, help is just a phone call away. But what if the voice on the other end of the line knew exactly where you were? That's the idea behind Networkcar, a service that installs a GPS transmitter unobtrusively in your car to report its whereabouts and its mechanical condition every 2 minutes or so. Networkcar tracks the vehicle's use and alerts you and your car dealer if it diagnoses a problem. The service helps you recover the vehicle if it's stolen. A one-year Networkcar contract is \$108, a two-year agreement costs \$192, and a three-year deal is \$252.

One caveat: When you call in, you give the Networkcar agent your account password; then (to be safe) you have to change it the next time you log on. Why doesn't the company give you two passwords: one for accessing your account online, and the other for obtaining data on your vehicle's current whereabouts?

If you want vehicle tracking and monitoring services but no roadside assistance, DirectTrack (www.gps-directtrack.com) lets you check a vehicle's location, driving history (including top speed), and other data via the Web. The service puts a GPS transmitter out of view inside your car. It alerts you by e-mail, pager, or cell phone when the car exceeds the maximum speed you set or when the vehicle travels outside a designated area. DirectTrack is currently available much more widely across the country than Networkcar.

The service also lets you operate the vehicle's power locks remotely and disable the starter in case of theft or to ground the family teenager. Of course, disabling the starter won't put the damper on unauthorized drivers if the car is already running, but maybe you can catch them when they stop off for a milk shake. Monitoring prices start at \$8.50 a month, which entitles you to access the system three times online at no extra charge; additional online accesses with this plan cost 75 cents each, and each phone access costs \$3. I'm just glad that this service wasn't available to my parents when I was in high school.

Dennis O'Reilly is a senior associate editor for PC World.



FAST-LANE MP3s: PhatNoise Digital Car Audio System.

OUTDOOR SPEAKER

WIRELESS SPEAKER CAN REPEL RAIN AND RODENTS

THE GREAT SUBURBAN outdoors: Squirrels chattering, birds twittering, leaf blowers blaring. This environment probably doesn't need the soothing sounds of AC/DC or Def Leppard, but if you must take your tunes into the wilds of the backyard, Advent's wireless **ADVW801** is a good alternative to sticking a speaker

in a window or doorway.

About the size of a bowling ball and half the weight (a little under 6 pounds), the speaker is easy to carry, and its green case will blend in with fake rocks and pink flamingos. It works on a 900-MHz wireless frequency; Advent says it'll work up to a distance of 150 feet. I carried the device to the far reaches of my estate (maybe 75 feet), and it still played. It even continued playing while I ran water over it in the sink—the manual says it'll withstand light moisture. A footnote on the box, though, says "not for use in damp locations," and an Advent rep says

the unit is not designed for permanent outdoor installation; you're supposed to bring it indoors after use.

A wireless transmitter plugs into a PC, TV, or stereo; I had to fiddle with the frequency settings on both the transmitter and the speaker to tune out static. After I did that, the sound was surprisingly good—about the clarity of FM radio, with a commendable amount of bass. I did hear infrequent loud pops. The speaker puts out monaural sound, but if you buy two you can set them up as discrete right and left stereo channels.

The product runs on either



THIS ORB can take a few drops, but don't dunk it in the pool.

eight D batteries or AC power. Only the AC adapter is included. A set of alkalines is supposed to last 13 hours.

I would probably use the ADVW801 in different parts of the house, or the garage. Whether it's appropriate for drowning out the neighbors and getting the squirrels to back off, that's up to you.

—Alan Stafford

ADVW801

Advent

★★★★☆

Good sound, but you can't leave this outdoor speaker outdoors—and the neighbors may grumble.

List: \$150

find.pcworld.com/42262

ALL-IN-ONE SPEAKER SYSTEM

SMALL BLACK BOX GIVES BIG SOUND

THE LITTLE **Zvox 315 Sound Console** is deceptively simple for a device that yields such beautifully complex sound. It packs three magnetically shielded speakers and a subwoofer into a single box that's easy to set up and install and greatly improves the audio from your television or PC.

Using either the supplied RCA cable or the mini-plug

connector cable, you insert one end into the Zvox and the other into the audio outputs of the TV, PC, MP3 player, or whatever device you want to hear, and then you connect the AC cord. Presto: Setup is complete.

A technology that Zvox calls Phase Cue creates the illusion of surround

sound without the need for widely separated speakers and the yards of hard-to-hide cables usually required to connect them to an audio source.

When I tested a shipping



THE ZVOX puts three speakers and a sub in one box.

produced, with a hearty bass that seemed as if it were coming from a separate subwoofer. The Zvox certainly made my television sound better than it ever has. In addition, when I set the box up with my computer, it performed double duty as a sturdy monitor stand.

There is one more thing that sounds great about the Zvox: its \$199 price. Considering its sound quality, versatility, and 60-second setup, the product is a steal.

—Michael S. Lasky

Zvox 315 Sound Console

Zvox Audio

★★★★★

Well-priced three-in-one speaker box requires little setup and produces room-filling sound.

List: \$199

find.pcworld.com/42220

GADGET FREAK

DAN TYNAN

LOST IN TRANSMISSION



SOMEDAY, WE'LL ALL be like fish swimming in a vast sea of data—able to soak up any content, stored anywhere in the world, from any device. And with the help of companies such as AllMiMedia (www.allmimedia.com), we may soon be equipped with devices that let us access content anywhere, anytime. The Silicon Valley startup has extended the concept of the home media center to the entire planet, letting you get to your digital goodies wherever you are.

Here's the way it works. Say you're Bill Murray in *Lost in Translation*. Instead of sitting in a Tokyo hotel, bored out of your skull, you could log on to AllMiMedia with your cell phone and watch a *Saturday Night Live* rerun stored on your home PC. The service scales the data for each device, so it sends a smaller file to a

cell phone than to a notebook.

That's the ultimate goal, anyway. Today, AllMiMedia is a little more humble. It enables you to use a Pocket PC or cell phone to program your digital video recorder, fetch photos off your home machine, grab MP3s you've already downloaded, and get stock quotes or weather reports. All you need is the AllMiMedia software, a Windows Media Center PC with a broadband connection, a browser-enabled portable, and a little luck. It sounded so nifty that I had to try it.

DATA BE THE DAY

SETTING UP AllMiMedia is a fairly easy process. Sign up for the service (\$12 a year to program your DVR; \$20 to get music, photos, and such, too), download a 10MB file, install it on your Media Center PC, and connect to AllMiMedia's

servers from your home PC. Then log on to the company's Web site from a portable device and do your stuff.

Using a Wi-Fi-connected notebook, I directed my Gateway FMC-901 X Family Media Center PC to record an episode of *The Beverly Hillbillies*—the one where the Clampetts visit the White House (*insert your own joke here*). I also downloaded and played my favorite Al Green tunes, fetched a photo of my dog, picked up some stock quotes, and got a weather report (partly cloudy).

I could do these things on a Dell Axim Handheld as well. But getting the service to perform on either device was a chore. I had to reinstall the AllMiMedia software on my PC and spend quality time with tech support. Even then, it didn't always work.

At this point, AllMiMedia is more proof of concept than actual product. According to CEO Jim Behrens, the company is currently negotiating with consumer electronics vendors to build its services into their next generation of home media devices, DVRs, and the like. Kurt Scherf, vice president of research for Park Associates in Dallas, calls this a "pretty daring" strategy. "I hate to be colored a skeptic," he says, "but it's a bit early for apps like AllMiMedia."

Still, this kind of connectiv-

NEXT UP

High-Definition Audio Comes to PCs



Yet another argument for putting a PC in the

living room: the new High Definition Audio specification Intel will implement in its new Grantsdale chip set, expected to arrive in desktop computers in late June. "Think of this specification as the plumbing" for up to 7.1-channel surround sound, 192 KHz of bandwidth per channel, and 32-bit sampling, says Tom Loza, Intel technology initiative manager—that's more than enough to support Super Audio CD and DVD-Audio discs, which use 24-bit, 5.1-channel encoding. The AC '97 spec it replaces describes only 16-bit, 48-KHz audio. However, a system based on Grantsdale will also require HD Audio hardware codecs, typically integrated into its motherboard, to take full advantage of the plumbing.

ity is beginning to surround us. Already, users of TiVo's Home Media Option can program their DVRs remotely, while GoToMyPC subscribers can access their PCs from anywhere for \$20 a month. But neither service lets you sit in a Tokyo hotel room and watch *The Sopranos* on a cell phone. If AllMiMedia pans out, that could be almost as much fun as hanging out all night with Scarlett Johansson. ■

PC World Contributing Editor Dan Tynan would kill for a hot towel and some good sushi.

TOP 100

EDITED BY THE REVIEWS STAFF

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SPOTLIGHT: DIGITAL PROJECTORS



Spot LIGHT We found a wide variance in the size, shape, and design of ultraportable digital projectors. Hewlett-Packard's Mp3130 (left) is a rarity, with its upright design. Both the NEC LT10 (right) and InFocus LP120 (center) are supercompact, but the former's sleek, short-depth form is more eye-catching.

Small, Svelte Digital Projectors

Know how many times we've seen the term "light-weight" applied to a laptop PC—even ones that weigh 12 pounds? About as often as we've seen the term "portable" attached to a data projector. A projector's portability really comes into question when you're carrying it (along with your laptop and luggage) through airport security, at which point you'll wonder, "Portable relative to what—a cinder block?"

However, we discovered seven digital projectors weighing 4 pounds or under (without cables and other connectors) that live up to their billing. The PC World Test Center examined models from Dell, Hewlett-Packard, InFocus, NEC, Optoma, Plus Vision, and Xerox to see how they stack up at displaying everything from PowerPoint presentations and Excel spreadsheets to DVD movies. We liked the ►



Top 10 Monitors

Top 10 CHART The Samsung SyncMaster 172X, a 17-inch LCD, tilts and swivels easily. At just over 8 pounds, it's quite light as well. It lands in the fourth spot on our chart this month.



Top 10 PDAs

Top 10 CHART A camera here: PalmOne's Zire 72 has a built-in 1.2-megapixel camera on the back for shooting video and still shots.

172

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Top 15 Notebook PCs

Top 10 CHART A camera there: Sony's VAIO PCG-TR3AP3 laptop provides a built-in camera that not only swivels but also can take video clips and still shots.



170

INSIDE THE TOP 100

See find.pcworld.com/15720 for details on how we compile our charts for the Top 100. Freelance writers Dan Littman and Carla Thornton, and PC World editors Richard Baguley, Laura Blackwell, Tracey

Capen, Kalpana Ettenson, Rebecca Freed, Alexandra Krasne, Melissa J. Perenson, and Alan Stafford contributed to the Top 100 section. Ulrike Diehlmann, Julio Gianobile, Elliott Kirschling, Jeff Kuta, Tony

K. Leung, and Thomas Luong of the PC World Test Center performed testing on the products that are reviewed in this section, with logistical support provided by Julian Weatherby.

2.2-pound NEC LT10 the best, due to its combination of terrific overall image quality and easy portability (it's about the size of the latest Harry Potter book).

If we look at factors beyond size, however, our runner-up, the Dell 3300MP, provides the best value, and is a well-rounded alternative for budget-conscious buyers. The 3300 MP ties the HP model as the heaviest base unit, at 4 pounds, and with all of its accessories it's also the heaviest of this group, exceeding 8 pounds.

All seven of the models we tested employ Texas Instruments' Digital Light Processing technology to project images. TI's single-chip DLP engine requires less space than an LCD engine does, enabling the production of increasingly miniaturized projectors. For example, the smallest projector we reviewed was Plus Vision's 2-pound V3-131, which stands just 1.4 inches tall and measures 6.2 inches wide by 8.2 inches long.

The projectors we tested were rated at brightness levels from 1000 to 1800 ANSI lumens (an industry-standard measure). The InFocus LP120 and Plus V3-131 are rated at 1000 ANSI lumens, and the NEC

LT10, Optoma EzPro 725, and Xerox DP 1011 are rated at 1100 lumens. Those brightness levels are sufficient for use in small conference rooms (typically ones that accommodate 10 to 15 people at the table), either in darkness or with moder-



FRATERNAL TWINS: The Xerox (top) and Optoma appear similar and have the same remote, but their image quality differs.

ate ambient light. But larger rooms, small auditoriums, and situations with a lot of ambient light call for a model with a higher lumens rating. The Dell 3300MP, at 1500 lumens, and the HP Digital Projec-

tor Mp3130, at 1800 lumens, both fared better than the other models in this review when viewed with the lights on.

EASY AS PLUG AND DISPLAY

WE EVALUATED THE projectors at their native XGA (1024 by 768) resolution and default factory settings. We set the PCs used in our testing at a matching resolution. To connect the projectors to our test systems, we used an M1-A cable (which pairs both VGA and USB connectors with a single input on the projector) on the models that allow that connection, and a VGA cable on the ones that don't. (Only the Dell, HP, and InFocus projectors have an M1-A port.) Our battery of tests included several Word and Excel document screens; a variety of still graphics images; and a series of motion tests featuring a PowerPoint presentation, a DVD movie, and a video game.

On the whole, setting up the projectors was painless: Each included a VGA cable and a composite video cable, and all but the Optoma included an S-Video cable. In addition to an M1-A connection, the Dell, HP, and InFocus units also support an

TOP 100

TEST Center

Supremely Portable Projectors

WE LIKED THE NEC LT10'S good image quality and its lift-it-with-one-hand portability. See find.pcworld.com/42542 for more details.

DIGITAL PROJECTOR	Street price	Overall rating	Weight (projector-only/traveling ¹), in pounds	ANSI lumens ² / lamp replacement cost	Display performance and quality	Comments
1 Best BUY NEC LT10 find.pcworld.com/42096	\$2200	85	2.2/3.5	1100 lumens/\$349	• Text: Good • Graphics: Very good • Motion: Good	A good bet for toting on the go, this model exhibited sharp text on documents, and accurate colors, including skin tones, in graphics. (★★★★)
2 Dell 3300MP find.pcworld.com/42094	\$1700	85	4.0/8.4	1500 lumens/\$279	• Text: Very good • Graphics: Good • Motion: Poor	A terrific value, this boxy model can serve well in a multitude of environments, thanks to its bright images and ultrasharp text. (★★★★)
3 InFocus LP120 find.pcworld.com/42098	\$2200	83	2.1/4.3	1000 lumens/\$343	• Text: Good • Graphics: Very good • Motion: Good	This sleek attention-getter is one of the few here to support both DVI and 802.11b connectivity (the latter via an optional module). (★★★★)
4 Optoma Technology EzPro 725 find.pcworld.com/42102	\$2100	82	2.2/3.5	1100 lumens/\$395	• Text: Very good • Graphics: Good • Motion: Fair	Unit seemed to run a smidgen brighter than the NEC—which helped it reach the top on our text tests, but was too much on our graphics tests. (★★★★)
5 Hewlett-Packard Digital Projector Mp3130 find.pcworld.com/42096	\$2700	75	4.0/7.6	1800 lumens/\$500	• Text: Fair • Graphics: Poor • Motion: Fair	Versatile projector required significant tweaks to improve the picture quality—and even then, it had trouble in our video playback test. (★★★½)

FOOTNOTES: ¹ Traveling weight includes all accessories, such as carrying case, cables, and remote control. ² Industry-standard brightness rating. **CHART NOTES:** All models are DLP-based XGA-resolution (1024 by 768) projectors; all support HD/TV resolution and include a carrying case. Overall rating is based on subjective tests, as well as tests conducted by the PC World Test Center using the projectors' default settings. The overall rating is based on text quality (15 percent), graphics quality (15 percent), motion quality (10 percent), price (25 percent), features (20 percent), and support policies (15 percent).

