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THE INDEPENDENT GUIDE TO TECHNOLOGY

DECEMBER 14, 2004



HOLIDAY GIFTS



72

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- Microsoft® Windows® XP Home Edition
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- 10.6" Widescreen XBRITE™ LCD Display
- Integrated DVD+RW/CD-RW Drive⁴
- 1-Year Limited Warranty⁵
- PictureGear Studio™ Software
- [Click to DVD™ Software](#)
- VAIO Media™ Software

\$2,199⁹⁹ As low as \$55 per month¹⁰

UPGRADES

- Privacy Screen for \$69.99
- Port Replicator for \$199.99
- 3-Year On-site Service⁶ plus Accidental Damage Protection for \$315.99

Build-to-Order VGN-S270

- Intel® Pentium® M Processor 725 (1.80GHz¹; 2MB L2 Cache)
- Microsoft® Windows® XP Home Edition
- 40GB³ Hard Drive, 256MB RAM
- 13.3" WXGA (1280x800) Display with XBRITE™ LCD Technology
- Integrated DVD+RW/CD-RW Drive
- 1-Year Limited Warranty⁵
- PictureGear Studio™ Software
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\$1,889⁹⁹ As low as \$48 per month¹⁰

UPGRADES

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- Sony® VAIO® Large-capacity Battery⁷ for \$299.99

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- 40GB³ Hard Drive, 256MB DDR SDRAM
- 15" XGA (1024x768) TFT Display
- Integrated DVD+RW/CD-RW Drive⁴
- 1-Year Limited Warranty⁵
- PictureGear Studio™ Software
- [Click to DVD™ Software](#)
- VAIO Media™ Software

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- Integrated Wireless LAN 802.11b/g² for \$50

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- Intel® Pentium® M Processor 735 at 1.70GHz¹
- Intel® PRO/Wireless Network Connection 802.11b/g²
- Microsoft® Windows® XP Home Edition
- 40GB³ Hard Drive, 256MB DDR SDRAM
- 17" WXGA (1280x800) LCD Display
- Integrated DVD+R Double Layer DVD+RW/CD-RW Drive⁴
- 1-Year Limited Warranty⁵
- PictureGear Studio™ Software
- [Click to DVD™ Software](#)
- VAIO Media™ Software

\$1,989⁹⁹ As low as \$50 per month¹⁰

UPGRADES

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Display sold separately.

Affordability
RS Series

PCV-RS720G

- Intel® Pentium® 4 Processor 530 with HT Technology (3EGHz¹ with 1MB L2 Cache)
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- Intel® GMA900 Graphics with 224MB Dynamically Allocated Memory
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- 1-Year Limited Warranty with On-site Service⁴
- PictureGear Studio™ Software
- **Click to DVD™ Software**
- VAIO Media™ Software

\$100 MAIL-IN REBATE

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\$1,059⁹⁹

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UPGRADES

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Build-to-Order VGC-RA920G

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- Add the SDM-HS74P/B 17" XBRITE™ Flat Panel Display for \$499.99

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- Intel® Pentium® 4 Processor 2.80GHz¹
- Microsoft® Windows® XP Home Edition
- DVD+RW/CD-RW Drive³
- Wireless LAN Card¹ Included
- Convert VHS to DVD with Giga Pocket® Personal Video Recorder
- 1-Year Limited Warranty with On-site Service⁴
- PictureGear Studio™ Software
- **Click to DVD™ Software**
- VAIO Media™ Software

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Free Epson Printer (after \$129.99 mail-in rebate¹¹) when you buy any VAIO® PC and eligible Epson printer direct from Sony by 1/31/05. (Taxes, shipping and handling charges apply.)

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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.



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- Get the Sharpest Detail with a Carl Zeiss® Vario-Tessar® Lens
- Quick Start-up, Super-fast Lens Pop-out and Near-instant Shutter Release Mean You Never Miss That Special Moment
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\$499⁹⁵

As low as \$13 per month!¹⁰

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- 20GB² Hard Drive Digital Music Player. Includes USB Cradle for PC Connection and Recharging (Pictured)
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- Up to 30 Hours Playback with Built-in Rechargeable Battery¹³
- Free Carrying Case (HDCASE1) with Purchase—a \$14.95 Value (while supplies last)

\$399⁹⁵

As low as \$10 per month!¹⁰

The NW-HD1 is compatible with Sony's Connect™ Online Music Store. It plays back in ATRAC3™ or ATRAC3plus™ audio format and supports the most popular Internet audio formats, including MP3, WMA and WAV.¹⁴



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- Print Images in Either 4" x 6" or 3 1/2" x 5" Sizes
- PC-free Printing with PictBridge™ Technology
- High-resolution, Photo-quality Dye Sublimation Printing

\$149⁹⁹

The super-compact DPP-FP30 digital photo printer lets you create lab-quality prints directly from your digital camera using PictBridge™ technology.



offer, if balance on these purchases is paid in full before the expiration of the 90-day promotional period 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 of 21.99% APR. For Accounts not kept current, the Default Rate of 24.99% APR will be applied to all balances on your Account. 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 Financial Services credit card. Call 1-888-367-4310 or review your cardholder agreement for information. 11. Standard ground shipping within the continental United States with purchase of eligible PC direct from Sony. Offer expires 12/31/04. See www.sonystyle.com for more information. 12. Up to 30 hours continuous playback with built-in Lithium Ion rechargeable battery fully charged when playing in ATRAC3plus format at 48Kbps. Actual battery life may vary based on usage patterns. 13. The Multifaceted Reader does not support Memory Stick media using the MagicGate function. 14. Up to 50 Sony Media Center or the ID function of Sony Media Center media copyright protection function. 15. Purchase must be made by 1/31/05. For rebate mail-in coupon, list of eligible models, and complete Terms and Conditions, please visit www.sonystyle.com. 16. Supports uncompressed files with conversion to ATRAC3 format. 17. Purchase must be made by 1/31/05. For rebate mail-in coupon, list of eligible WVA models, and Terms and Conditions, please visit www.sonystyle.com. 18. NO PURCHASE NECESSARY TO WIN AND PURCHASE WILL NOT INCREASE YOUR CHANCES OF WINNING. Sweepstakes open to legal residents of the Continental United States, excluding Florida, who are 18 or older. Void in Florida and where prohibited by law. Ends December 31, 2004. For Official Rules, free method of entry, complete list of prizes, prize descriptions and odds disclosure, visit www.sony.com/makeover. Sponsor: Sony Electronics e-Solutions Company LLC, Attn: Sweepstakes Dept., 16705 West Bernardo Drive, San Diego, CA 92127. 19. After \$129.99 mail-in rebate. Taxes, shipping and handling charges apply. Offer valid on VAIO PCs and eligible Epson printers purchased only from www.sonystyle.com between 11/1/04 and 1/31/05. For rebate mail-in coupon and Terms and Conditions, please visit www.sonystyle.com.

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The Burgundy Sony® VAIO® T150P/T Notebook PC shown on insert cover is available exclusively through SonyStyle.com.

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Forward Thinking

High-Tech Holidays

As we head into prime gift-giving season, technology products top many people's gift lists. That's good news for the industry and great news for consumers. I'm continually amazed by how far digital cameras, home printers, and notebook PCs have advanced in the past few years. In this issue, we offer lots of gift-giving ideas, from our annual holiday gift guide (page 98) and our roundup of top software in After Hours (page 184) to our latest list of Editors' Choices (page 31).

To go along with these picks, here's some advice for your holiday shopping.



Shop online. With so many products available online, it's a really easy and convenient way to work through your list.

Know the ultimate user. High-end gaming machines are perfect for people who casually toss

off phrases like "SATA hard drives" and "DirectX 9 extensions," but are not ideal for people who just want to surf the Web and do basic produc-

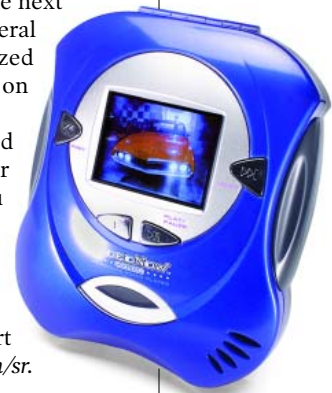
tivity tasks. Even for people who want high-end systems, big differences exist among those designed for games, digital imaging, and media center tasks.

Know which products your gift will be used with. Don't team up a great camera with a lousy printer, and don't buy Far Cry for your friend the Macintosh user.

Don't forget accessories. Webcams, fancy mice, and cool speakers can transform a humdrum computing experience.

Consider giving personalized gifts. I love gadgets as much as (well, maybe more than) the next guy, but they can be impersonal. Several Web sites let you create personalized photo albums or print your photos on clothing or bags.

Remember tech support. Price and features are important to consider when buying tech products, but you should also consider the level of support and service you'll get. This is especially important when it comes to deciding where to buy your gifts. Check out our listing of vendor support and satisfaction at <http://go.pcmag.com/sr>.



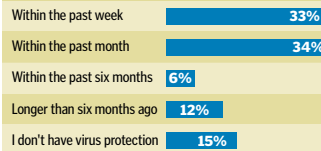
The PIC is part of AMD's effort to ensure that the Internet is available to 50 percent of the world's population by 2015.

Internet Safety Begins at Home

You know the old saying "Everyone talks about the weather, but no one does anything about it"? The same could be said for Internet security. It seems like every computer user I talk to is worried about viruses, yet a recent study indicates that most home computers are sorely lacking in even the basic protections.

According to a recent study from the National Cyber Security Alliance and America Online (available at www.staysafeonline.info), about 85 percent of all the machines surveyed in the U.S. had some form of antivirus software installed, but only about 33 percent of those systems were loaded

When was your antivirus software last updated?



Source: AOL/NCSA Online Safety Study, October 2004.

with antivirus programs updated within the past week. Another third were updated within the past month. Given the speed at which threats are proliferating these days, that's not good enough.

Spyware fared even worse. Almost 80 percent of the Internet users contacted had spyware/adware on their systems. Half of them had Alexa, which a lot of people don't consider spyware. But most of the other systems were running real adware, and 90 percent of folks didn't realize their systems were running it. Twenty-seven percent of machines ran file-sharing software, and those ma-

Forward Thinking

MICHAEL J. MILLER

chines tended to have more spyware infections than others. Spyware was just plain everywhere.

Most people indicated that they weren't even sure what a firewall was, much less how to use one properly. But the worst news: 77 percent of those surveyed thought they were either "very safe" or "somewhat safe" from online threats.

No wonder we see so many virus outbreaks. All of these unprotected machines are spreading problems

to other machines. I know that while many of you take precautionary measures, many more aren't updating Windows or their antivirus software.

So who is to blame? PC makers, Microsoft, other OS makers, ISPs, and even computer publications and Web sites need to do a better job of spreading the word about the importance of updating OS and antivirus software. And software makers need to make the process simple enough so that everyone does it.

Search: Your New User Interface

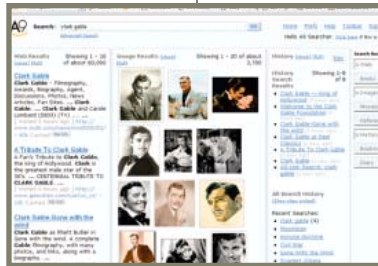
Google goes public at a huge valuation, and suddenly everyone wants to be part of the search industry. The company recently introduced Google Desktop, which does a good job of searching files on your computer's desktop. (See First Looks, page 34.) A few months back it introduced Gmail, an online e-mail service (open by invitation only) that offers a lot of storage and a clever search tool. And recently Google bought Keyhole (<http://go.pcmg.com/keyhole>), a great utility for searching digital maps.

Yahoo! recently bought the online mail service Oddpost and acquired Stata Labs, maker of the Bloomba e-mail client. Yahoo is also buying Musicmatch, the popular jukebox and music store, and has added a local and a personalized search, which lets you search a preselected set of sites you've visited.

The list goes on and on. Microsoft recently bought Lookout, an indexing tool for Microsoft Outlook, and is testing out new search algorithms. And I'm impressed with the A9 search engine, which collects into a multipane interface Google Web and image results, Amazon.com's "Search Inside!" results, movie information from the Internet Movie

Database, and reference materials from GuruNet.

The newest version of Ask Jeeves does a great job with specialized searches. Idealab, the folks behind X1 (my favorite desktop search tool), has created the Snap. And there's no shortage of good search add-ons. Lately, I've been quite impressed by blinkx, which indexes your e-mail and the files in your My Documents directory but is most notable for suggesting Web sites and files related to your search without directly searching for them.



Forget windows and pull-down menus. People just want to type in search criteria and get results. But as search tools become the new user interface of choice, privacy issues will take on renewed importance. Most worrisome, as everything you search for becomes indexed, do you really know how much information about you is being collected and what it is being used for? In most cases, it's used to create targeted ads. But when all your information is collected on a public or shared machine, data that you thought was confidential may be available to everyone. It's very important that you realize such data is being collected.

A Little Computer for the Rest of the World

One of the neatest ideas I've seen lately is AMD's new Personal Internet Communicator (PIC). It's a low-power computer with a customized version of Windows CE (see Pipeline on page 25) designed for emerging markets in China, India, and Russia. The machine is about the size of a small hardcover book. Though not particularly powerful, it is good enough for surfing the Web.

The PIC won't be available in the U.S. or in other developed markets, as most people in those regions will find it underpowered—unable to play any of today's games, for example. That's fine, because it's designed to help spread technology to people who

can't otherwise afford computing and to be so simple that it won't require a lot of support. The system has an AMD Geode GX 500 processor with 128MB of RAM and a 10GB hard drive and is not upgradable. Most likely, it will be distributed on a rental basis by ISPs and phone companies. The PIC is part of AMD's effort to ensure that the Internet is available to 50 percent of the world's population by 2015. Now that's a goal we all can find worthwhile.



MORE ON THE WEB: Join us online and make your voice heard. Talk back to Michael J. Miller in our opinions section, www.pcmag.com/miller.

TURBO DRIVE



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Learn more: xeroxscanners.com

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*AIIM E-DOC Magazine, March, 2004.



Neatened up.



Grass made greener.

Sprea



Teeth whitened.