M1-DA connection, which combines a DVI connector with USB—the cable costs \$25 to \$50 extra. The Dell and InFocus models came with the most generous assortment of cables, including almost everything you could need (except for the M1-DA cable).

We found many commonalities among the seven projectors tested. All had easy-to-navigate graphical on-screen menus—except the InFocus, whose plain-gray text menu was frustrating to use (it required navigating multiple layers to complete some tasks). And all provided image adjustments to fine-tune such specifics as color temperature, brightness, and contrast, and to fix keystoned images.

Just three units have expansion options: HP's \$600 module provides USB ports, an ethernet connection, and a CompactFlash slot for adding wireless connectivity (via an 802.11b CF card) or for displaying a presentation stored on a media card; InFocus's \$500 LiteShow module supplies 802.11b connectivity; and Dell's \$150 add-on has a six-in-one flash memory card reader.

Every one of the projectors tested includes a remote control so that you can adjust the projector from afar, but only the Dell, HP, and InFocus (via an optional cable) remotes could control a PC's mouse, and only the Dell and InFocus ones included laser pointers. We found the Dell and the NEC remote controls the most comfortable to hold, but HP's remote had the most responsive buttons. The worst examples were from Optoma and Xerox, whose identical, credit-card-size remotes pack away easily but were a pain to use.

ON THE BIG SCREEN

THREE OF THE MODELS we tested—from NEC, Optoma, and Xerox—appear to share common DNA. Cosmetically, the most obvious difference among the three is the NEC's attractive navy blue grille

covering the front-mounted fan. Otherwise, all three have the same physical design, right down to the ports on the back and the control panel.

Even so, the projectors showed differences in image quality when at the same settings—which suggests that each vendor made specific tweaks to the firmware and electronics of its product. In spite of these projectors' identical lumens rating, the Optoma displayed the brightest images of the three. This trait helped the Optoma earn the top score overall on our text tests: White text on a black background in a Microsoft Word document screen jumped right out at us. However, the higher brightness hindered the Optoma's display of colors in our graphics tests, where this unit came in fourth.



THE SUPERSLIM Plus Vision V3-131 (left) achieves its small size thanks to its pop-up lens mechanism; by contrast, Dell's 3300MP is big and boxy.

The NEC's text was nearly as sharp as the Optoma's, though white backgrounds seemed to have a warmer tinge. Plus, it topped our graphics tests, displaying rich colors in our test photo of fruit and good, accurate skin tones on a group photo.

Meanwhile, the Xerox model just barely missed our chart, due in part to its higher price. The Xerox topped the pack on our motion tests, and did nearly as well as the NEC on text, but it came in a distant fifth on our graphics tests (manual adjustments helped improve the image).

The Dell's physical design is unremarkable—and the most clunky-looking of the bunch. But this model proved a versatile performer: The 3300MP came in second in our text tests and third in our graphics tests, displaying crisp lettering, vibrant

colors, and realistic skin tones. This unit's one weakness was on our motion tests, where it came in last among our field.

INNOVATIVE DESIGNS

OUR NOD FOR MOST elegant design goes to the InFocus LP120, which measures just 2 inches deep. This model tied for top marks on our graphics and motion tests, and produced sharp text (though its text screens lacked the brightness and overall impact we saw from the Dell and the Optoma). Sadly, the lens's focus and zoom rings are so close that we found it hard to adjust one without accidentally affecting the other, and the left side of the unit (where the fan is located) becomes unusually hot during operation.

The HP Digital Projector Mp3130 sports an unusual upright design that allows it to throw the image from a higher point of origin than the horizontally oriented units can, an asset in presenting situations where you need to raise the image (for example, to clear an object on the conference table). The unit's vertical orientation works against it in very dark rooms, however, as light spills out through its taller-than-usual front fan grilles



and distracts viewers seated near the projector. At default settings, this model was a mediocre performer in our lab tests. Video showed artifacts and appeared muddy, especially in special-effects sequences on our DVD movie.

The biggest disappointment was the Plus Vision V3-131, which didn't make the chart due to its poor performance on our text and graphics tests (all of its images were marred by a grayish pall). This noisy model did well on our motion tests, though, and will suffice for use with many PowerPoint presentations.

Most of the units we reviewed will serve you well should you need a presentation projector to take on the road. All of them live up to their promise of portability.

—Melissa J. Perenson

TOP 15 DESKTOP PCs

POWER SYSTEM			Overall rating	Street price (4/22/04)	PC WorldBench 4 performance score ¹ 	Comments
1	Best BUY ABS Ultimate M6 find.pcworld.com/42214	NEW	88	Very expensive \$4972	Windows XP Professional Outstanding 147	This system combines superior performance, graphics quality, and design—as you'd expect for just under \$5000. (★★★★★)
2	MPC Millennia 920i Creative Studio find.pcworld.com/41153		85	Average \$2999	Windows XP Professional Fair 127	You get great speakers, a sleek LCD, and photo- and video-editing software—and the price falls nearly \$300 this month. (★★★★★ May 04)
3	HP Compaq Presario 8000Z find.pcworld.com/41740		85	Inexpensive \$2178	Windows XP Professional Very good 141	This newly configured 8000Z sped through our tests, but the model we reviewed lacked open drive bays to boost storage. (★★★★★ June 04)
4	Alienware Aurora Extreme find.pcworld.com/42162	NEW	85	Very expensive \$4619	Windows XP Professional Outstanding 150	The first unit we've tested to reach 150 on PC WorldBench 4. The large, sci-fi-themed case offers plenty of expansion room. (★★★★★)
5	Polywell Poly 900NF3-FX53 find.pcworld.com/41528		82	Expensive \$3499	Windows XP Professional Outstanding 146	This loaded tower was one of our top performers; funky, almost demonic black "gaming" chassis has a flimsy door. (★★★★★ May 04)
6	Gateway 710X Performance find.pcworld.com/41736		81	Inexpensive \$2600	Windows XP Home Fair 127	The matching LCD on this silver-and-black midsize tower produced sharp text at all font sizes. (★★★★★ June 04)
7	ABS Awesome 5500 find.pcworld.com/40166		81	Inexpensive \$2429	Windows XP Home Fair 130	System uses Intel's game-centric CPU. It produced top-notch frame rates in gaming tests, but the monitor was mediocre. (★★★★★ Mar 04)
VALUE SYSTEM			Overall rating	Street price (4/22/04)	PC WorldBench 4 performance score ¹ 	Comments
1	Best BUY Dell Dimension 4600 find.pcworld.com/40406		88	Inexpensive \$1089 ²	Windows XP Home Good 123	This well-appointed Dell offers fine performance for its configuration; it includes an attractive LCD and good speakers. (★★★★★ Apr 04)
2	EMachines T3085 find.pcworld.com/41734		87	Inexpensive \$1198	Windows XP Home Very good 129	Strong performer (except on graphics tests) can handle most tasks, but the dark, fuzzy LCD makes doing them a chore. (★★★★★ June 04)
3	Dell Dimension 2400 find.pcworld.com/41174		87	Very inexpensive \$699 ²	Windows XP Home Good 115	A large CRT monitor and a generous, home-oriented software bundle highlight this bargain system. (★★★★★ May 04)
4	Gateway 510XL find.pcworld.com/41738		86	Average \$1400	Windows XP Home Very good 125	Well-rounded PC handles basic text and spreadsheet files, as well as multimedia presentations. Price falls \$100 this month. (★★★★★ June 04)
5	Sony VAIO PCV-RS520 find.pcworld.com/42158	NEW	84	Expensive \$1599	Windows XP Home Very good 126	Stylish design and competitive performance are undermined by an inferior keyboard and tinny-sounding speakers. (★★★★★)
6	Velocity Micro Vision 64 find.pcworld.com/42152	NEW	84	Expensive \$1739	Windows XP Home Outstanding 139	This PC has a stylish case and a tidy interior. It is one of the fastest budget systems we've seen. (★★★★★)
7	Cyberpower Gamer Ultra 7000 find.pcworld.com/42146	NEW	83	Expensive \$1695	Windows XP Home Outstanding 146	The bright green case and interior lights will appeal to kids, but this system earned only so-so marks on graphics tests. (★★★★★)
8	Polywell Poly 900VF find.pcworld.com/40004		81	Inexpensive \$1185	Windows XP Home Outstanding 136	This was one of the fastest PCs on our value list at running productivity apps, but graphics performance was disappointing. (★★★★★ Mar 04)

Go to find.pcworld.com/10806 for details on PC World's Star Ratings.

Go to find.pcworld.com/39209 for a breakdown of the weightings we give to the various factors that contribute to a desktop PC's overall rating in each of the two categories.

¹ Performance word scores reflect comparisons of PCs in the same category (power or value) running the same operating system. See find.pcworld.com/15720 for more details.

² Total capacity in gigabytes (may represent multiple drives).

THE LATEST ATHLON PROCESSOR from AMD is making a big impact on our chart: Two new systems that use the Athlon 64 FX-53 join the power section of our chart, and a third debuts on the value side.

The ABS Ultimate M6 takes the top spot in our ranking of power systems. This beefy unit comes tricked out with pretty much everything you could hope for. In addition to its Athlon 64 FX-53 processor, it has a massive 2GB of DDR400 memory and enough hard disk space to keep even

the most avid video editor humming along for a few weeks. This system has three hard drives: a Maxtor 250GB Serial ATA drive, and two 74GB Western Digital Raptor SATA drives connected to a RAID controller (so they appear to the user as one very fast drive; see *Tech Trend* on page 168 for more details). This arrangement would be ideal for someone who works with digital media. The Klipsch ProMedia

Visit find.pcworld.com/42224 for reviews of all products tested this month and ranked in this chart.

CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³	Optical drives	Other features ⁴	Graphics quality	Setup and ease of use	Vendor's reliability/service
2.4-GHz Athlon 64 FX-53	2048/DDR400 SDRAM	398 [RAID]	19-inch LCD	256MB ATI Radeon 9800 XT	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Flash media reader, ⁵ Microsoft Wireless Optical keyboard and mouse, Klipsch ProMedia Ultra 5.1 speakers, no modem, Microsoft Office 2003 SBE	Outstanding	Outstanding	Good/ ⁶
3.2-GHz Pentium 4	1024/DDR400 SDRAM	320 [RAID]	19-inch LCD	256MB NVIDIA GeForce FX 5950	Midsized tower	8X DVD±RW and 52X CD-RW drives	Imaging Zip 750 drive, Microsoft Wireless Multimedia Keyboard, Microsoft Office XP Small Business Edition, Pinnacle Studio 8, Roxio PhotoSuite 5SE	Outstanding	Outstanding	Good/ ⁶
2.2-GHz Athlon 64 FX-53	1024/DDR400 SDRAM	160 [RAID]	17-inch LCD	256MB ATI Radeon 9600 Pro	Midsized tower	8X DVD±RW and 48X CD-RW drives	Microsoft Works 7, Money 2004, MSN Encarta Plus	Very good	Good	Fair/Poor
2.4-GHz Athlon 64 FX-53	1024/DDR400 SDRAM	398 [RAID]	22-inch CRT	256MB ATI Radeon 9800 XT	Tower	8X DVD±RW and 48X CD-RW drives	Flash media reader, ⁵ Logitech Z-680 speakers, Microsoft Works Suite 2004	Very good	Very good	/ ⁶
2.4-GHz Athlon 64 FX-53	1024/DDR400 SDRAM	148 [RAID]	19-inch CRT	256MB NVIDIA GeForce FX 5950 Ultra	Midsized tower	8X DVD±RW drive and 52X CD-RW/16X DVD-ROM combo drive	Flash media reader, ⁵ TV tuner card with remote, Creative Inspire T7700 speakers, no modem, Ulead VideoStudio 7, Ulead DVD MovieFactory 2.5	Good	Good	/ ⁶
3.2-GHz Pentium 4	1024/DDR400 SDRAM	250	17-inch LCD	256MB NVIDIA GeForce FX 5950 Ultra	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Flash media reader, ⁵ Microsoft Works Suite 2004, Pinnacle Expressions 2	Very good	Good	Good/Fair
3.2-GHz Pentium 4 Extreme	1024/DDR400 SDRAM	160	17-inch LCD	256MB ATI Radeon 9800 XT	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Flash media reader, ⁵ gigabit ethernet, Microsoft Works Suite 2004	Good	Outstanding	Good/ ⁶
CPU	RAM (MB/type)	Hard drive ²	Monitor	Graphics	Case type ³	Optical drives	Other features ⁴	Graphics quality	Setup and ease of use	Vendor's reliability/service
2.8-GHz Pentium 4	512/DDR400 SDRAM	120	17-inch LCD	128MB NVIDIA GeForce FX 5200	Minitower	16X DVD-ROM and 48X CD-RW drives	Corel WordPerfect Productivity Pack, Microsoft Money 2003, Quicken 2003 New User Edition	Good	Good	Good/Fair
2.167-GHz Athlon XP 3000+	512/DDR333 SDRAM	160	17-inch LCD	Integrated NVIDIA GeForce4 MX graphics using main memory	Minitower	8X DVD±RW and 52X CD-RW drives	Flash media reader, ⁵ Microsoft Works 7, Microsoft Money 2004, Encarta Online	Poor	Very good	Good/Good
2.67-GHz Pentium 4	256/DDR333 SDRAM	80	19-inch CRT	Integrated Intel 845GL graphics using main memory	Minitower	16X DVD-ROM and 48X CD-RW drives	Dell A425 speakers, Microsoft Works Suite 2003, Sonic MyDVD, Britannica 2003, Quicken 2002, Jasc Paint Shop Pro 8	Poor	Very good	Good/Fair
3-GHz Pentium 4	512/DDR400 SDRAM	160	15-inch LCD	128MB NVIDIA GeForce FX 5200G	Minitower	8X DVD±RW and 16X DVD-ROM drives	Flash media reader, ⁵ Microsoft Works Suite 2004, Pinnacle Expressions 2	Fair	Good	Good/Fair
3-GHz Pentium 4	512/DDR333 SDRAM	160	17-inch LCD	128MB ATI Radeon 9200	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Flash media reader, ⁵ Microsoft Works 7, Sony PictureGear Studio, Quicken 2004 New User Edition	Good	Fair	Good/Fair
2.2-GHz Athlon 64 3400+	512/DDR400 SDRAM	200	19-inch CRT	128MB EVGA GeForce FX 5900XT	Midsized tower	8X DVD±RW and 16X DVD-ROM drives	Logitech Z-640 speakers, WordPerfect Productivity Pack, Ulead Digital Creation Suite	Outstanding	Very good	/ ⁶
2.4-GHz Athlon 64 FX-53	512/DDR400 SDRAM	120	19-inch CRT	256MB XFX GeForceFX 5700LE	Midsized tower	16X DVD-ROM and 52X CD-RW drives	Creative SBS 5.1 560 speakers, Microsoft Works 7	Very good	Very good	/ ⁶
2-GHz Athlon 64 3200+	512/DDR400 SDRAM	80	17-inch CRT	128MB NVIDIA GeForce FX 5200	Midsized tower	16X DVD-ROM and 52X CD-RW drives	Logitech Cordless Elite keyboard, Logitech X-220 speakers, Microsoft Works Suite 2004	Good	Good	/ ⁶

¹ Vertical cases are towers (over 20 inches), midsized towers (15.5 to 20 inches), or minitowers (under 15.5 inches). Compacts are small-footprint or thin horizontal cases.

² Unless otherwise stated, systems come with a modem and a 10/100 network adapter.

³ Includes support for some combination of CompactFlash I/II, Memory Stick, Memory Stick Pro, MultiMediaCard, Secure Digital, SmartMedia, and XD-Picture Card.

⁴ Insufficient data to give a rating.

⁵ Use Dell E-Value code 6V411-460RPW to get this price.

⁶ Use Dell E-Value code 6V411-D24REV to get this price.

Ultra 5.1 speaker set that the system came with earned the Best Buy in our February Spotlight on speakers and sound cards (at find.pcworld.com/42242).

Alienware's newest Aurora Extreme has many of the same components as the ABS, such as the Athlon 64 FX-53 CPU, a trio of hard drives (two yoked to a RAID controller), and 1GB of DDR400 memory. Although we also received a 22-inch NEC

MultiSync FE221SB CRT monitor with our review unit, we were unimpressed with its image quality—text was readable but not particularly sharp, and images had good (but not outstanding) colors.

All of this power comes at a price, however: Both of these PCs are extremely expensive. At \$4619 for the Alienware and an even steeper \$4972 for the ABS, they should be great systems. ➤



THE ABS ULTIMATE M6 has a stylish black case that conceals a raft of high-end components.

BUDGET PERFORMANCE

FORTUNATELY, THE FX-53 processor isn't appearing solely in expensive power systems: The Cyberpower Gamer Ultra 7000 uses the speedy new CPU, but its price comes in at just under \$1700. Not surprisingly, this PC isn't as well outfitted as the two more-expensive ones: It lacks a rewritable DVD drive, has a less impressive set of speakers, and packs a single 120GB hard drive. However, with a PC WorldBench 4 score of 146—the fastest on the value list—it nearly kept pace with the very high-priced ABS and Alienware, which achieved scores of 147 and 150, respectively. The images rendered by the combination of the Cyberpower's 19-inch ViewSonic E90B CRT monitor and the 256MB XFX GeForce FX 5700LE graphics card looked sharp, with realistic colors. The system did not perform as well in games, though; we didn't see the high

frame rates we've observed in systems running higher-end graphics cards.

Also new on the value list is the Velocity Micro Vision 64, another model that came with a good selection of high-end components. Velocity Micro went with AMD's Athlon 64 3400+ processor and 512MB of DDR400 RAM. One thing that impressed us about this system was the way that every cable inside was secured to keep cooling airflow unobstructed; the company claims that it assembles all its machines this way. The system also came with Ulead's Digital Creation Suite—a good program for people just starting out in digital photo or video editing.

The Sony VAIO Digital Studio PCV-RS520, as the name suggests, also comes bundled with digital media software, in the form of Sony's PictureGear Studio photo management software, plus video editing and DVD authoring software. However, we found the speakers a bit dis-

appointing for a system designed for use with digital media; the set lacked a subwoofer and produced tinny, weak sound.

Two PCs we tested this month didn't make the value section of the chart: the HP Compaq Dx2000 and the Pogo Linux Altura 64. The Dx2000 is a system designed for small and medium businesses: For a model with a 3-GHz Pentium 4 processor and a 15-inch LCD monitor, it is very moderately priced at \$1140. However, the system's performance fell a little behind the curve, with a PC WorldBench 4 score of 122. Go to find.pcworld.com/42150 to read our full review.

The Pogo Linux Altura 64 carried both Windows XP Professional and SuSE Linux Pro 9 preinstalled, along with a boot manager for choosing between them when you start up the system. It achieved a very solid PC WorldBench 4 score of 139. Visit find.pcworld.com/42156 for our full review of this system. ■

TECH TREND

Serial ATA RAID: Hard Drives in the Fast Lane

ON THIS MONTH'S *Top 15 Desktop PCs* chart, the top five spots are taken by systems that use paired Serial ATA (SATA) hard drives configured in a redundant array to help step up performance. We've seen plenty of power systems with similar RAID setups over the last couple of years—though mostly with drives using the older parallel ATA interface. But now SATA drives are predominating in new power systems, and RAID configurations of SATA drives take advantage of SATA's easier setup and better performance.

Another reason we've seen more SATA RAID systems is that the required controllers are now integrated into many high-end motherboards, such as the Asus boards used in the Alienware Aurora Extreme and ABS Ultimate M6 systems we review this month.

The five RAID systems on our chart use RAID Level 0, where the hard drive controller stripes data across both linked drives, using the full capacity of both. This approach improves performance by allowing both of the drives to read and write simultaneously, greatly boosting the data-transfer rate. Because of transactional overhead, throughput does not double, but tests of IDE RAID controllers we conducted last year (reported at find.pcworld.com/42252) revealed speed

improvements of between 8 and 44 percent—a sizable amount for tasks that involve a lot of disk activity, such as video editing.

Of course, striping doesn't secure your data or keep your system running in case of a drive failure: If one of the drives in your RAID 0 setup dies—and you don't have a backup—you've lost all your data. RAID Level 1 mirrors one hard drive's contents to the other in real time—allowing a system to keep running if one drive fails. RAID 1 provides no performance benefit and allows you to use the capacity of only one of the two drives. Most desktop RAID controllers will handle either striping or mirroring. If you lie awake at night worrying about a hard drive going down, you may be able to

customize your new system with RAID Level 1. Generally, the systems that offer mirroring are workstations aimed at professional users or servers. ABS, for instance, offers RAID Level 1 as an option on its Navigator workstations. The systems we've reviewed are configured for maximum speed. According to Alienware product manager Kevin O'Neill, "Our machines are typically configured to appeal to those who crave performance." These days, that means efficient SATA drives and RAID Level 0—an idea whose time has come.





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TOP 15 NOTEBOOK PCs

DESKTOP REPLACEMENT		Overall rating	Street price (4/20/04)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best BUY HP Compaq Nc6000 find.pcworld.com/41093	82	Average \$1992	Windows XP Professional	Very good 125	Lightweight corporate notebook comes with dual wireless capabilities and great battery life. (★★★★☆ May 04)
2	Gateway M405CS find.pcworld.com/42184	80	Inexpensive \$1522	Windows XP Home	Very good 124	Offers fast performance for a low price. Order it with the lithium ion battery for long battery life (over 5 hours on one charge in our tests). (★★★★☆)
3	Dell Inspiron 5150 find.pcworld.com/41147	78	Average \$1779	Windows XP Home	Good 115	This notebook has a high-resolution screen. It's hefty, however, and you can't remove its optical drive to swap in a second battery. (★★★★☆ May 04)
4	EMachines M6807 find.pcworld.com/41063	77	Inexpensive \$1609	Windows XP Home	Very good 128	The first notebook we've tested that has a Mobile Athlon 64 CPU whips through applications and piles on the features. (★★★★☆ May 04)
5	Toshiba Satellite P15-S420 find.pcworld.com/42286	75	Average \$1849	Windows XP Home	Good 118	Wide-screen notebook is a suitable desktop replacement if you don't need good stereo sound or upgradable storage. (★★★★☆)
ALL-PURPOSE NOTEBOOK		Overall rating	Street price (4/20/04)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best BUY IBM ThinkPad R50 find.pcworld.com/40025	82	Inexpensive \$1569	Windows XP Home	Good 117	Well-rounded, affordable laptop turned in strong performance, and has long battery life and a great keyboard. (★★★★☆ Mar 04)
2	Dell Latitude D505 find.pcworld.com/41144	80	Inexpensive \$1357	Windows XP Professional	Good 111	Business portable delivered lackluster performance; its sleek modular optical drive has a built-in release. (★★★★☆ May 04)
3	Micro Express NP1620A find.pcworld.com/42186	80	Inexpensive \$1469	Windows XP Home	Outstanding 137	Outperformed similarly equipped notebooks, thanks to a whopping 1024MB of RAM—our unit's maximum and twice that of most notebooks. (★★★★☆)
4	IBM ThinkPad T41 find.pcworld.com/39476	80	Expensive \$2048	Windows XP Professional	Very good 123	Eraserhead and mouse buttons feel a bit flimsy and the battery is awkward to remove, but the overall design is still pleasing. (★★★★☆ Feb 04)
5	Toshiba Satellite A45-S250 find.pcworld.com/41872	79	Inexpensive \$1599	Windows XP Home	Good 111	Wedge-shaped portable allows easy typing; carries twice as many USB ports as most notebooks, along with useful audio controls. (★★★★☆ June 04)
ULTRAPORTABLE		Overall rating	Street price (4/20/04)	PC WorldBench 4 performance score ¹	Faster	Comments
1	Best BUY IBM ThinkPad X31 find.pcworld.com/39512	81	Inexpensive \$1399 ²	Windows XP Professional	Good 116	This near-perfect small notebook's only flaw: The optical drive is in a separate \$199 docking station. Price drops \$279 this month. (★★★★☆ Feb 04)
2	Toshiba Portégé M100 find.pcworld.com/38870	80	Average \$1749	Windows XP Professional	Good 115	Sporty notebook combines a good keyboard, solid performance, strong audio, and long battery life. (★★★★☆ Jan 04)
3	Fujitsu LifeBook P5020 find.pcworld.com/42422	76	Average \$1899	Windows XP Professional	Fair 107	Relatively compact for a portable having a modular bay, the P5020 also has one of the smallest screens here. (★★★★☆ Feb 04)
4	Dell Latitude X300 find.pcworld.com/38531	75	Expensive \$2306 ²	Windows XP Professional	Good 116	On its own, this portable weighs just 3 pounds; its 1.9-pound media slice adds a full set of connections and great sound. (★★★★☆ Dec 03)
5	Sony VAI0 PCG-TR3AP3 find.pcworld.com/42188	72	Very expensive \$3000	Windows XP Professional	Fair 107	VGA camera mounted on the screen is nice. But the small (albeit easy-to-read) display, tinny speakers, and shallow keystroke are drawbacks. (★★★★☆)

Go to find.pcworld.com/10860 for details on PC World's Star Ratings. Go to find.pcworld.com/40049 for a breakdown of the weightings we give to the various factors that contribute to a notebook's overall rating in each of the three categories.

¹ See "Your Guide to the Top 100" at find.pcworld.com/15720 for more details.

² Except where noted, all Intel CPUs are SpeedStep chips, which run at a slower speed on battery power. (We performance-test all notebooks plugged in.)

³ Features listings are not exhaustive.

⁴ Unless otherwise noted, all notebooks come with a lithium ion battery.

⁵ Includes computer, AC adapter, power cord, optical drive, and floppy drive (if offered).

EACH SECTION OF THIS MONTH'S CHART has at least one new entrant. Among desktop replacements, Gateway's M405CS looks plain but would be a fine choice for small businesses that don't have a lot of money to spend on a good office portable. This Wi-Fi-equipped model has a big screen, turned in blistering performance, and weighs just 6.3 pounds

(not including the power adapter). Another wide-screen model, Toshiba's Satellite P15-S420, takes fifth place among desktop replacements. Low rubber feet help the unit run coolly, and application-shortcut buttons toggle on features like TV-out.

Micro Express's NP1620A, a loaded yet

Visit find.pcworld.com/42190 for reviews of all products tested this month and ranked in this chart.

CPU ²	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Bays and optical drives	Other features ³	Overall design	Battery life (hours:min) ⁴	Average weight (pounds) ⁵	Vendor's reliability/service
1.6-GHz Pentium M	14.1	512	60	Touchpad, eraserhead	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11a/g, gigabit ethernet, SD slot, embedded security chip	Very Good	Outstanding/ 6:23	Light/ 6.6	Fair/Fair
1.5-GHz Pentium M	15.0	512	40	Touchpad	Fixed DVD-ROM and CD-RW combo drive	802.11g, Microsoft Works 7	Good	Very good/ 5:15	Average/ 7.1	Good/Good
3.06-GHz Mobile Pentium 4	15.0	512	60	Touchpad	Fixed DVD+RW drive	802.11g, WordPerfect Productivity Suite	Average	Good/ 4:02	Very heavy/ 10.3	Good/Fair
1.8-GHz Mobile Athlon 64 3000+	15.4	512	60	Touchpad	Fixed DVD±RW drive	802.11g, six-in-one media card reader, Microsoft Works 7	Good	Fair/ 2:49	Heavy/ 9.1	*/
3-GHz Pentium 4	15.4	512	80	Touchpad	Fixed DVD±RW drive	802.11g, S-Video-out port	Good	Limited/ 1:28	Heavy/ 9.7	Good/Fair
CPU ²	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Bays and optical drives	Other features ³	Overall design	Battery life (hours:min) ⁴	Average weight (pounds) ⁵	Vendor's reliability/service
1.4-GHz Pentium M	14.1	512	40	Touchpad, eraserhead	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11b, S-Video-out port	Outstanding	Good/ 4:04	Light/ 6.5	Good/Good
1.2-GHz Celeron M	15.0	256	40	Touchpad	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11b, FireWire port, S-Video-out port	Good	Very good/ 4:45	Average/ 7.1	Good/Fair
1.6-GHz Pentium M	14.1	1024	60	Touchpad	Fixed DVD-ROM and CD-RW combo drive	SD/MultiMediaCard/Memory Stick reader, 802.11g	Good	Fair/ 2:50	Light/ 6.4	*/
1.6-GHz Pentium M	14.1	512	40	Touchpad, eraserhead	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11b, Bluetooth, gigabit ethernet	Good	Good/ 4:19	Light/ 5.9	Good/Good
2.8-GHz Mobile Pentium 4	15.0	512	60	Touchpad	Fixed DVD±RW drive	802.11g, SD slot, Microsoft Works 7	Good	Outstanding/ 6:51	Heavy/ 9.3	Good/Fair
CPU ²	Screen (inches)	RAM (MB)	Hard drive (GB)	Pointing device	Bays and optical drives	Other features ³	Overall design	Battery life (hours:min) ⁴	Average weight (pounds) ⁵	Vendor's reliability/service
1.3-GHz Pentium M	12.1	512	20	Eraserhead	DVD-ROM and CD-RW combo drive *	802.11b, CompactFlash slot	Very good	Very good/ 4:49	Light/ 6.4	Good/Good
1.2-GHz Pentium M	12.1	256	40	Eraserhead	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11g, FireWire	Very good	Good/ 4:11	Light/ 5.3	Good/Fair
1-GHz Pentium M	10.6	256	60	Touchpad	One multipurpose bay with DVD-ROM and CD-RW combo drive	802.11b, SD and CompactFlash slots	Good	Good/ 4:15	Very light/ 4.7	*/
1.2-GHz Pentium M	12.1	640	40	Touchpad	DVD-ROM and CD-RW combo drive *	802.11g, SD slot	Very good	Fair/ 2:07	Light/ 6.0	Good/Fair
1-GHz Pentium M	10.6	1024	80	Touchpad	Fixed DVD-RW	Memory Stick slot, integrated VGA camera supports motion and JPEG, 802.11g	Good	Good/ 3:20	Very light/ 4.0	Good/Poor

* Insufficient data to give a rating.

² Price includes the extra-cost docking station.

³ Multipurpose bay is in docking station.

light system, joins the all-purpose section. Equipped with a 1.6-GHz Pentium M CPU, a gigabyte of RAM, and a 60MB hard drive, it earned the best PC World-Bench 4 score we've seen from a notebook: 137. On the ultraportable portion of the chart, the Sony VAIO PCG-TR3AP3 is

the first model to include a built-in camera. Mounted on the top edge of the notebook's screen, the swivel lens is easy to use, and it takes fairly sharp 640-by-480-pixel photos and short videos. The PCG-TR3AP3's case is attractive, but the small silver unit costs a hefty \$3000. ■

THE VERSATILE
Gateway M405CS was
fast in tests.