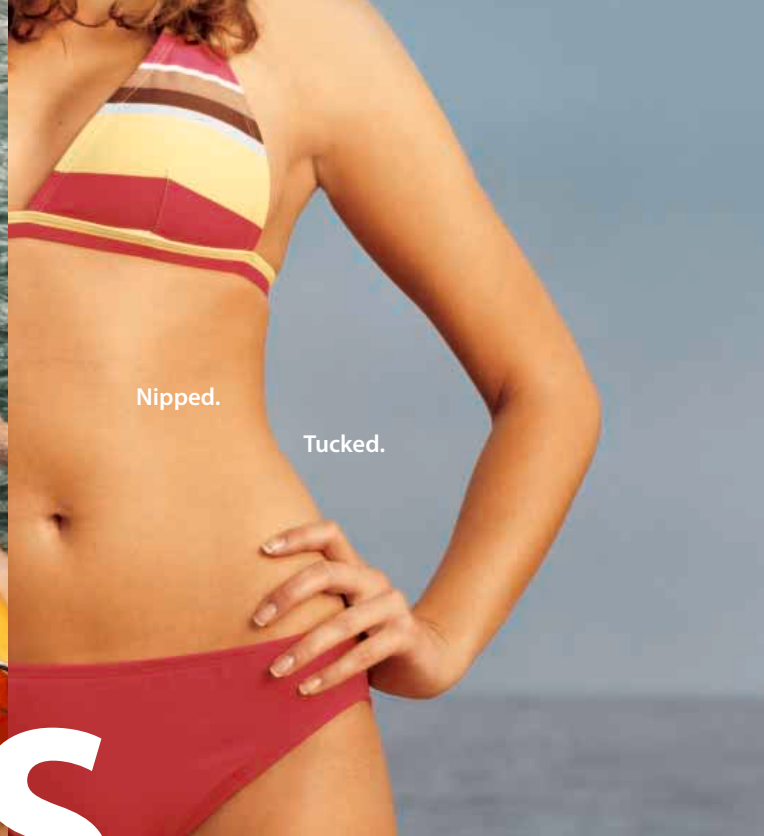
Gray skies turned blue.

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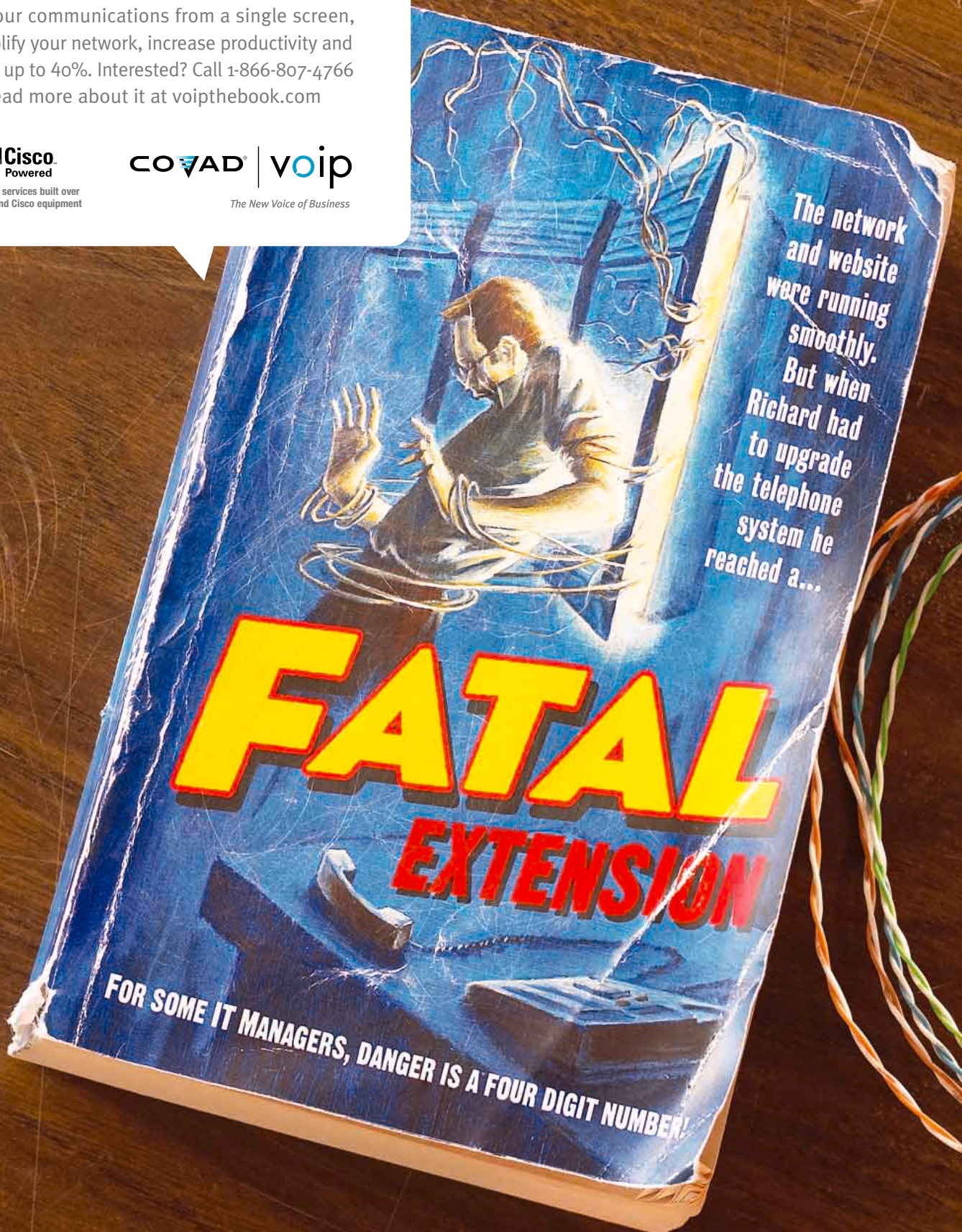
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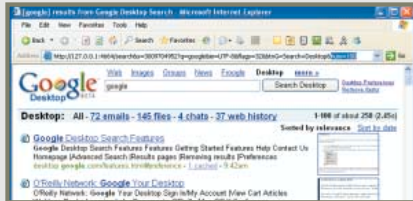
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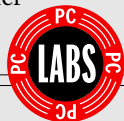
31 Editors' Choices

A comprehensive list of our current picks in nearly 100 categories.

34 First Looks



- 34 Google Desktop (beta) ▲
- 35 Lookout for Outlook 1.2.4
- 36 Falcon Northwest FragBox 2
- 38 Velocity Micro Gamer's Edge LX
- 38 Astaro Security Linux
- 40 EarthLink Toolbar
- 40 Webroot Phish Net (beta)
- 42 palmOne Tungsten T5
- 42 Curitel Identity GA-400B ▶
- 47 Apple Motion
- 47 Ulead PhotoImpact 10
- 50 Grouper Beta 1.0
- 50 ShareGear 2004
- 52 Cloudmark SpamNet 3.0
- 52 Norton AntiSpam 2005
- 54 Toshiba TDP-T91U ▶
- 54 Sharp LL-I72G
- 56 Canon CanoScan 8400F ▼
- 56 Lexmark P6250 Home Photo Center All-In-One
- 58 Ben Q DW1620
- 58 Lite-On SHOW-1633S
- 60 Memorex 16X Dual Format Double-Layer DVD Recorder
- 60 Pioneer DVR-A08XL



ALSO IN THIS ISSUE

- 69 Feedback
- 190 Backspace

COVER STORY

98

high-tech holidays



100 Road Warrior



104 Tech Kid



108 Geek Grandma



110 Early Adopter

So you know what your best friend wants for the holidays, but what about your geeky brother-in-law who lives in the basement? Or your cousin who is always bragging about the latest gadget she bought? We're here to help, with great gift ideas for the many people in your life.