TOP 10 MONITORS

Visit find.pcworld.com/42236 for reviews of all products tested this month and ranked in this chart.

OF THE SEVEN NEW MONITORS we tested this month, four join the chart. Though none of the new models earned a Best Buy, we were especially impressed with the image quality of the beautiful Sony SDM-HS73P. The Samsung SyncMaster 172X's fast 12-millisecond response time makes it an above-

average entertainment LCD, but its graphics and text scores—though good—fall short of those of a previously tested Samsung model, the 173P. Monitors from Sharp, Planar, and (despite a 12-ms response time) BenQ missed our chart primarily due to disappointing image quality.

17-INCH LCD MONITOR		Street price (4/23/04)	Overall rating	Quality of text/graphics	Comments
1	Best Buy Dell UltraSharp 1703FP find.pcworld.com/39407	\$569	91	Very good/ Very good	FEATURES: 15.4 pounds; dual video inputs; tilt, swivel, height, and pivot adjustments; optional speakers; headphone jack; four-port USB hub; TCO'99 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: A smaller version of Dell's top-performing 19-inch, the 1703FP offers the same lithe design and great adjustment options. (★★★★☆ Mar 04)
2	Best Buy Samsung SyncMaster 173P find.pcworld.com/39383	\$619	89	Outstanding/ Outstanding	FEATURES: 13.2 pounds; dual video inputs; tilt, swivel, height, and pivot adjustments; color-adjusting software; TCO'03 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: The swank SyncMaster 173P's outstanding image quality is great for graphics and entertainment—but this model is also the most expensive on the chart. (★★★★☆ Mar 04)
3	Eizo Nanao FlexScan L557 find.pcworld.com/39377	\$530	88	Very good/ Very good	FEATURES: 12.3 pounds; dual video inputs; tilt and height adjustments; headphone jack; TCO'03 compliant; five-year warranty (three for backlight); 24-hour daily toll-free tech support. SUMMARY: Well suited for graphics use, the L557 has both preset color modes and a bevy of advanced on-screen menu options for refining screen and print-out images. (★★★★☆ Mar 04)
4	Samsung SyncMaster 172X find.pcworld.com/40877 NEW	\$579	86	Very good/ Good	FEATURES: 8.3 pounds; dual video inputs; tilt and height adjustments; color- and image-adjusting software; TCO'99 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: Light, small-footprint monitor offers multiple viewing modes and a swift 12-ms response time for comfortable gaming and DVD viewing; graphics quality could be better, however. (★★★★☆)
5	IBM ThinkVision L170p find.pcworld.com/37499	\$600	86	Very good/ Outstanding	FEATURES: 12.6 pounds; dual video inputs; tilt, swivel, and height adjustments; TCO'99 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: Vivid colors and uniform brightness contribute to this model's high graphics rating; but, although sturdy and adjustable, the L170p is suitable primarily for users content with a minimum of advanced features. (★★★★☆ Mar 04)
6	Hewlett-Packard L1730 find.pcworld.com/39380	\$469	85	Very good/ Good	FEATURES: 15.4 pounds; dual video inputs; tilt, swivel, height, and pivot adjustments; TCO'99 compliant, three-year warranty, 24-hour daily toll-free tech support. SUMMARY: Moderately priced monitor boasts crisp text and nimble adjustment features; however, with weakly reproduced colors and details, its graphics performance is nothing to brag about. (★★★☆☆ Mar 04)
7	Sony SDM-HS73P find.pcworld.com/42212 NEW	\$610	84	Outstanding/ Outstanding	FEATURES: 16.7 pounds; analog video input; tilt adjustment; image-adjusting software; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: Elegant home-oriented model performed beautifully in both text and graphics tests, but its price—especially steep for a display with only an analog input—and lack of physical adjustability means it's not a fit for everyone. (★★★★☆)
8	NEC MultiSync LCD1765 find.pcworld.com/42202 NEW	\$550	84	Very good/ Very good	FEATURES: 13.2 pounds; analog video input; tilt adjustment; color- and image-adjusting software; one-year warranty; 24-hour daily toll-free tech support. SUMMARY: Pleasing image quality and clean design make this glossy black display all the more attractive; some users may find the unobtrusive side-mounted controls a little too challenging to navigate, however. (★★★★☆)
9	Iiyama ProLite E431S find.pcworld.com/42196 NEW	\$425	83	Very good/ Very good	FEATURES: 9 pounds; dual video inputs; tilt adjustment; headphone jack; TCO'99 compliant; three-year warranty; 12-hour weekday toll-free tech support. SUMMARY: This display delivers excellent text and has the lowest price on the chart, but difficult-to-understand controls make you work too hard—and tech support leaves you on your own after-hours and on weekends. (★★★★☆)
10	ViewSonic VG710s find.pcworld.com/39389	\$489	83	Outstanding/ Good	FEATURES: 11.7 pounds; dual video inputs; tilt adjustment; TCO'03 compliant; three-year warranty; 24-hour daily toll-free tech support. SUMMARY: Though a solid choice for text-intensive work, this model's limited range of ergonomic adjustments detracts from its desirability. Offering speakers but no headphone jack, the unit is better for home use than for an office setting. (★★★☆☆ Mar 04)

FOOTNOTE: ¹ Includes both digital (DVI) and analog inputs. DVI requires a graphics card with a DVI digital output, which we use to test all monitors that offer DVI. **HOW WE TEST:** Judges rate how well each monitor displays 13 text and graphics images at a native resolution of 1024 by 768. Some screens are from DisplayMate for Windows (www.displaymate.com). See find.pcworld.com/34613 for testing details. Data based on tests designed and conducted by the PC World Test Center. All rights reserved. **CHART NOTES:** Overall ratings are based on text and graphics quality (20 percent each), price (15 percent), features (20 percent), ease of use (15 percent), and service and support (10 percent). With LCD monitors, the entire screen area is viewable. See find.pcworld.com/10860 for details on PC World's Star Ratings.

TOP 10 DVD DRIVES

Visit find.pcworld.com/42512 for reviews of all products tested this month and ranked in this chart.

PLEXTOR'S PX-712A, our new number one drive—and the first 12X model we've tested—sped through our write-once test, taking nearly 2 minutes less to finish the task than did its predecessor (and our former Best Buy), the PX-708A. Media vendors aren't planning to release 12X media, but this drive

can achieve its speedy performance with some brands of 8X media (for now limited to Maxell, Ricoh, and Taiyo Yuden).

Also new this month are drives from I/O Magic and Asus. The former is a terrifically priced external USB 2.0 drive with a versatile software bundle; the latter, a basic internal drive.

	REWRITABLE DVD DRIVE	Street price (5/6/04)	Overall rating	Performance	Write performance (min:sec) ¹	Comments
1	Best Buy Plextor PX-712A find.pcworld.com/42466 NEW	\$215	90	Outstanding	• DVD+R 6:31 • DVD+RW 10:09 • CD-R 2:50	FEATURES: Internal IDE drive, 12X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 48X CD-R, 8MB buffer; Roxio Easy CD & DVD Creator 6.2 (with Drag-to-Disc and DVD Builder), PhotoSuite 5 SE, and DVDMax Player; 11-hour weekday toll-free support. SUMMARY: Speedy model took nearly 2 minutes less than its predecessor to write to DVD+R (using 8X media), but +RW writes were sluggish. (★★★★☆)
2	Best Buy TDK External Indi DVD 840G 8x MultiFormat find.pcworld.com/40475	\$280	86	Outstanding	• DVD+R 8:22 • DVD+RW 9:02 • CD-R 3:02	FEATURES: External USB 2.0 and FireWire drive, 8X DVD+R, 4X DVD+RW, 4X DVD-R, 2X DVD-RW, 40X CD-R, 2MB buffer; Roxio Easy CD & DVD Creator 6.1 (with Drag-to-Disc and DVD Builder), PhotoSuite 5 SE, DVDMax Player, and Toast Lite (for Mac); 8-hour daily toll-free support. SUMMARY: Attractive, dual-interface external drive has quick +R/+RW performance. (★★★★☆ Apr 04)
3	Lite-On LDW-812S find.pcworld.com/41850	\$110	86	Very good	• DVD+R 9:18 • DVD+RW 9:09 • CD-R 3:14	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 40X CD-R, 2MB buffer; Sonic MyDVD 4.5, RecordNow DX 4.6, and DLA 3.6, CyberLink Power2Go XP 4; 24-hour daily toll-free support. SUMMARY: Reasonably priced drive is a strong performer; software bundle is a couple of versions behind (upgrades are free downloads from the Lite-On site). (★★★★☆ June 04)
4	AOpen 8X DVD+/- RW Burner (DRW8800) find.pcworld.com/41846	\$100	85	Very good	• DVD+R 9:33 • DVD+RW 11:51 • CD-R 3:38	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 32X CD-R, 2MB buffer; MediasStream NeoDVD 4.5, Ahead Nero Burning ROM 5.5 and InCD 4.1, CyberLink Power2Go 5, Ulead VideoStudio 7 SE; 9-hour weekday toll-free support. SUMMARY: Cheapest drive on the chart has an array of software for editing and authoring DVDs; rewrite performance lagged. (★★★★☆ June 04)
5	Kano Technologies K8Xtreme find.pcworld.com/40472	\$150	85	Very good	• DVD+R 9:36 • DVD+RW 8:52 • CD-R 3:40	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 32X CD-R, 2MB buffer; Roxio Easy CD & DVD Creator 6.1 (with Drag-to-Disc and DVD Builder); 11-hour weekday toll-free support. SUMMARY: Fastest drive on the chart at burning to rewritable media, and the only drive we've tested (informally) that writes to some brands of 4X-rated DVD-R media at 8X speed. (★★★★☆ Apr 04)
6	Memorex True 8X Dual Format DVD Recorder find.pcworld.com/40424	\$140	84	Very good	• DVD+R 8:30 • DVD+RW 11:52 • CD-R 4:22	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 24X CD-R, 2MB buffer; Ahead Nero Memorex Special Suite (includes Nero Vision 2.1, Nero Express 6.3, InCD 4.1, Media Player 1.3, BackItUp, and ReCode 2); 9-hour weekday toll-free support. SUMMARY: Write-once performance shone, but rewritable efforts were slow. Has a great manual. (★★★★☆ Apr 04)
7	TDK Internal Indi DVD 8x+/8x- MultiFormat Burner 880N find.pcworld.com/41852	\$170	84	Very good	• DVD+R 9:48 • DVD+RW 8:52 • CD-R 3:41	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 32X CD-R, 2MB buffer; Roxio Easy CD & DVD Creator 6.1 (with Drag-to-Disc and DVD Builder), PhotoSuite 5 SE, and DVDMax Player; 8-hour daily toll-free support. SUMMARY: This model was nearly 1.5 minutes slower at writing to DVD+R than the second-ranked TDK 840G, but it also does 8X writes to DVD-R. (★★★★☆ June 04)
8	Asus DRW-0804P find.pcworld.com/42472 NEW	\$130	84	Very good	• DVD+R 8:32 • DVD+RW 10:22 • CD-R 4:22	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 24X CD-R, 2MB buffer; Ahead Nero Express 6.3 (with Nero Vision Express, InCD, and Media Player); 15.5-hour weekday toll-call support. SUMMARY: Bare-bones model had competitive write-once performance; but it was about 2 minutes slower than expected on our +RW tests, and it lagged on our CD tests. (★★★★☆)
9	I/O Magic External 8X USB 2.0 Dual DVD IDVD8DBE find.pcworld.com/42474 NEW	\$180	83	Good	• DVD+R 10:46 • DVD+RW 9:19 • CD-R 3:16	FEATURES: External USB 2.0 drive, 8X DVD+R, 4X DVD+RW, 4X DVD-R, 2X DVD-RW, 40X CD-R, 2MB buffer; Pinnacle Instant CD/DVD SE, Roxio Easy CD & DVD Creator 6.1 (with Drag-to-Disc and DVD Builder) and PhotoSuite 5 SE, CyberLink Power2Go XP 4; 9-hour weekday toll-call support. SUMMARY: Low-cost external drive has lots of software; but +R performance was surprisingly mediocre. (★★★★☆)
10	Pioneer DVR-A07 find.pcworld.com/40421	\$175	83	Very good	• DVD-R 8:23 • DVD+RW 9:32 • CD-R 4:46	FEATURES: Internal IDE drive, 8X DVD+R, 4X DVD+RW, 8X DVD-R, 4X DVD-RW, 24X CD-R, 2MB buffer; Ulead MovieFactory 3 SE, BurnNow 3.5, UDF Driver, VideoStudio 7 SE, Photo Explorer 8, and DVD Player, NovaStor Nova Backup 7.1; 9-hour weekday toll-free support. SUMMARY: A versatile software bundle rounds out this drive's fine write-once performance, but its CD-R speed was slow. (★★★★☆ Apr 04)

FOOTNOTE: ¹We test the drives with the format specified by the vendor at review time. Write speed is the time (in minutes:seconds) to write 4.35GB to DVD using the drive's bundled mastering software, to format a blank rewritable DVD disc and copy 2.64GB of data to that disc, and to write 700MB of data to a CD-R. **HOW WE TEST:** We test drives under Windows XP Home on PCs with 1.67-GHz Athlon XP 2000+ CPUs and 512MB of SDRAM, using media supplied by the vendor or Verbatim. Some vendors may change drive suppliers without changing their model designations; our results reflect the configuration tested at review time. **CHART NOTES:** Overall rating is based on performance (35 percent), price (25 percent), features (15 percent), ease of installation (15 percent), and support policies (10 percent). All drives have a one-year warranty unless otherwise noted. See find.pcworld.com/10860 for details on PC World's Star Ratings.

TOP 10 PDAs

Visit find.pcworld.com/42476 for reviews of all products tested this month or ranked in this chart.

NEW WINDOWS MOBILE models dominate our Top 10 PDAs chart this month. A few—including units from HP and Asus—have both Bluetooth and Wi-Fi connectivity: By adding a Bluetooth cell phone, you can send and receive e-mail or surf the Web from almost anywhere. A couple of interesting units

don't appear: Mitac's Mio 168 GPS, a Windows Mobile PDA with a built-in GPS receiver, was expensive and hard to use, so it missed our chart; Dell's Axim X30—the successor to the Axim 3i, our last Best Buy—hadn't been released at press time. Look for a review of it in next month's *New Products*.