116 Mom and Dad



120 Style Maven



122 Rabid Gamer



124 Person Who Has Everything

ON THE COVER

Holiday Gifts
page 98



The New Google Desktop page 34

HDTVs page 141

Desktop PC Buying Guide page 130

Solutions: Multibooting page 80

PCS

130 The Essential Buying Guide: Business Desktops

Is your business better off with managed PCs? We look at the pros and cons of this centralized approach to managing desktops and the factors to consider when buying managed PCs.



DISPLAYS

141 HDTVs: Ready for Prime Time

You may not be ready to invest in the high-priced world of HDTVs, but it's ready for you! Attractions include more prime-time programming every day and beautiful picture quality.

25 Pipeline

- 25 Has the most advanced robot of all arrived?
- 25 File sharing may not be dwindling, just hiding.
- 25 Meet the mirage display.
- 25 Is your PC as secure as you think it is?
- 26 AMD: Spreading Net access globally.
- 26 Apple takes the iPod in new directions.
- 28 **COMING ATTRACTIONS:** Creative Zen Micro, Dell W4200HD 42-inch Plasma HDTV, Niveus Summit Series Media Center PCs, hip-e node, Epson P-2000 Photo Viewer, Akimbo player and service, Half-Life 2, Nintendo DS.



80 Solutions

- 80 **Manage Multiple Operating Systems:** Have you longed to try Linux without dedicating a machine to it? Need to test software in various environments? It's easier than ever to host several OSs on a single computer.
- 86 **Hardware:** If you're bleary after a day's computing, your display is most likely a factor. The resolution of new monitors has increased faster than their display size, resulting in smaller type.
- 90 **Security Watch:** Bot worms seek to enlist your computer in "zombie armies" to serve spam, or worse. Prudence and the right firewall should give bots the boot.
- 95 **User to User:** How to keep hidden text hidden when pasting from Word into Outlook Express, record your best Karaoke efforts, and more.

Opinions

- 7 Michael J. Miller: Forward Thinking
- 71 Bill Machrone
- 73 John C. Dvorak
- 75 John C. Dvorak's Inside Track
- 77 Bill Howard

184 After Hours

- 184 **Holiday Software:** We've seen the previews and played the demos. These are our top choices for game gifts this year. We also recommend a smattering of personal software gifts for the non-gamers in your life.



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HOLIDAY SHOPPING

The holidays will be here before you know it. And we've got plenty of shopping help for you—from lists of top-rated products to daily gift ideas to online shopping tips. We've even gathered more products to add to the magazine's Gift Guide feature. (www.pcmag.com/holidaygiftguide)

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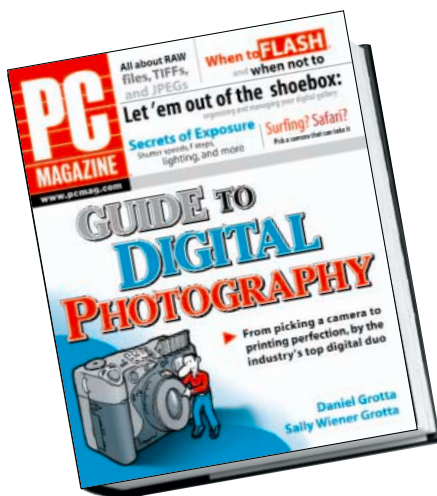
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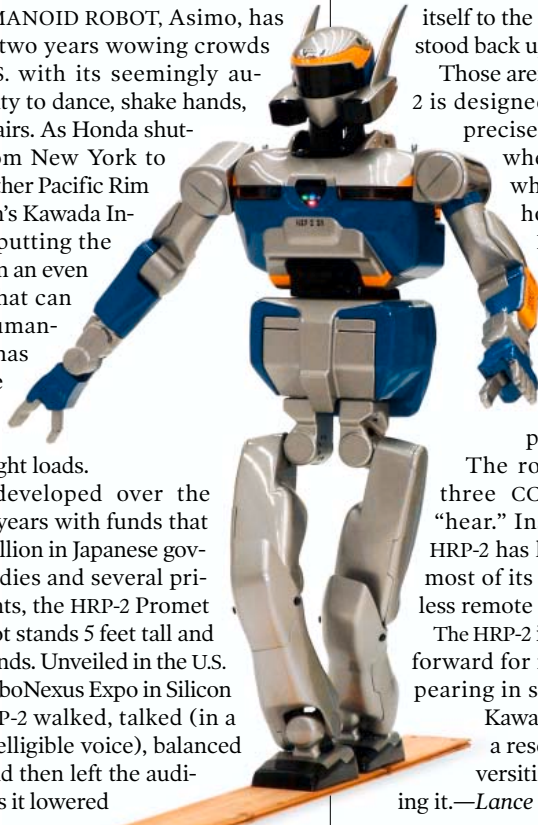
TECHNOLOGY TRENDS & NEWS ANALYSIS

Robots Take a Step Forward

One of the most capable robots yet recently visited Silicon Valley.

HONDA'S HUMANOID ROBOT, Asimo, has spent the last two years wowing crowds across the U.S. with its seemingly autonomous ability to dance, shake hands, and walk up stairs. As Honda shuttled Asimo from New York to California, another Pacific Rim company, Japan's Kawada Industries, was putting the final touches on an even larger biped that can do what no humanoid its size has done before: lie down, get up, and help a human carry light loads.

Built and developed over the course of five years with funds that include \$4.5 million in Japanese government subsidies and several private investments, the HRP-2 Promet humanoid robot stands 5 feet tall and weighs 127 pounds. Unveiled in the U.S. at October's RoboNexus Expo in Silicon Valley, the HRP-2 walked, talked (in a virtually unintelligible voice), balanced on one foot, and then left the audience stunned as it lowered



itself to the ground, lay down, and then stood back up.

Those aren't its only tricks. The HRP-2 is designed to perform a number of precise tasks that could be useful when working. The robot, which has 30 motors and houses two 1.2-GHz Linux PCs, uses its arm strength to hoist up to 20 pounds. It can even carry a large object with human help and cross one leg in front of the other to walk carefully across a narrow plank (see the photo).

The robot can "see," thanks to three CCD cameras, but cannot "hear." Instead, like the Asimo, the HRP-2 has limited autonomy and gets most of its marching orders via wireless remote control.

The HRP-2 is without a doubt a big step forward for robots, but it won't be appearing in showrooms anytime soon.

Kawada officials say that it is still a research project, with ten universities in Japan currently studying it.—Lance Ulanoff



Floating Screen

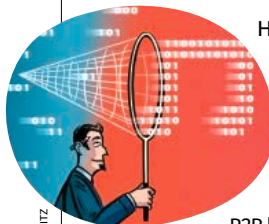
CONSIDER THE DISPLAY THAT is a mirage. Mitsubishi has announced plans to introduce the Scopo next year. This headset with an eye-sized, eye-level LCD creates the illusion that a 10-inch display is in front of the viewer. The display is not positioned directly on the user's face, so external surroundings remain visible.