	PDA	Street price (4/26/04)	Overall rating	Features/ease of use	Comments
1	Best BUY HP iPaq Pocket PC H4150 find.pcworld.com/39011 NEW	\$449	81	Very good/ Very good	FEATURES: Microsoft Windows Mobile 2003 OS, 64MB of RAM, 240-by-320-pixel screen, stylus input, SD/SDIO slot, removable lithium ion battery, built-in Wi-Fi and Bluetooth, 4.7 ounces. SUMMARY: Small, light Pocket PC has all the connectivity options you could want, and it handles wireless networking gracefully. Comes with an easy-to-use photo editor. (★★★★☆)
2	Best BUY Asus MyPal A716 find.pcworld.com/42194 NEW	\$415	78	Very good/ Very good	FEATURES: Microsoft Windows Mobile 2003 OS, 64MB of RAM, 240-by-320-pixel screen, stylus input, SD card and CompactFlash II slots, removable lithium ion battery, built-in Wi-Fi and Bluetooth, 6.9 ounces. SUMMARY: This chunky unit is loaded with memory, slots, and communications options—but some applications, like its Wi-Fi utility, need polishing. (★★★★☆)
3	HP iPaq Pocket PC H4350 find.pcworld.com/39008	\$499	78	Very good/ Good	FEATURES: Microsoft Windows Mobile 2003 OS, 64MB of RAM, 240-by-320-pixel screen, stylus and thumb-keyboard input, SD/SDIO slot, removable lithium ion battery, built-in Wi-Fi and Bluetooth, 5.8 ounces. SUMMARY: Has one of the best-looking screens we've seen so far; the integrated thumb keyboard works well but adds some bulk. (★★★★☆ Jan 04)
4	Toshiba Pocket PC E405 find.pcworld.com/42240 NEW	\$299	76	Good/ Good	FEATURES: Microsoft Windows Mobile 2003 OS, 64MB of RAM, 240-by-320-pixel screen, stylus input, SD/SDIO slot, lithium ion battery, 4.6 ounces. SUMMARY: Moderately priced business PDA has an elegant design, a useful launch page, and handy software extras, but its process for installing software would benefit from being made a lot smoother. (★★★★☆)
5	Sony Clie PEG-TH55 find.pcworld.com/42358 NEW	\$400	75	Good/ Average	FEATURES: Palm OS 5.2, 32MB of RAM, 320-by-480-pixel screen, stylus input, Memory Stick Pro slot, lithium ion polymer battery, built-in 310,000-pixel camera, built-in Wi-Fi, 6.5 ounces. SUMMARY: Sony's latest Palm-based unit is lovely to look at and a pleasure to hold, and it comes with loads of extra applications, but Sony's software overlay on the Palm OS isn't helpful. (★★★★☆)
6	Toshiba Pocket PC E800 find.pcworld.com/42238 NEW	\$599	74	Very good/ Good	FEATURES: Microsoft Windows Mobile 2003 OS, 128MB of RAM, 240-by-320-pixel screen, stylus input, SD/SDIO and CompactFlash II slots, removable lithium ion battery, built-in Wi-Fi, 6.8 ounces. SUMMARY: The priciest model here, the E800 comes with presentation software that lets road warriors leave their notebooks home. Connecting to a Wi-Fi network took only a couple of clicks. (★★★★☆)
7	PalmOne Zire 72 find.pcworld.com/42246 NEW	\$299	74	Good/ Very good	FEATURES: Palm OS 5.2.8, 32MB of RAM, 320-by-320-pixel screen, stylus input, SD/SDIO slot, lithium ion polymer battery, built-in 1.2-megapixel camera, built-in Bluetooth, 4.8 ounces. SUMMARY: Compact and attractively priced for a Bluetooth PDA; has just about everything you need for productivity and fun—but some features, like the Real music player, could be easier to use. (★★★★☆)
8	PalmOne Tungsten E find.pcworld.com/38030 NEW	\$199	73	Fair/ Good	FEATURES: Palm OS 5.2.1, 32MB of RAM, 320-by-320-pixel screen, stylus input, SD/SDIO slot, lithium ion polymer battery, 4.6 ounces. SUMMARY: This entry-level business Palm has a bright, especially readable screen and a generous software bundle. Files must be added to an SD card via the Palm Desktop in order to be recognized, which is irritating. (★★★★☆)
9	PalmOne Tungsten C find.pcworld.com/36887	\$399	71	Good/ Very good	FEATURES: Palm OS 5.2.1, 64MB of RAM, 320-by-320-pixel screen, stylus and thumb-keyboard input, SD/SDIO slot, lithium ion battery, built-in Wi-Fi, 6.3 ounces. SUMMARY: The only PDA from PalmOne (other than the Treo) that has a thumb keyboard. It lacks Wi-Fi-capable competitors' voice recording, Bluetooth connectivity, and enterprise-worthy support. (★★★★☆ Sept 03)
10	PalmOne Zire 31 find.pcworld.com/42248 NEW	\$149	70	Fair/ Good	FEATURES: Palm OS 5.2.8, 16MB of RAM, 160-by-160-pixel screen, stylus input, SD/SDIO slot, lithium ion polymer battery, 4.1 ounces. SUMMARY: Follow-on to the entry-level Zire 21 adds a faster ARM processor, a good-looking (though low-resolution) color screen, a stereo headphone jack, and a built-in digital music player (which requires an SD card to use). (★★★★☆)

CHART NOTES: All screens are color, unless otherwise noted. RAM available to user may be less than the vendor-stated amount of RAM. Ratings are based on features (40 percent), price (30 percent), ease of use (20 percent), and support policies (10 percent).

MORE REVIEWS

TOP 100

TEST
Center

MISSED AN ISSUE OF *PC World* or passed your copy along to a friend? Here's a recap of other *Top 100* topics from previous issues. To read reviews of the products ranked on these Top 10 charts, go online and type in the *PC World* Find-It

URL at the top of each chart. Next month, we'll look at point-and-shoot digital cameras, 19-inch LCD monitors, and CD-RW drives. Our Spotlight review will take a look at UPS (uninterruptible power supply) devices.



THE CANON i455 Desktop Photo Printer, a Best Buy, makes nice glossies. It also has a port that lets you upload photos from a PictBridge-enabled camera.



THOUGH IT COSTS \$1850, Leica's Digilux 2 has a fixed lens. However, the lens does have rings for focus and aperture adjustment.

ADVANCED CAMERAS		REWRITABLE DVD DRIVES		SCANNERS		INKJET PRINTERS		
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1	Best BUY Olympus C-5060 Wide Zoom find.pcworld.com/39527	1	Best BUY Plextor PX-708A find.pcworld.com/38396	SMALL-OFFICE SCANNER	1	Best BUY Canon CanoScan Lite 50 find.pcworld.com/37376	1	Best BUY HP Deskjet 5150 find.pcworld.com/39197
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3	Olympus C-8080 Wide Zoom find.pcworld.com/41860	3	Kano Technologies K8Xtreme find.pcworld.com/40472		3	Visioneer OneTouch 9000 USB find.pcworld.com/29882	3	Canon i350 Color Bubble Jet Printer find.pcworld.com/39191
4	Canon PowerShot G5 find.pcworld.com/37358	4	Lite-On LDW-812S find.pcworld.com/41850		4	Epson Perfection 1670 Photo find.pcworld.com/37379	4	Lexmark Z615 find.pcworld.com/41816
5	Nikon Coolpix 8700 find.pcworld.com/41862	5	Memorex True 8X Dual Format DVD Recorder find.pcworld.com/40424		5	HP Scanjet 5530 Photosmart find.pcworld.com/41546	5	Canon i475D Desktop Photo Printer find.pcworld.com/38174
6	Sony Cyber-shot DSC-F828 find.pcworld.com/40802	6	TDK Internal Indi DVD 8x+/8x-Multiformat Burner 880N find.pcworld.com/41852		6	Microtek ScanMaker 4900 find.pcworld.com/29124	6	HP Business Inkjet 1100d find.pcworld.com/38177
7	Olympus C-5000 Zoom find.pcworld.com/39530	7	Pioneer DVR-A07 find.pcworld.com/40421		7	Visioneer OneTouch 7300 USB find.pcworld.com/41561	7	HP Deskjet 5850 find.pcworld.com/39200
8	Fujifilm FinePix S7000 find.pcworld.com/40880	8	AOpen 8X DVD+/- RW Burner (DRW8800) find.pcworld.com/41846	CORPORATE SCANNER	1	Best BUY HP Scanjet 8200 find.pcworld.com/37382	8	Epson Stylus C84 find.pcworld.com/38171
9	Nikon Coolpix 5400 find.pcworld.com/37370	9	Benq DW800A find.pcworld.com/40445		2	Epson Perfection 4870 Photo find.pcworld.com/41564	9	Epson Stylus C64 find.pcworld.com/39362
10	Leica Digilux 2 find.pcworld.com/41868	10	Sony DRU-530A find.pcworld.com/40451		3	Microtek ScanMaker 8700 Pro Design find.pcworld.com/15843	10	Lexmark Z715 find.pcworld.com/41818
From the June 2004 Issue		From the June 2004 Issue		From the May 2004 Issue		From the June 2004 Issue		

HERE'S HOW

EDITED BY MICHAEL S. LASKY, DENNIS O'REILLY, AND ERIC DAHL



WINDOWS TIPS

SCOTT DUNN

Access Your Desktop From Wherever You May Be



IT HAPPENS ALL the time: You're at home and the files you need are on your office computer. Or you're at Grandma's place and you want to use her PC to do a little Web browsing without leaving a bunch of cookies and other Internet cache files behind. Perhaps you'd just like to show some clients the software you're running on your system back in the office without having to take them there or install the program on their computers.

If the PC you need to access uses Windows XP Professional, you have everything you need to do this and more, thanks to Remote Desktop. If you don't have XP, don't worry: RealVNC offers a free solution for you called VNC (Virtual Network Computing).

In most cases, the computer you're accessing from afar must have an Internet connection. The computer you're actually using (called the "client") can run any version of Windows from 95 on,

though you may also need the Windows XP CD (Pro or Home). Likewise, if you're using VNC to make the remote link, you can work with any PC that runs Windows 95 or later. Both Remote Desktop and VNC require the remote computer to be accessible over a network, via a modem, or across a virtual private network (VPN) connection. A high-speed DSL or cable-modem connection works best.

First, let's look at XP's Remote Desktop. **Set up the remote computer:** Log on to the PC you'll be accessing remotely as the administrator or with an account that is part of the Remote Desktop Users group. (To find out whether your account is in this group, select *Start*•*Run*, type `lusrmgr.msc`, and press *<Enter>* to access the Local Users and Groups utility.) After you log on, right-click *My Computer* on your desktop or in Windows Explorer, and choose *Properties*. Click *Remote*; and under Remote Desktop, check *Allow users to connect remotely to this computer*. Click *OK* at the explanatory prompt. Make a note of the full computer name listed there.

By default, all administrator accounts are set up to permit remote access. If the account you want to access isn't an administrator, click *Select Remote Users*. If you don't see the desired name listed in this dialog box, click *Add*, type the user account name or multiple account names separated by a semicolon (;), and click *OK*. (You'll receive a prompt to try again if you type the name of an account not set up on that system.) Click *OK* to close the System Properties dialog box. If any of the accounts you've specified are *not* password-protected, you'll need to change that: Choose *Start*•*Run*, type `nusrmgr.cpl`, and press *<Enter>*. Click an account name and select *Create a password*. Follow the

176 WINDOWS TIPS

Log on to your PC from anywhere with XP Pro's Remote Desktop—or in other versions via a free network utility.

182 HARDWARE TIPS

Pass on the new PC and soup up your motherboard instead: What to look for in CPUs, power supplies, and graphics.

184 STEP-BY-STEP

Watch TV shows on your schedule—not the network's—by converting your PC into a personal video recorder.

186 INTERNET TIPS

Broadband ISPs enforce bandwidth limits for downloads; a free program removes the CoolWebSearch spyware.

188 ANSWER LINE

Fix those slow and failed Windows shutdowns; delete files in DOS mode; un-dual-boot a system; share Outlook data on a network.



182

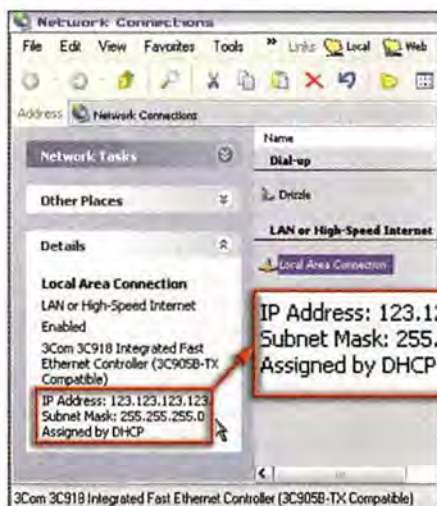


FIGURE 1: YOUR IP ADDRESS is on the Network Connections window's Task bar.

on-screen prompts and then click *Create Password*. Close the User Accounts control panel when you're done.

Various network and connection settings may make it difficult for the system or network you're accessing to find the computer's name. To be on the safe side, note its IP (Internet Protocol) address, too (if applicable): Launch Explorer if needed, right-click *My Network Places*, and choose *Properties*. Select *Local Area Connection*, and look in the Details box in the Task bar on the left side of the window. You may need to scroll the Task bar or click head-

ings to collapse the ones you don't want and to reveal the Details contents. If your Network Connections folder still doesn't have a Task bar, choose *Tools > Folder Options*, make sure *Show common tasks in folder* is selected under the General tab, and click OK. Once you see the Details data, note the IP address. It consists of

four groups of numbers separated by periods, like 123.123.123.123 (see FIGURE 1).

Set up the client: Keep the remote system on while you set up the client computer (you can turn the remote PC's monitor off, of course). If the client computer is running a version of Windows other than XP Professional or Home, you have to install some files onto the client from your Windows XP CD, so bring the disc with you. Insert the disc, and when the Welcome screen appears, click *Perform additional tasks*. In the next screen, click *Set up Remote Desktop Connection*. Follow the prompts on screen to complete the installation.

Climb the firewall: In many cases, establishing remote connections involves using a virtual private network to access a computer that sits behind a corporate firewall. If you're connecting to a company computer, contact your IS department or network administrator to find the approved means of making this connection. (Visit find.pcworld.com/41720 for an overview of virtual private networking.) If you're connecting two privately owned, firewall-protected computers that are on the same network, you may need to consult the documentation for your router, gateway, or firewall (or the ven-

dor's Web site) to learn how to get through the firewall and connect to the remote PC.

Log in remotely: Once you've established a connection via your modem, network, or VPN, choose *Start > Programs (or All Programs) > Accessories > Communications > Remote Desktop Connection*. Type the name of the remote computer, and click *Connect* (see FIGURE 2). You'll see the log-in dialog box of the remote XP computer. After you log in, the remote computer will lock, preventing anyone at that location from using the machine without the account name and password. If you log into an account on the remote machine other than the one currently running, you'll receive a warning that a different account



FIGURE 3: TROUBLESHOOT A faulty remote connection via XP's Help and Support Center.

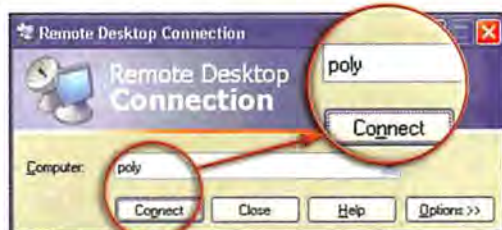


FIGURE 2: TO SEE A REMOTE desktop on your own, just type its name in the text field and click *Connect*.

is already logged in. If you click 'Yes' to proceed, a message will appear on the remote PC asking whether the connection should be allowed. If the remote machine user clicks 'No', you won't be able to continue. If no one is at the remote machine, the prompt will disappear after several seconds, and you can log in.

If at first you don't succeed... If the client computer couldn't find the remote computer by using the name you typed in, enter the remote PC's IP address (the ►

one you wrote down when you set up the remote system). If that doesn't work, consult your IS department or check other resources mentioned previously. Also, the next time you are at a machine running XP Pro, you can get additional information by choosing *Start•Help and Support*, typing **Troubleshooting Remote Desktop** in the Search box, and pressing **<Enter>** to see a list of topics based on the type of error message you receive (see **FIGURE 3**).