Although Xybernaut and other companies have previously introduced wearable displays, the Scopo is expected to sell for about \$400, which is less than half of what most of the others cost. Also, Scopo presents no uncomfortable ergonomic problems.

In addition to the LCD headset, the Scopo comes with a belt-carried unit with a CPU to process images and video. It can be attached to a cell phone, video player, or other device.—SR

CHARGE IT Market researchers are predicting big numbers for online holiday shopping this year. eMarketer forecasts that online spending in November and December will total \$16.7 billion, up from \$12.9 billion last year, representing a rise of 29.3 percent.

Is P2P File Sharing Fading?

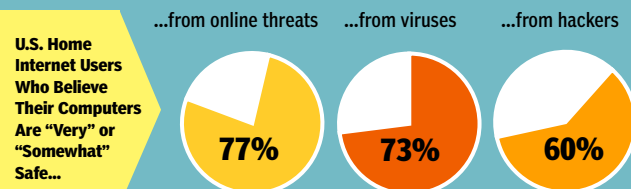


HAVE RECORDING INDUSTRY lawsuits slowed down P2P file sharing? That's the consensus from many sources, but a new study from researchers at the University of California at Riverside and the Cooperative Association for Internet Data Analysis begs to differ.

In an extensively detailed paper entitled "Is P2P Dying or Just Hiding?" the researchers report that previous studies have focused only on slowdowns at high-profile file-sharing services like Kazaa and have ignored ways that P2P network traffic is being camouflaged. P2P file sharing has never declined, concludes the report.—Sebastian Rupley

Is Your PC as Safe as You Think It Is?

Home Internet users appear to think they are safer from online threats than they actually are. But 67 percent of the very same survey respondents do not have up-to-date antivirus software, and the same number lack a firewall.



Based on surveys of 329 respondents. Source: AOL, National Cyber Security Alliance, October 2004.

Global Push

AMD IS TAKING aim at value-conscious potential Internet users in emerging markets. The company is discussing details related to its new Personal Internet Communicator (PIC) devices, which will be sold at rock-bottom prices in Russia, India, and China.

The explicit goal for the AMD PICs is to “deliver affordable, accessible Internet connectivity and computing to 50 percent of the world’s population by 2015,” according to Dan Shine, an AMD marketing director. AMD’s short version of the goal is dubbed “50-by-15,” a catchphrase coined by AMD CEO Hector Ruiz. The company estimates that 90 percent of



the world’s population does not have Internet access.

For \$249 (list), purchasers get the central PIC device—about as big as a hardcover book—a 15-inch monitor, a USB keyboard, a USB mouse, a preinstalled custom version of Microsoft Windows (based on Windows CE), and service and support.

The central PIC device consists of an AMD Geode GX 500 processor, 128MB of RAM, a 3.5-inch 10GB hard drive, a 56K modem, four USB ports, and one VGA port. Those are low-end components, and PIC devices are not upgradable.

Lease-to-buy deals could make PICs a value proposition, and they represent a pet project at AMD, reports Dan Shine. “We want to change the world,” he says.—SR

The iPod Does Photos

APPLE IS TAKING THE IPOD in new directions. At an invitation-only event in Silicon Valley in October, CEO Steve Jobs confirmed widespread rumors of a photo-ready, color, 60GB version of the digital music player. In addition to that iPod, there is a second new version.

Bono and The Edge, of U2, were on hand, because Apple also introduced a \$349 20GB version of the iPod, called the iPod U2 Special Edition, and a new form of online music distribution, which will begin with a \$149 online U2 anthology.

The new color-screen iPod (shown), dubbed the iPod Photo, is designed for portable photo archives. Jobs showed a slide of Creative’s new Portable Media Center devices and said that Apple had considered doing a portable video player too, but “these new products are wrong, and we don’t think video is where it needs to be.”

He said that the new Portable Media Centers are too large to tote around comfortably and too heavy. He also cited the fact that there are no copyright issues with photos.

iPod Photo, billed as “25,000 photos in your pocket,” comes in a 40GB version for \$499 and a 60GB version for \$599. It can play photo slide shows on a TV, with musical accompaniment. The new color display also makes calendars and games look richer.

The iPod has 65 percent of the market share among all digital music players, according to NPD researchers. Look for major competition among MP3 players in 2005, though.—SR



I GOTCHA NEC has developed a handheld Japanese/English translation device that can take spoken English sentences and play them as Japanese sentences and vice versa. The translation of a sentence typically takes about 1 second. The device has a vocabulary of several thousand words and comes with a speech recognition engine, translation software, and a voice generator. It’s shipping in Japan within the next few months, though no price has been set. Other handheld translation devices are available, but they don’t do two-way, voice-to-voice translation.

Changing Chip Architecture

REAL ESTATE AND SILICON have a common limitation: space is finite. So the more apartments—or semiconductor components—you can pile on top of one another on a single block, the greater the cost savings. That’s the idea behind the 3D chip technology from Matrix Semiconductor.

Standard integrated circuits put all the active circuitry on the silicon substrate and then add layers for the connecting wiring and insulators. Matrix’s 3D design actually piles multi-

ple layers of active memory elements on a standard silicon substrate so that active circuitry extends horizontally and vertically. What’s also different about Matrix’s approach is

that it isn’t trying to build faster, cutting-edge chips. It’s trying to save money.

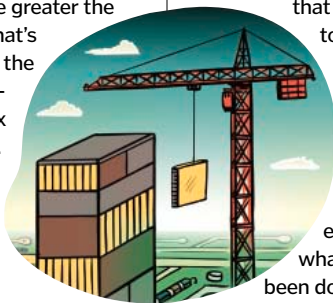
“Silicon real estate is very expensive, and what people have been doing is building ranch houses,” explains Dan Steere, vice president of marketing at Matrix. “We save money by reducing the die size

and using existing fab plants and technology in new ways.”

Matrix’s first 64MB memory chips are priced at about \$9 a unit versus about \$15 for similar flash memory products. The first Matrix memory chips are being used in the Mattel Juice Box, a portable multimedia player aimed at “tweens.”

One disadvantage of Matrix’s current 3D-memory architecture is that the chips are write-once, nonvolatile RAM. So are Nintendo game cartridges, though, and 75 million sold last year. Matrix hopes to extend its 3D technology to many different types of semiconductors.

—John R. Quain



FALSE IMAGES In the future, new laws will have to be passed to combat counterfeit reality, Gartner researchers report. Citing a fake video of a beheading in Iraq and numerous other digital forgeries, they contend that “fake reality for sale will be the norm in the next decade.”

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COMING ATTRACTIONS



Bring the Movies Home

Dell wants to move from your office and into your living room. And with products like the new **Dell W4200HD 42" Plasma HDTV**, we say come on in. This gorgeous home theater display boasts a movie-friendly 16:9 aspect ratio and excellent picture quality in a package that's only 3.3 inches thick.—*Jamie M. Bsales*
\$3,499 direct. Dell Inc., www.dell.com.