GO VIRTUAL

IF THE MACHINE you want to access from a distance doesn't have Windows XP Pro, don't sweat it. Start your browser, head over to www.realvnc.com, and click the *download it now* link on the left to get the free VNC software. Enter your name, e-mail address, and other required information. Check the OS version you want (Windows, Linux, or Solaris), and click *Proceed to download*. Choose the link for the .exe version. (The .zip version isn't much smaller, and it has to be uncompressed before you can install it.)

Set up server and client: With VNC, one installer sets up both the VNC Server (the "remote" computer in XP-speak) and the VNC Viewer (which runs on the machine that XP calls the "client"). Double-click the file you downloaded, and follow the prompts to install VNC. If the current machine will be exclusively a server computer (one that others connect to but that doesn't make any connections itself), uncheck the VNC Viewer option to install the VNC Server only. If you think you'll ever want to use that system to access another machine remotely, install both programs. Repeat these steps on all the

other computers you'll be working with.

Now go to the remote (server) computer and choose *Start•Programs•RealVNC•Run VNC Server*. The first time you run this tool, you'll see a properties dialog box. Normally, you can accept the defaults, but be sure to enter a password in the box on the upper left (see **FIGURE 4**). Then click **OK**. To reopen this dialog box, double-click the VNC icon in your system tray (at the end of the taskbar near the clock). Finally, write down the server computer's IP address. VNC makes it simple to find: Hold the pointer over the VNC icon in the tray for a moment until a tool tip appears over the icon. The number in the tool tip is the one you want.

Like Remote Desktop, VNC is not likely to see computers that hide behind a firewall. Make sure that you can establish a network connection first. See "Climb the firewall" on page 177. And jump to find.pcworld.com/41722 to read RealVNC's helpful FAQ page on firewalls.

Make the connection: Choose *Start•Programs* (or *All Programs*)•*RealVNC•Run VNC Viewer* on the client (or "viewer") computer. Enter the IP address that you noted in the tool tip and click **OK**. A window will appear displaying the desktop of the server machine. Ta-da! Now you can click, drag, and generally perform tasks on the computer as if it were the one in front of you. Well, almost. A number of system keystrokes (such as **<Alt>**•**<Tab>**) will go to the local computer, not to the server (the remote one). You may have to use the mouse to get to the application you want; but once it's active, you can use the keyboard to run it from the viewer machine.

Maximize performance: Even with a relatively fast connection, virtual computing can be sluggish. To limit the amount of data that needs to be transmitted, double-click the VNC icon in the system tray of the server computer to open the properties dialog box shown in Figure 4. Under Connection Settings, make certain that *Remove Desktop Wallpaper* is

WINDOWS TOOLBOX

Redesign Your Keyboard for Free With KeyTweak



A FEW YEARS BACK, I told you how to edit your Windows Registry to remap the keys on your keyboard (find.pcworld.com/41726). Key remapping is especially useful to IBM ThinkPad users, whose keyboards lack a **<Windows>** key and who are willing to give up another one (such as **<Caps Lock>**) to get it. Fortunately, Travis Krumsick has automated the process. His brainchild, KeyTweak, lets you change keys by clicking the one you want to remap on an onscreen keyboard, choosing its new function from a handy drop-down list, and selecting *Remap Key*. When you've got all your remappings set, just



double-check them and click **Apply**. If you make a boo-boo, it's easy to restore the default mapping for one change or for all of them. Browse to find.pcworld.com/41728 to download your free copy.

checked, and under Update Handling, verify that 'Poll Full Screen' and 'Poll Window Under Cursor' are unchecked (but leave the 'Poll Foreground Window' option checked). To boost performance further, check *Poll on Event Received Only* to update the viewer only when it receives clicks and keystrokes from you. Click **OK**.

Go to find.pcworld.com/41724 to read the full user manual for VNC.

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.



FIGURE 4: TO GET STARTED with VNC, just install and launch the program, and then enter a password.

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HARDWARE TIPS

KIRK STEERS

Do You Need a New PC or Just a New Motherboard?

IF YOU DON'T WANT to spend big bucks on a new PC, consider upgrading your old system's motherboard and CPU. This can boost the machine's performance and give you access to the latest technologies. It can also save you hundreds of dollars.

What you won't get is a new hard drive, optical drive, or operating system, though the new motherboard gives you the option of upgrading these components later. When you do it yourself, you choose the make, model, and cost that serve you best, rather than settling for what's preloaded in an off-the-shelf machine.

For as little as \$200 to \$350, you can purchase a motherboard with a new Pentium 4 or Athlon processor and 512MB of RAM. (Visit find.pcworld.com/41834 to check the latest motherboard prices.) That's hundreds of dollars less than the retail cost of a midrange PC that supports AGP 8X graphics cards, Serial ATA drives,

and the other advanced features that your new motherboard is likely to offer.

Here's my motherboard buyers guide:

Size matters: Most desktop PCs sold in the last few years conform to the ATX form factor (as do most motherboards), but not all do. Many small or ultrabudget systems are based on other designs, and some PCs from HP/Compaq, IBM, and other big-name vendors aren't ATX-compatible. Refer to your computer's documentation to see if the new motherboard will fit inside its case.

Find the right CPU: The optimal combination of CPU price and performance may lead you to early versions of Athlon XP and Pentium 4 processors: Retail boxed versions of 1- to 2-GHz AMD Athlon XP processors

cost less than \$100, while Pentium 4 processors running at comparable speeds are less than \$130. OEM versions of both (that's minus the fancy box, the cooling fan, and sometimes a warranty) may be priced considerably lower. Avoid older Pentium 4 processors with 256KB of L2 cache. CPUs with 512KB cache are faster and well worth the small added expense.

Be picky: Steer clear of no-name vendors and buy from established manufacturers only. Visit find.pcworld.com/41836 for reviews and installation tips from the motherboard roundup in March's *Top 100 Spotlight*, and browse to find.pcworld.com/41838 for instructions on installing a motherboard from Stan Miastkowski's October 2002 *Step-By-Step* column.

Pay for power: Your old PC's power supply may not have enough wattage or may lack the 12-volt amperage needed to run some Pentium 4 and Athlon motherboards. Check the new motherboard's requirements against the specs on your power supply. If in doubt, buy a power supply that generates 300 watts or more, such as Antec's \$50 SL300S Power Supply (www.antec-inc.com, see **FIGURE 1**).

Faster is better: A motherboard's front-side bus speed is the rate at which data moves between the CPU and RAM. FSB speed can have a greater effect on overall system performance than listed CPU speed, which is a multiple of the FSB speed. The faster the FSB, the better.

Get it all: Your new motherboard needs PCI slots and USB ports, two UltraATA/100 connectors, parallel and serial ports



FIGURE 1: GIVE YOUR MOTHERBOARD the power it needs by upgrading to a 300-watt device such as Antec's SL300S.

MINIMIZE YOUR MOUSING

FOR PEOPLE IN A HURRY, every unnecessary mouse movement is an aggravation. Windows 2000, Me, and XP let you set the pointer to automatically move to commonly used buttons in dialog boxes. Click *Start•Settings•Control Panel* (or *Start•Control Panel* in XP), and click or double-click *Mouse* (choose *Printers and Other Hardware* first if you're in XP's Categories view, or *view all Control Panel options* if you're in Me's "commonly used" view). Now select *Pointer Options*, check the box labeled *Automatically move pointer to the default button in a dialog box* (the option's wording varies slightly in Windows 2000), and click *OK*.

(if you use these), and at least two DIMM slots for RAM (DDR RAM is best). For a little extra money, you can get Serial ATA, ethernet, RAID, FireWire, Wi-Fi, and other advanced features.

Sight and sound off: Some low-cost motherboards have sound and graphics functions built in. The quality of these integrated functions is often marginal. Make sure that any built-in sound and graphics can be disabled, and that separate audio and graphics boards can be added. ■

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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CISCO SYSTEMS



STEP BY STEP

STAN MIASTKOWSKI

Convert Your PC Into a Digital Video Recorder

NO DOUBT ABOUT IT, TiVo has become a cultural icon. Witness its transformation into a verb: "I'm going to TiVo *Survivor* tonight." Personal computer manufacturers have responded with so-called Media Center PCs that sport TV tuners, large hard drives, great sound systems, and Microsoft's Windows XP Media Center Edition 2004—an extended version of XP that lets you record TV and manage audio, video, and photos in one interface.

Unfortunately, you can't just go out and buy the Media Center OS; it's available only with off-the-shelf Media Center PCs. But you can use add-in accessories and software to upgrade your current PC to include virtually all the features of a Media Center PC or a digital video recorder like TiVo. Two possible routes are available. The less expensive is to add a TV-tuner card or USB box, which supplies basic TV viewing and recording capabilities. We decided to take the pricier route of upgrading our graphics, too, by installing

a graphics card that integrates a TV tuner and other video extras.

To test the process out, we used two graphics/DVR cards: first ATI's All-In-Wonder 9600, then NVIDIA's Personal Cinema FX 5200, both of which retail for about \$200. They offer built-in TV tuners, the ability to record to hard disk (and to CD/DVD or VCR), and TiVo-like features such as the ability to pause a live program for later viewing from where you left off.



EVGA'S NVIDIA PERSONAL Cinema FX 5200 with its included remote and break-out box of connectors.

THE TOP DOWN

Benefits: Automatically record TV programs to your hard drive for later playback or for recording on CD/DVD or VCR; input video from a VCR or camcorder for conversion to digital video or CD/DVD. Use special features such as pausing a live program for later viewing.

Costs: TV tuner/recorder, \$75-\$200; complete graphics/video add-in kit, \$200-\$250; optional DVD writer, \$150-\$300

Expertise level: Intermediate

Time required: 45 to 90 minutes

Tools required: Phillips screwdriver, anti-static wrist strap (recommended)

Vendors: ATI (www.ati.com), AVerMedia (www.avermedia.com), Creative (www.creative.com), Hauppauge (www.hauppauge.com), Leadtek (www.leadtek.com), Matrox (www.matrox.com), Pinnacle Systems (www.pinnaclesys.com)

You can also hook these boards up to your television and surround-stereo system to play back recorded TV, or to connect your VCR and digitize old VHS tapes. And a PC-based DVR doesn't require a phone line or a monthly fee for a programming guide, as TiVo does.

Unlike their predecessors, today's PC add-in products are meant to work with cable TV set-top boxes. New ATI All-In-Wonder models can also share video with other PCs over a local network, and some can record HDTV with an included add-in board. ■

Contact PC World Contributing Editor Stan Miastkowski at stan_miastkowski@pcworld.com. Visit find.pcworld.com/31676 for past Step-By-Step columns.

IS YOUR PC VIDEO-READY?

RECORDING VIDEO PUTS a lot of demands on your CPU and hard disk. In our experience, a PC needs quite a bit more horsepower than the manufacturer's minimum hardware and software requirements to be able to comfortably record, edit, and play back digital video. Here's our take on the real-world specs you'll need.

PROCESSOR: 1.8-GHz or higher Intel Pentium 4 or AMD Athlon.

RAM: 256MB minimum; 512MB (or more) optimum.

HARD DRIVES: 60GB (or larger) separate partition. You should strongly consider a second hard drive dedicated to video storage.

SOUND CARD: It depends on how you're planning to use your media center. Most existing sound hardware should be fine for standard cable TV. But if you intend to view DVDs, you'll want a high-

quality surround-sound card, such as the Sound Blaster Audigy 2. And a good set of PC speakers is a must as well.

WRITABLE MEDIA DRIVE: Though not strictly necessary, a DVD writer is something you'll wish you had if your PC lacks one.

OPERATING SYSTEM: For some DVRs, Windows 2000 or XP Professional is required. Don't use Windows 98 or Me, even if the manufacturer says you can—you'll be disappointed.

Also, if you plan to integrate your PC with your home video and audio system, you'll need to set aside space for the computer, keyboard, and monitor. And many PCs are too noisy to work satisfactorily in these environments; see "Quiet Your PC: Easy Ways to Cut Computer Noise" (find.pcworld.com/42406) for hints.

INSTALLING DIGITAL VIDEO RECORDER HARDWARE AND SOFTWARE

BEFORE YOU BEGIN Do a complete system backup. Then check the manufacturer's Web site to ensure that you have the latest versions of the drivers and other software. Some PCs may also require an AGP driver update. The steps shown here are typical for using a

Connection Speed	Catalyst Component	Download Link	File Size (MB)
High Speed (Cable / DSL)	Display Driver, Control Panel, WDM Capture driver	Download 1 of 1	23.8
Low Speed (Dial-up)	Display Driver	Download 1 of 3	8.63

graphics card with integrated DVR hardware. But your approach will differ if you aren't replacing your existing graphics card, and the steps vary by manufacturer. Your hardware comes with an installation poster and (usually) a manual. Read them carefully.

1 Remove existing graphics software and drivers. This will help you avoid potential driver incompatibilities. Open *Control Panel* and open *Add or Remove Programs*. Find any entries for your graphics card and choose *Change/Remove*. If no entries are evident, right-click *My Computer* and choose *Properties*. Click the *Hardware* tab and then the *Device Manager* button. Double-click *Display Adapters*, right-click the entry for your existing graphics card, and choose *Uninstall*.



2 Change the graphics card. Turn off your PC, unhook the monitor cable, and open the case. Don an antistatic wrist strap, and remove the screw that holds down the graphics card. Carefully



remove the old card. Gently but firmly insert the new card so that it's securely seated in the AGP slot. Fasten the card with the screw, and then close the PC's case back up.

3 Hook up the equipment. The connectors and cables on the rear of a TV-tuner graphics card can be intimidating, and each manufacturer uses a different layout. Study the installation poster that came with your hardware, paying particular attention to the audio and video inputs and outputs. Most cards, for example, require a connection to your sound card. Double-check all the connections before you restart.



4 Install the software. Plug your PC in and turn it on. Windows should detect the new card and pop up the Found New Hardware Wizard. Insert the CD that came with your new card and follow the directions. Reboot your PC when instructed to do so.



5 Tweak the settings. This is the most time-consuming step. Before you can use all the features of your new hardware and software, you must go through a number of setup screens. These will set up your audio and video connections, scan for available channels on your cable or satellite connection, and hook you up to a programming guide that simplifies choosing programs to watch or record. Follow the on-screen directions carefully.



6 Start using your multimedia center. Learning all the ins and outs of your new hardware and software will take a while. Make some test recordings on your hard drive and burn a DVD (if your PC is so equipped) to confirm that everything is working together properly. If you run into problems, contact the manufacturer's tech support.



INTERNET TIPS

SCOTT SPANBAUER

Download Too Much, Lose Your Broadband

CABLE AND DSL OFFER blazing-fast Internet connections, but they're not unlimited founts of data. As more and more subscribers exploit the speedy throughput times that make downloads a snap and

on BroadbandReports.com's forums, usage caps run from 5GB to 50GB a month.

Broadband Internet is the ultimate PC comfort food: An always-on cable or DSL connection's speedy downloads and snappy response times seldom disappoint. But if bandwidth-use limitations burn you up, look for a broadband provider or subscription plan that doesn't restrict your downloads. Though Bell Canada's Bell Sympatico DSL Basic Internet service limits you to 2GB of combined upload and download traffic per month, the company also offers plans (at a higher price, naturally) with unlimited bandwidth.

If no other provider or plan looks better than the one you have already, you may be forced to moderate your Internet traffic to fit within your ISP's acceptable-use policy. Of course, few broadband providers explicitly publish what their acceptable monthly download limit is. Comcast's Acceptable Use Policy, for example, states that your online activity must not "represent (in the sole judgment of Comcast) an unusually large burden on the network." Cox Communications maintains a similar policy. To determine your ISP's bandwidth limitations—if any—contact the company's customer service department, or check the forums listed at BroadbandReports.com to see what other people in your area have to say about the provider.

TRACK YOUR DOWNLOADS

JUST BECAUSE YOU'RE saddled with a bandwidth-usage cap doesn't mean that you have to give up your file-sharing and streaming programs completely, however. Most peer-to-peer applications have

settings that let you throttle back uploads to more moderate levels to help keep you under any usage limits imposed by your ISP. Visit find.pcworld.com/41828 to read Salisbury University's Help Desk page, which offers a quick summary of the relevant settings you need to adjust in the leading peer-to-peer programs.

If you use Windows XP, you can monitor your own bandwidth hogging via Task Manager's Networking monitor tab. Press **<Ctrl>-<Alt>-** to open Task Manager, and select the *Networking* tab. To introduce downloads to the display, choose *View>Select Columns*, check *Bytes Received*, and click *OK* (you may have to adjust the window and column size to see the new column). If you'd like to make the data cumulative, choose *Options>Show Cumulative Data* (see **FIGURE 1**). Close Task Manager and go about your normal Internet activity (but don't shut down or restart Windows—that resets the counter). To see your total downloads a day, week, or month later (if you've left your PC on continuously and it hasn't crashed), just press **<Ctrl>-<Alt>-** again.

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.

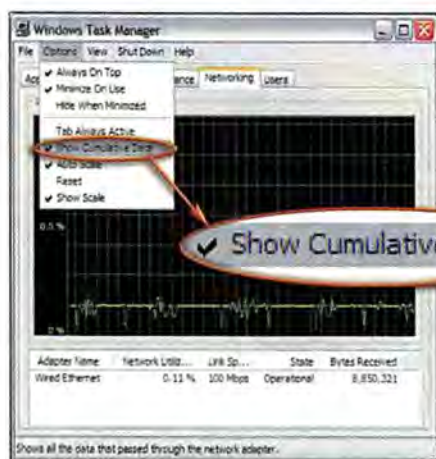


FIGURE 1: KEEP TABS ON your download totals by using Windows XP's Task Manager.

media streaming smooth, ISPs are placing limits on how much you can download and upload within a set time period.

These transmission-rate caps are intended to prevent bandwidth-hungry customers from gobbling more than their share of pipeline from the ISP's back-end connection to the Internet. If you keep your file-sharing programs, streaming media players, and media downloads pumping data to and fro 24 hours a day at your bandwidth limit, your cumulative bandwidth consumption can be staggering. As your monthly Internet traffic increases to 100GB, so do your chances of receiving a nasty letter from your ISP regarding your bandwidth consumption.

Judging from customer reports posted

BEAT THE COOLWEBSEARCH HIJACKER—FOR FREE

YOU MAY HAVE noticed that the amount of spam and viruses bombarding your PC has increased sharply over the last year or so. The same is true of yet another Internet plague: spyware. I've been recommending a couple of free anti-spyware tools for the last few years—Lavasoft's Ad-aware and Patrick M. Kolla's Spybot Search & Destroy. Even the combination of these two great spyware and adware cleaners can't stop some versions of an insidious and viruslike pest called CoolWebSearch. Fortunately, a Dutch student who goes by the name Merijn has written a tiny (128KB) free tool called CW-Shredder (find.pcworld.com/41830) that removes dozens of CWS variants.

I didn't know...

- ...fixing my PC problems without calling technical support
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According to the PC World Privacy & Security Survey (June/July 2003), 40% of all PC user survey respondents have had a virus infection even though 83% use antivirus software and 58% use a firewall.

Also from FarStone:



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PC Game Backup



VirtualDrive Pro

CD/DVD Emulator



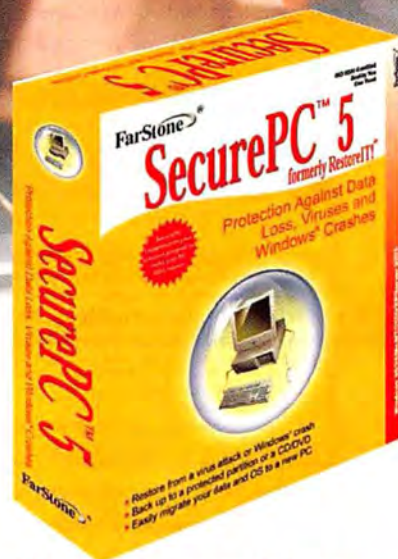
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Why All the Problems Shutting Down My PC?



MY PC TAKES ABOUT 5 minutes to shut down. What's causing the problem, and how can I fix it?

Linnett Williamson, Felt, Oklahoma

REMEMBER WHEN turning off an electronic gadget meant flipping a switch? Shutting down a PC is much more complicated. Sometimes Windows takes an extremely long time to close, and too

remote desktop, fast user switching, remote assistance, the terminal server, or other Terminal Services, you don't need this. To shut it off, select *Start>Run*, type *services.msc /s*, and press **<Enter>**. Find and double-click the *Terminal Services* listing. (Of course, if you don't have Terminal Services installed, your slow shutdowns have another cause.) Change

'Startup type' to *Disabled* or *Manual* and click **OK**.

If you use Windows 2000 or XP, you can speed up your shutdowns by verifying that you're not clearing your virtual memory whenever you exit out of Windows. This is not

the default setting, but it's still good to check. Select *Start>Run*, type *gpedit.msc*,

and press **<Enter>**. Navigate the left pane as if you're in Windows Explorer to *Computer Con-*

figuration\Windows Settings\Security Settings\Local Policies\Security Options. In the right pane, scroll to *Shutdown: Clear virtual memory pagefile*. If the option is enabled, double-click it, select *Disabled*, and click **OK**. (You may not have this option on your system.)

Finally, the more programs you have running on your system, the longer it takes Windows to close each one before shutting itself down. You could simply close your programs manually before exiting Windows, but you still would have to

wait for them to close. For additional Windows shutdown tricks, browse to find.pcworld.com/41866 to check out last month's *Windows Tips* column.

FAILED SHUTDOWNS

IF WINDOWS WON'T shut down at all, run the Startup and Shutdown Troubleshooter (unless you have Windows 2000, which lacks this wizard). To launch the troubleshooter, select *Start>Help (Help and Support in XP)*. In Windows 98, click *Search*. Type **shutdown troubleshooter**, press **<Enter>**, and select *Startup and Shutdown Troubleshooter* (see **FIGURE 1**).

If the troubleshooter wizard doesn't help, or if you have Windows 2000, here are some other suggestions:

If you have Windows XP and haven't upgraded to Service Pack 1, visit find.pcworld.com/41864 to download the update. It fixes a shutdown bug.

If Windows closes but the PC stays on with a message that you can now safely turn off your computer, there's a problem with Advanced Power Management. But is the problem in Windows or in your hardware configuration? Check Windows first: Right-click the desktop and select *Properties*. Click the *Screen Saver* tab and then the *Power* button. (In 98 and Me, this button is the 'Settings' button under 'Energy saving....') Click the *APM* tab (if there is no *APM* tab, the problem resides in your hardware configuration). Check the *Enable Advanced Power Management Support* box, and then click **OK**.



FIGURE 1: WHEN WINDOWS WON'T shut down, turn to the Startup and Shutdown Troubleshooter first.

often the operating system doesn't shut down at all. I'll discuss the major causes and describe fixes for both problems.

First, here's some general advice: Bugs in hardware drivers cause most shutdown difficulties. Before you do anything else, go to the Web sites of your hardware vendors and look for the latest updates.

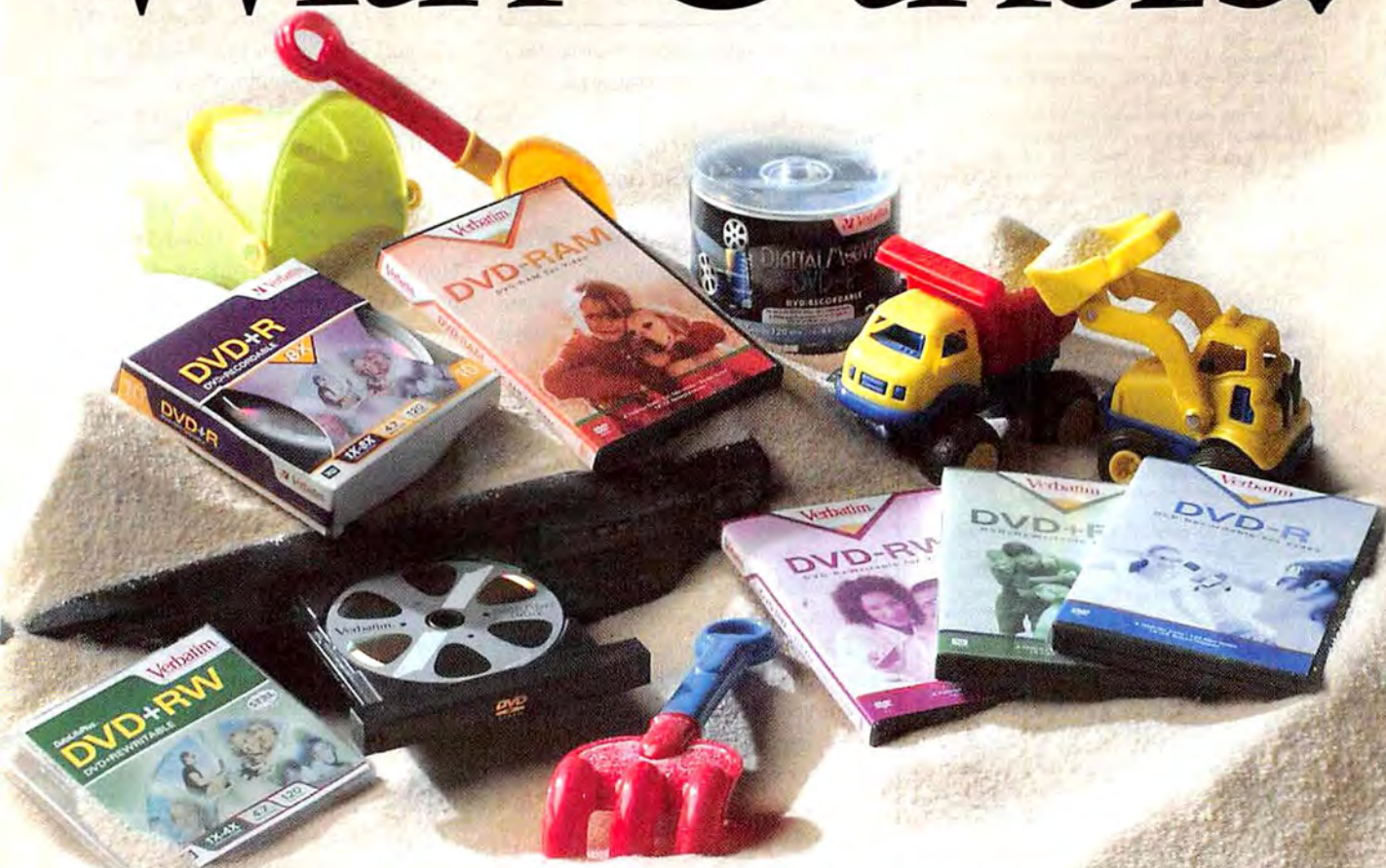
SLOW SHUTDOWNS

ONE COMMON CAUSE of recalcitrant shutdowns in Windows 2000 and XP is Terminal Services. If you never use

BE A CHOOSY DOWNLOADER

A READER WHO asked to remain anonymous requests that I remind readers not to download and install every program they read about in *PC World*. We recommend only programs that we find useful, of course, but that doesn't mean they're useful to everyone. You may not need a tool for the chore it's designed to do, or you may already have a program that handles it. Remember that every program you download and install clutters your hard drive, and every program that runs in the background slows Windows and increases the likelihood of conflicts.

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REVISED NOTICE OF PROPOSED
CLASS ACTION SETTLEMENT:

Eustice v. Network Associates, Inc.,

Case No. CIV 210925,

Superior Court of California, County of Ventura.

IF YOU ARE A U.S. RESIDENT AND YOU LICENSED VERSIONS 3 OR 4 OF MCAFEE VIRUSSCAN SOFTWARE, YOU MAY BE A MEMBER OF THE CLASS FOR WHOM RELIEF IS BEING SOUGHT AND YOU SHOULD READ THIS NOTICE. A detailed class notice is at <http://download.mcafee.com/updates/notice/>.

Plaintiffs allege that Network Associates has violated California state law and breached their license agreements by failing to provide free lifetime updates to purchasers of versions 3 and/or 4 of McAfee VirusScan software. Without determining the merits of Plaintiffs' claims, the Court has ruled that the named Plaintiffs in this class action may represent the Class described above.

Each Class member may obtain a free download of the perpetual version of one of the following: (i) McAfee VirusScan version 8, (ii) AntiSpyware version 1.0 or (iii) QuickClean version 4.01 software from mcafee.com. Your free download will be available until July 16, 2004. To obtain your free download, go to <http://download.mcafee.com/updates/notice/> and complete an on-line form certifying that you are a member of the class.

If you wish to be included in this class action, you need do nothing. You will automatically be in the Class and may immediately participate in the settlement. However, if you do NOT wish to be included in the Class, you should complete and sign the opt-out form available at <http://download.mcafee.com/updates/notice/> and mail it to the attorneys for the Class (identified below). Alternatively, you may send a letter of your own. In the letter, state your name, your address, that you are a member of the Class and that you wish to be excluded from the Class. Your opt-out form or letter must be postmarked by July 6, 2004. If you opt-out of the class action you will not be bound by any Court orders or judgments, and you will not participate in the relief granted to the Class.

As a Class member you will be bound by all orders and judgments of the Court. Class members who do not validly and timely request to be excluded from the Class shall be deemed to have released and forever discharged all of the Settled Claims against Network Associates.

Under the settlement, Class Counsel will receive \$227,000 in attorneys' fees, costs and expenses from Network Associates. Class Members are not personally liable for any such fees or expenses. You also may seek the Court's permission to intervene or personally appear in the class action. If you hire your own attorney, you must make pay arrangements with that attorney.

On July 13, 2004, the Court will hold a settlement fairness hearing. You may file an objection with the Clerk of the Ventura County Superior Court and mail it to Class Counsel no later than July 6, 2004. Only members of the Class who have submitted timely written objections will be entitled to be heard at the settlement hearing, unless the Court orders otherwise.

This is only a summary of the proposed settlement. In order to receive a copy of the detailed notice of the Settlement or a claim form, go to <http://download.mcafee.com/updates/notice/>. If you have questions about this class action or would like a copy of the settlement agreement, you may contact the following attorneys for the Plaintiffs and the Class:

ROBERT CHATENEVIER
WILLIAM JOHN WEILBACHER
ATTORNEYS AT LAW
3639 HARBOR BLVD., SUITE 103
VENTURA, CA 93001
TELEPHONE: (805) 650-6640
FACSIMILE: (805) 650-7765
E-MAIL: najclassaction@earthlink.net

The proposed settlement and the pleadings filed in the class action are available for inspection during business hours at the Superior Court for the County of Ventura. Please DO NOT telephone the Court concerning this Notice.