Creative Out-Colors the iPod

The tiny, stylish **Creative Zen Micro** should have your iPod Mini-toting friends multicolored with envy. After all, for the same amount of money they paid for a 4GB music player and not much else, you'll get a 5GB model that also has an FM tuner and recorder, voice recorder, swap-out battery with 12 hours of runtime, and Outlook-compatibility (to sync your calendar, to-do list, and contacts). The glowing blue backlighting is just plain cool, and the Zen Micro is available in ten different colors.—*JMB*
\$249.99 list. Creative Labs Inc., www.creative.com.



Video on Demand

You don't need digital cable to get video on demand. The **Akimbo** system puts thousands of programs at your fingertips. Simply hook up the player to your broadband Internet connection and TV and download the programs you want from the



company's growing content library. The 80GB Akimbo player holds 175 to 200 hours of programming.—*Molly K. McLaughlin*
Player, \$225 direct; subscription, \$9.95 per month, plus extra charges for premium channels. Akimbo Systems Inc., www.akimbo.com.

Two Screens Are Better

The **Nintendo DS** handheld video game system sports two LCD screens and twin surround-sound speakers. The unit also has multiplayer wireless capabilities. DS users can write and send messages to other nearby users with the included PictoChat utility. Nintendo and more than 100 companies are developing titles that will take advantage of the dual screens.—*MKM*
\$149.99 list. Nintendo, www.nintendo.com.



Finally, the Sequel

Half-Life 2, the sequel to one of the most popular PC gaming titles, has arrived. The Collector's Edition includes **Half-Life 2** in DVD-ROM format; **Half-Life: Source**; a limited-edition T-shirt; and a **Half-Life 2** strategy guide book.—*MKM*
Regular edition, \$54.99 list; Collector's Edition, \$79.99. Vivendi Universal Games Inc., www.vugames.com.



For more new products see www.pcmag.com/productbulletin

Epson's Portable Multimedia Player

Store and enjoy photos, videos, and music on the **Epson P-2000 Photo Viewer**. You can zoom in and rotate images on the spacious 3.8-inch LCD screen, and the built-in memory card slot makes for easy transfers to the unit's 40GB



hard drive. For a bigger view, connect it to a television, monitor, or projector; it can also print directly to select Epson printers. —Molly K. McLaughlin
\$499 list. Epson America Inc., www.epson.com.



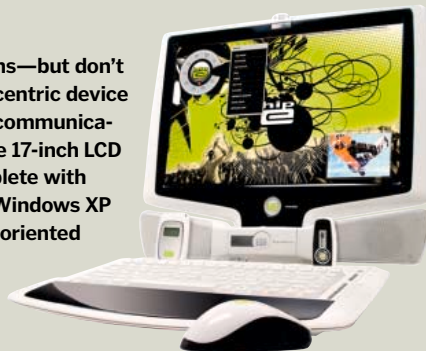
That's Entertainment

With sleek designs that you won't mind sliding into an A/V rack in your living room, the **Niveus Summit Series Media Center PCs** are evolutionary. The fanless devices stay silent while enlivening your living room with recorded TV, music, and photos. Running Windows Media Center 2005, the Summit Series devices are much more than just DVRs. Niveus even offers an HD version, as well as an optional 1-terabyte storage server you can attach to archive all your digital media. —Konstantinos Karagiannis
\$3,000 street and up. NiveusMedia Inc., www.niveusmedia.com.

Cool Enough for Teens

It's a machine for teens designed by teens—but don't call it a PC. The **hip-e node** is a lifestyle-centric device that puts kids' interests—music, video, communication—front and center. Hiding behind the 17-inch LCD screen is a full-featured computer, complete with TV tuner and DVR software. The boring Windows XP interface is hidden beneath a more task-oriented (and slicker-looking) skin. —JMB

\$1,699 list and up. Digital Lifestyles Group Inc., www.hip-e.com.



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*Vs. ordinary alkaline. Results vary by device.



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Wal-Mart Customers

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EDITORS' CHOICES

NOVEMBER 30-DECEMBER 13, 2004



In the market to buy? Here are our latest Editors' Choices in the leading technology categories—the products we've picked as the best from the hundreds that PC Magazine Labs has been testing. For links to the complete reviews, including dates of publication, visit www.pcmag.com/editorschoice.

DESKTOP PCs & SERVERS

GAMING DESKTOPS

- Falcon Northwest Mach V
- Polywell Poly 939N-FX55

MULTIMEDIA DESKTOP

- Dell Dimension 8400

MEDIA CENTER PC

- HP Media Center Photosmart PC m1050y Series

ALL-IN-ONE

- Apple iMac G5

MIDRANGE PC

- Velocity Micro Vector SX-V

SMALL-BUSINESS PC

- IBM ThinkCentre A50p

CORPORATE PC

- IBM ThinkCentre S50

ENTRY-LEVEL SERVER

- IBM eServer xSeries 306

ENTERPRISE SERVER

- Dell PowerEdge 2850



Apple iBook

PORTABLE PCs

BUSINESS NOTEBOOKS

- Acer Travelmate 8000
- HP Compaq nc6000

ULTRAPORTABLE NOTEBOOK

- IBM ThinkPad X40

MULTIMEDIA NOTEBOOKS

- HP Pavilion dv1000
- Toshiba Qosmio E15

GAMING NOTEBOOK

- Dell Inspiron XPS

VALUE NOTEBOOKS

- Apple iBook
- eMachines M5405

TABLET PCs

- Motion Computing M1400
- Toshiba Portégé M205-S809

MOBILE DEVICES

PDA's

- HP iPaq hx4700
- palmOne Zire 72

PHONE/E-MAIL DEVICE

- BlackBerry 7100t

PHONES

- Audiovox SMT 5600
- Nokia 6620

GPS DEVICES

- TomTom Bluetooth GPS Receiver
- TomTom GO

HOME ENTERTAINMENT

MEDIA HUBS

- Creative Sound Blaster Wireless (music)
- Prismiq MediaPlayer
- Turtle Beach AudioTron AT-100 (music)

DIGITAL VIDEO RECORDER

- SnapStream Beyond TV 3

HDTVs

- NEW** Pioneer Elite Pro-1110HD
- NEW** Sharp Aquos LC-37G4U

CAMERAS

ULTRACOMPACT

- Sony Cyber-shot DSC-T1
- COMPACT**
- Canon PowerShot S60
- Casio Exilim Pro EX-P600
- Kodak EasyShare LS743

SUPERZOOM

- Olympus Camedia C-765 Ultra Zoom

ENTHUSIAST

- Konica Minolta DiMage A2
- Leica Digilux 2
- Olympus C-5060 Wide Zoom
- Olympus C-8080 Wide Zoom

DIGITAL SLR

- Canon EOS 20D
- CAMCORDERS**
- Canon Optura 400
- JVC GR-D33US
- Sony DCR-DVD201 DVD Handycam



Pioneer Elite Pro-1110HD

- Sony DCR-HC40 MiniDV Handycam

DIGITAL IMAGING

FLATBED SCANNER

- NEW** Canon CanoScan 8400F

IMAGE EDITORS

- Adobe Photoshop CS (pro)
- Adobe Photoshop Elements 3.0 (consumer)