May 7, 2004

The Honorable Henry A. Walsh
Judge of California Superior Court
for Ventura County

HERE'S HOW / ANSWER LINE

To check your hardware configuration, reboot and then enter your computer's Setup program by pressing a certain key early in the boot-up process (an on-screen message should identify the key). Search

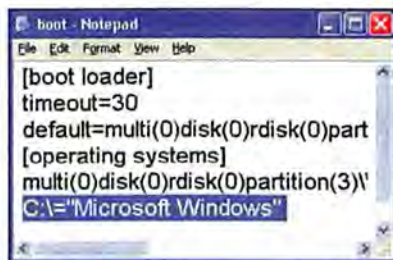


FIGURE 2: REMOVE WINDOWS' dual boot by erasing one line from your boot.ini file.

the menus for options that will allow you to turn on APM or ACPI (another power-conserving standard).

If you run Windows 2000 or XP and your PC reboots when it's supposed to shut down, the culprit is probably a system failure. These versions of Windows respond to system failures by rebooting, making it look like Windows can't distinguish between Turn Off and Restart. To get to the root of the problem, right-click *My Computer* and choose *Properties*. Select the *Advanced* tab. In Windows XP, click *Settings* under 'Startup and Recovery', uncheck *Automatically restart*, and click *OK* twice. In Windows 2000, click *Startup and Recovery*, uncheck *Automatically reboot*, and click *OK* twice. Now you'll be able to see what's making Windows blow up in your face, and maybe you'll be able to fix it or find a workaround.

WHEN YOU CAN'T
DELETE A FILE



HOW DO I DELETE a file when Windows insists that it's "being used by another person or program"?

Rob Oldenburg, Wellington, Florida

THIS IS EASY to do in Windows 98: Select *Start>Shut Down>Restart in MS-DOS mode*, and then use the *del filename* command to delete the file from the DOS prompt. To do this, you'll have to know the path to the file on your hard drive. And remember that a file called "Photo of Mary.jpg" in Windows is probably something like *photo*1.jpg* in DOS.

You have to boot from your startup floppy disk to accomplish the same thing in Windows Me. If you don't have a startup disk, select *Start>Settings>Control Panel*, double-click *Add/Remove Programs>Startup Disk*, and then follow the prompts (be sure to have a blank, formatted floppy disk ready beforehand). If you reboot your computer with the startup disk in the drive, you'll get to a DOS prompt from which you can delete the file.

Unfortunately, you can't exit to DOS in Windows 2000 and XP, so try deleting the file in Safe Mode: Select *Start>Turn Off Computer>Restart*. During the reboot—and just before Windows loads—press <F8> (it may take you a few attempts to get the timing right). Select *Safe Mode*, and then try to delete the file.

If that doesn't work, go to find.pcworld.com/40568 to download Gibin Software House's GiPo@MoveOnBoot. This free program lets you define files to be copied, moved, or deleted the next time you boot—before Windows loads.

REMOVE DUAL BOOT



I'M RUNNING A dual-boot system with Windows XP and Windows 98. I no longer want to use 98. What steps do I take to remove the dual boot?

George Nowotny,

Port Moody, British Columbia

TO KILL THE "Please select the operating system..." menu that comes up every time you boot, load Windows XP, click the *Start* button, right-click *My Computer*, and select *Properties>Advanced*. Choose the *Settings* button under 'Startup and Recovery'.

If your XP installation isn't listed as the 'Default operating system', select it from the drop-down menu, click *OK* twice, and reboot. Return to 'Startup and Recovery', and click the *Edit* button to bring up *boot.ini* in Notepad. Delete the last line of the file (see FIGURE 2), which should be the unwanted boot option. Save the file, exit Notepad, click *OK* twice, and reboot. XP should load with no menu. If there's a problem, use System Restore to return to the status quo, and try again.

If you have partitioning software such as Symantec's PartitionMagic, you may want to delete the Windows 98 parti- ▶



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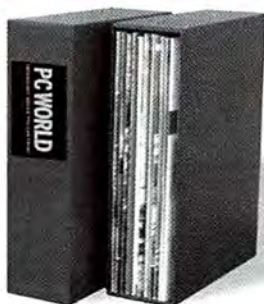
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HERE'S HOW

OFFICE TIP

Share Your Outlook Data



HOW CAN TWO people use Microsoft Outlook to share data across a network?

Andrew Mace, Birmingham, Alabama

THIS TECHNIQUE doesn't keep one person's data separate from the other's, and it doesn't work between Outlook 2003 and older versions of the program, but it's free: Open Outlook on the first machine and select *File•Import and Export* to launch the Import and Export Wizard. Select *Export to a file*, and then *Personal Folder File (.pst)*. Choose the folder you want to export (you can't select more than one folder, so you'll have to run the wizard separately for each folder you want to move). To export everything, select *Personal Folders* and check *Include subfolders*. Save the export in a shared folder that the other computer can access. Once the wizard is finished, exit and reopen Outlook.

Now open Outlook on the second PC, and select *File•Import and Export* to launch the Import and Export Wizard on that system. Select *Import from another program or file*; for the file type, click *Personal Folder File (.pst)*. Choose the file you just created on the first PC, and click *Replace duplicates with items imported*. Click *Finish*, and the data from the first system merges with that on the second.

If you're willing to spend money for a more elegant solution, you might try Vaita's OsaSync (\$37.50), which shares only contacts, or its bigger sibling, OsaSync Pro (\$62.50), which shares everything. Go to find.pcworld.com/40565 to download either of these programs.

tion and resize the Windows XP one. But otherwise, don't worry about it. Simply use the Win 98 partition to store backups or for some other purpose. ■

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.

Smaller Is Better: eFotoXpress cuts emailing of digital photos down to size

It is the bane of many digital camera enthusiasts. They shoot a series of great digital photos and edit them to perfection, but are stymied trying to email those photos to friends, family, and colleagues. Why?

Because the image files are often too large for emailing. So instead of sending the photos they want, users try shortcuts like cropping, editing, and otherwise changing their photos to make them smaller just to email.

Now the fix is in. eFotoXpress from AMC Network Services (www.amux.com) makes quick and easy work of emailing large digital images. By leveraging the genius behind the JPEG2000 standard, eFotoXpress can take a 10 MB image and compress it to a completely manageable 80 KB—all without losing any discernible image quality! Now the recipients of emailed digital photos can not only see the original large, high-quality photo but can also print directly from the image in whatever size they want.

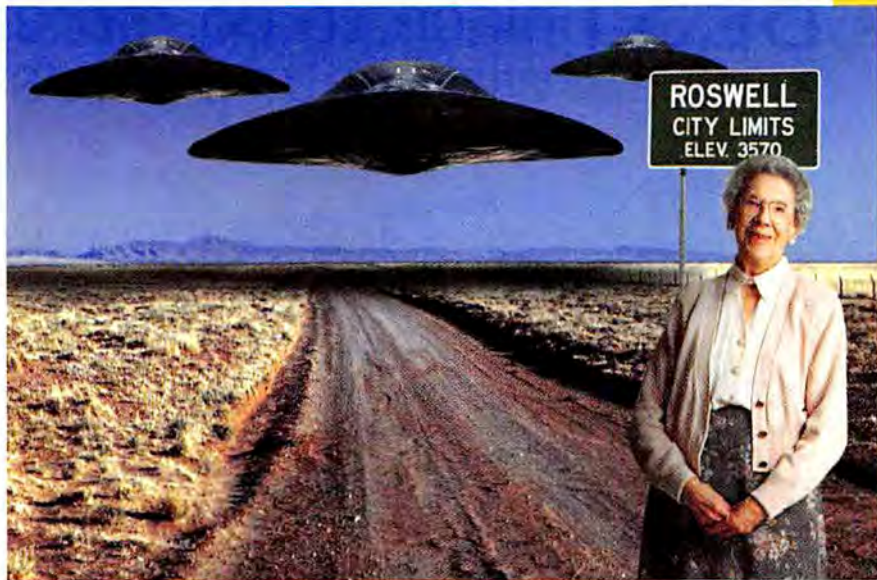


See the difference? The photo on the left is the usual 900KB JPEG file. On the right is an eFotoXpress 80KB JPEG2000 photo.

In a nutshell, here's what eFotoXpress does:

- **Automatically compresses** digital photos from JPEG, TIFF, and BMP formats into the JPEG2000 standard format
- **Emails the images** from Outlook, Yahoo!, Hotmail, and many other popular mail clients
- **Adds sound and text** captions to each image
- **Allows viewing** of images as a slideshow (with sound, making talking slideshows!)
- **Can dramatically** free up disk space (up to 1500%)
- **Works with any** digital camera, scanner, or image editing software
- **eFotoXpress also features** enhanced print capabilities for printing out extra-sharp photos in popular sizes.

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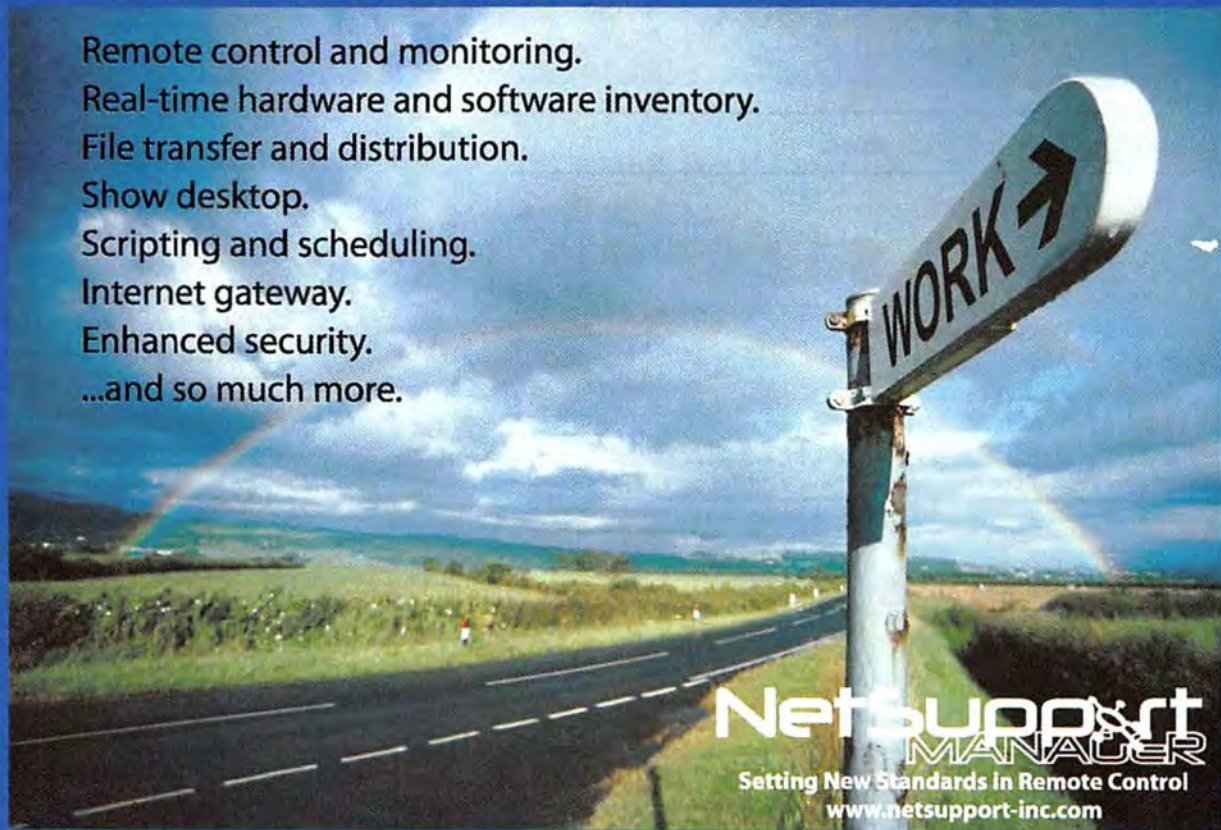
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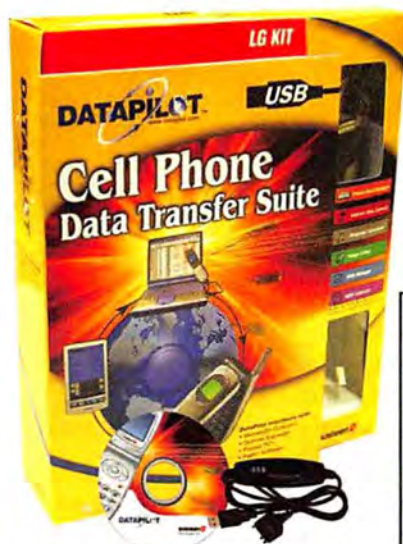
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Steve Class Awards: Two for the Road

I BORROW HUNDREDS OF NEW PRODUCTS for testing every year. When I send them back to the manufacturers, I rarely feel a pang of regret. But now and then, something great overwhelms my inner piker, and I go out and buy it myself. In the past year, it's happened

with two roadworthy products: Sony's just-over-3-pound VAIO PCG-TR series subnotebook and PalmOne's Treo 600 smart phone—this year's winners of the coveted Steve Class awards.

I love subnotebooks, but until now lightness meant essential features were left out (latest example: Sony's ultrasleek but dongle-and-PC Card-dependent new VAIO X505). The TR series breaks that mold by including every port and slot you need—plus modem, ethernet, and Wi-Fi connectivity—and shoehorning in an optical drive that 3-pound PCs used to offer only as an outboard extra.

Better still, these units come equipped with a bright, wide-format 10.6-inch screen that uses a special antireflective coating more like the ones on camera lenses than the standard diffusing type. The display enhances the readability of text, and its higher contrast restores deep black to DVDs that look washed-out on most LCD screens. Even bystanders who see this screen are dazzled. Bonus: The display's reduced height makes it easy to handle in a cramped airplane seat.

Complaints? A few. The CPU could be faster, the keyboard could be better, and the headphone outputs could be louder. The built-in camera is lousy. And though the battery can last for hours when you're just word processing, you can watch only about one DVD per charge—and a spare battery costs an outrageous \$300.

Just a month after I bought my TR1A, Sony upgraded to quicker models that have a DVD writer. But that's okay with me: The screen, the ports, and the DVD/CD-RW combination drive make this the handiest laptop I've ever owned.

Still, my Treo 600 just might supplant it. True, this little

wonder could use a higher-res screen, a more modern operating system, and a better browser. But it cleverly mates PDA and phone in one unit with a QWERTY thumb keyboard that you can use even with a single digit when your other hand is busy.

I bought T-Mobile's version of the Treo. The GSM model I got is usable internationally and runs longer than CDMA units. I went with T-Mobile for its cheap unlimited data access plans and its strong coverage in my neighborhood. Your situation may differ, but you can now get a Treo from almost any carrier.

And then you can customize it. PdaNet software (www.junefabrics.com) can turn it into a wireless modem for your notebook. SnapperMail (www.snappermail.com) beats the mail client that PalmOne supplies, and if you use it with the Mail-

blocks service, you'll avoid most spam.

I do have to reboot the phone every week or so, but this PDA/phone is a joy. On the road I can even get my mail in a cab—no Wi-Fi café required. Instead of paying a buck to get a phone number from directory assistance, I can look it up with the browser. I've even Googled people I've just met, right there on the spot.

I'm hooked. I just bought a folding full-size Treo keyboard, and I'm thinking about getting a big SD card to hold lots of music. On short trips, I may well leave the subnotebook at home. Lucky for Sony that this phone can't play DVDs. ■

Visit find.pcworld.com/31595 to see additional columns by Contributing Editor Stephen Manes. He has written about technology for two decades.



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