PHOTO ALBUM SOFTWARE

- Adobe Photoshop Album 2.0

PHOTO SHARING

- OurPictures
- smugmug
- PHOTO-PRINTING SERVICE**
- Shutterfly

DIGITAL AUDIO & VIDEO

VIDEO EDITORS

- Adobe Video Collection 2.5
- Pinnacle Studio Plus 9

CD-/DVD-BURNING SUITE

- Roxio Easy Media Creator 7

DVD AUTHORIZING

- Sonic MyDVD Studio 6
- Ulead DVD Workshop 2
- SLIDE SHOW CREATOR**
- Arcsoft DVD SlideShow
- PORTABLE AUDIO**
- Altec Lansing inMotion
- Apple iPod
- Apple iPod Mini
- Belkin Digital Camera Link
- Delphi XM Roady2
- iRiver H140
- Samsung Yepp YP-T5V

SOUND CARD

- Creative Sound Blaster Audigy 2 ZS



Toshiba TDP-T91U

SPEAKERS

- Creative Gigaworks S750
- Klipsch ProMedia GMX D-5.1

PC MEDIA PLAYER

- Microsoft Windows Media Player 10

MUSIC STORE

- Napster 2.0



Sharp Aquos LC-37G4U

WEBCAM

- Logitech QuickCam Pro
- MOUSE**
- Logitech MX1000 Laser

PRINTERS

PERSONAL PRINTERS

- Canon Pixma iP4000
- Lexmark C510n (color laser)
- Samsung ML-2250 (laser)

PERSONAL AIOs

- Brother MFC-3420 (ink jet)
- Brother MFC-8420 (laser)
- Canon MultiPass MP390 (ink jet)

PHOTO PRINTERS

- Canon i9900 Photo Printer
- Epson PictureMate
- Epson Stylus Pro 4000

NETWORK PRINTERS

- HP Color LaserJet 4650n
- HP LaserJet 9000dn
- Xerox Phaser 4500DT
- Xerox Phaser 7750DN

DISPLAYS & STORAGE

BUSINESS DISPLAYS

- Envision EN7220
- IBM ThinkVision C220p
- NEC MultiSync LCD1960NXi

BUSINESS PROJECTORS

- Sony VPL-CX85
- NEW** Toshiba TDP-T91U

GAMING GRAPHICS CARDS

- ASUS V9999 Ultra Deluxe
- ATI Radeon 9800 XT

MAINSTREAM GRAPHICS CARD

- PNY Verto GeForce 5700 FX Ultra

EDITORS' CHOICES

NOVEMBER 30-DECEMBER 13, 2004

DVD BURNERS

- HP DVD Movie Writer dc4000

NEW Pioneer DVR-A08

EXTERNAL DRIVES

- Transcend 1.8" Portable Hard Drive
- Western Digital Media Center
- WiebeTECH Fire800

REMOVABLE STORAGE

- Iomega Rev 35
- Buffalo LinkStation Network Storage Center

PORTABLE PHOTO STORAGE

- Micro Solutions RoadStor

PRODUCTIVITY SOFTWARE

OFFICE SUITE

- Microsoft Office 2003

OCR

- ScanSoft OmniPage Pro 14 Office

PDF CREATION

- Adobe Acrobat 6.0
- FinePrint pdfFactory PRO 1.57
- Jaws PDF Creator 3.0

DOCUMENT MANAGEMENT

- ScanSoft PaperPort Pro 9 Office

DESKTOP PUBLISHING

- Adobe InDesign CS

FINANCE & ACCOUNTING

- Microsoft Money Premium 2005
- QuickBooks Premier 2004
- QuickBooks SimpleStart

WEB SITE CREATION

- NeoVerve StoreSense

WEB RESEARCH

- Amplify
- enLightner Retriever
- Onfolio Professional

MEDIA CREATION SUITE

- Roxio Easy Media Creator 7

E-MAIL CLIENT

- Microsoft Outlook 2003

VIDEOCONFERENCING

- SightSpeed Video Messenger
- VidiTel

WEB COLLABORATION

- Intranets.com

FILE SHARING

NEW Grouper 1.0

DATABASE

- FileMaker Pro 7

BLOG/WIKI TOOLS

- EditMe
- Socialtext Workplace 1.0
- TypePad

UTILITIES

ANTIVIRUS

- Norton AntiVirus 2005

FIREWALLS

- Norton Personal Firewall 2005
- ZoneAlarm Pro 5

SECURITY SUITES

- Norton Internet Security 2005
- ZoneAlarm Security Suite 5

ANTISPYWARE

- Ad-Aware SE Plus 1.0.2
- SpySweeper 3.0

ANTISPAM

- NEW** Cloudmark SpamNet 3.0
- MailFrontier Desktop 4.0
- Qurb 2.0

POP-UP BLOCKER

- PopUp Cop

INSTANT MESSAGING

- MSN Messenger 6.1

FILTERING/MONITORING

- Cybersitter 9.0
- Spector Pro 5.0
- The Children's Internet

ANONYMIZER

- GhostSurf 2005 Platinum

FILE COMPRESSION

- PKZip 8.0 for Windows
- StuftIt Deluxe 8.0

BACKUP

- iBackup
- Retrospect Pro 6.5

ROLLBACK

- Norton GoBack 3.0

DISK IMAGING

- Symantec Ghost 9.0

PARTITIONING

- Norton PartitionMagic 8.01

DEFRAGGERS

- Diskeeper 8.0 Pro

REMOTE ACCESS

- LapLink Everywhere 3.0

FILE MANAGER

- Novatix ExplorerPlus 6.1

MIGRATION

- Alohobob PC Relocator

- Ultra Control

- Desktop DNA Pro 4.7

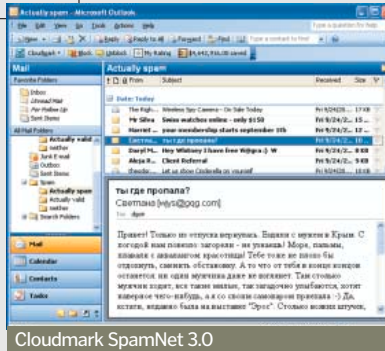
- Dogpile

- Google Toolbar

- Object Desktop 2004

- DownloadManager

- DownloadStudio 1.0



SCREEN CAPTURE

- SnagIt 7.0.3

FILE VIEWER

- IrfanView 3.85

VIRTUAL PC

- VMware Workstation 4.5

PASSWORD MANAGER

- AccountLogon 2.5

ENTERPRISE SOFTWARE & DEVELOPMENT

NETWORK ANTIVIRUS

- Trend Micro Enterprise Protection Strategy

ENTERPRISE ANTISPAM

- Postini Perimeter Manager

E-MAIL SERVER PLATFORM

- IBM Lotus Notes and Domino 6.5

WIRELESS PLATFORM

- GoodLink 3.0

WEB FILTERING

- Websense Enterprise 5.1

CRM

- salesforce.com Enterprise Edition

DATABASE

- Oracle 9i Database

WEB CONFERENCING

- WebEx Meeting Center

ENTERPRISE DEVELOPMENT

- Borland JBuilder 2005

- IBM WebSphere Studio

- Device Developer 5.6

- SQL Anywhere Studio 9

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NETWORKING

SERVER OS

- Microsoft Windows Server 2003 Enterprise Edition

WIRELESS INFRASTRUCTURE

- Cisco Aironet 1200
- D-Link DCS-5300G 802.11g Internet Camera
- Hawking HWPS12UG
- Linksys Wireless-G WRT54GS (802.11g)
- Netgear ProSafe-FWAG114
- 3Com Office Connect Wireless 54Mbps 11g Travel Router

SECURITY APPLIANCE

- ServGate EdgeForce

SECURITY SOFTWARE

- NEW** Astaro Security Linux 5
- Remote-Access Appliance
- Neoteris Access 1000

GEAR & GAMES

HOME AUTOMATION

- X10 ActiveHome Professional

SIMULATION

- Microsoft Flight Simulator 2004

- The Sims 2

ACTION/COMBAT

- Battlefield Vietnam

- Far Cry

- Halo: Combat Evolved

- Orbz 2

- Savage: The Battle for Newerth

SPORTS

- Madden NFL 2005

REAL-TIME STRATEGY

- Rise of Nations: Thrones and Patriots

VIRTUAL WORLD

- Second Life

ONLINE GAME

- EverQuest: Evolution

MOBILE GAME

- Bejeweled

EDUCATION

- eMedia Beginner Guitar Method 3.0

- Math Mission: The Race to Spectacle City Arcade, The Amazing Arcade Adventure

- VTech V.Smile Learning System, Smartbridge Library

- Zoombinis Island Odyssey

REFERENCE & HOBBIES

- Coin Collector's Assistant Plus

- Microsoft Encarta Reference Library 2005

- Sonicfire Pro 3.2

- Visual Thesaurus

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Compose emails with built-in QWERTY keyboard



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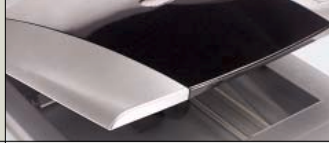
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FIRST

HANDS-ON TESTING OF NEW PRODUCTS • www.pcmag.com/first looks

- 36 Falcon Northwest FragBox 2
- 38 Velocity Micro Gamer's Edge LX
- 38 Astaro Security Linux
- 40 EarthLink Toolbar
- 40 Webroot Phish Net (beta)

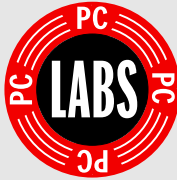


- 42 palmOne Tungsten T5
- 42 Curitel Identity GA-400B
- 42 AT&T Wireless Ogo
- 42 Siemens CF62T
- 42 Samsung SGH-D415

- 42 PocketMac for BlackBerry
- 47 Apple Motion
- 47 Ulead PhotoImpact 10
- 50 Grouper Beta 1.0, ShareGear 2004
- 52 Cloudmark SpamNet 3.0

Web Searching Goes Local

THE MAGAZINE
WORLD'S LARGEST
COMPUTER-TESTING
FACILITY



BY NEIL J. RUBENKING

We all know how to search the Web. Sometimes, though, what we seek is closer, buried somewhere on our own PCs. Other times, we don't remember where we saw a tidbit of information, but we know it's lurking somewhere. Web search megaplayers Google and MSN have set their sights on handling local search, Google by extending its indexing to the desktop and MSN by acquiring Lookout Software and its search technology.

Google Desktop is a natural extension of Google.com's Internet search engine, so it will appeal to Google fans everywhere. Automatic indexing of the sites you visit is a bonus, as is its cache of previous document versions. Lookout will naturally appeal to those who rely heavily on Outlook. It also has the advantage of powerful field-based search options that permit detailed queries, and unlike other tools such as X1 Search 3.0 (First Looks, May 18), Lookout integrates directly into Outlook.

Which should you choose? Both products are still in development, but both "public betas" are free to use and well worth a look. So give both a spin.

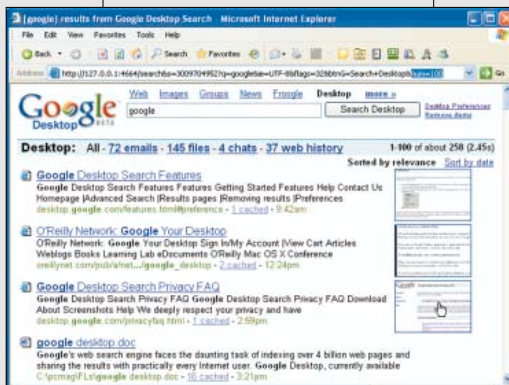
Google Desktop (beta)

Google's search engine faces the daunting task of indexing over 4 billion Web pages and sharing the results with practically every Internet user. Google Desktop has a much easier job: It indexes your local data to provide fast Google-

style local searching.

Immediately after you install Google Desktop and set initial preferences, it begins indexing existing files on all local drives and mapped network drives. Google Desktop can index Word, Excel, PowerPoint, and text documents. For certain other file types (for example, images and MP3 files) it indexes the filename only. It doesn't index PDF file contents and won't peek inside ZIP archives.

The product also tracks and indexes Outlook or Outlook Express e-mail messages, AIM conversations, and Web history. That Web history includes your actual IE history and Favorites lists, as well as all sites you visit while Google Desktop is running. You can optionally direct it not to save secure (https://) sites. And you can



GOOGLE DESKTOP lists search results much like Google.com does, with a snippet from each found item.

suppress indexing of particular drives or folders.

On our test system, indexing around 4,500 messages and 10,000 files took about 2 hours, and the index occupied 100MB on the hard drive. We would have liked to see a progress bar or other indication of remaining indexing time. The index is completely local; nothing at all goes out to Google without your permission. With your consent, it will share nonper-

sonal information, like how many searches you've made and how long they took.

Searching is just like using Google online, with a few exceptions. You can use quoted strings or combine terms with OR, and you can prefix a term with a minus sign to choose results not containing that term. You can use the "site:" or "filetype:" prefixes to choose results from a specific Web site or of a specific file type. Google.com supports word stemming and whole-word wildcards; Google Desktop does not. And you can't search a specific field, like the

To/From fields in e-mail messages.

By default, the newest results appear first; you can choose to sort by relevance instead. Results come ten to a page, and there is no preference setting for more, but you can get around that: Add "&num=100" (no quotes) to the URL after the initial search and click Go.

Each result includes a short snippet of content showing the keywords, just like the results at Google.com. For each result type, Google Desktop displays links to appropriate actions. Clicking on a found document opens it. You can expand e-mail conversations to view all messages and can Reply or Forward with a single click. IM conversations include a link to send an instant message. And Web history items include a URL link as well

LOOKS

WHAT THE RATINGS MEAN: ●●●●● EXCELLENT | ●●●●○ VERY GOOD | ●●●○○ GOOD | ●●○○○ FAIR | ●○○○○ POOR

- 52 Norton AntiSpam 2005
- 54 Toshiba TDP-T91U, Sharp LL-172G
- 54 Dell 2300MP, HP mp3130
- 54 IBM M400 Projector
- 56 Canon CanoScan 8400F



- 56 Lexmark P6250 Home Photo Center All-In-One
- 56 Brother QL-500 PC Label Printer
- 56 HP LaserJet 2420dn, Tally 8016
- 58 BenQ DW1620

- 58 Lite-On SOHW-1633S
- 60 Memorex 16X Dual Format Double-Layer DVD Recorder
- 60 Pioneer DVR-A08XL
- RED denotes Editors' Choice.

as (in most cases) a thumbnail of the page.

Google Desktop not only indexes documents, it caches file content each time you save the file. A search that turns up a DOC file can include links to many cached versions, allowing you to go back to an earlier version. Deleting a file doesn't remove it from the cache. On one hand, that means you may be able to recover a deleted

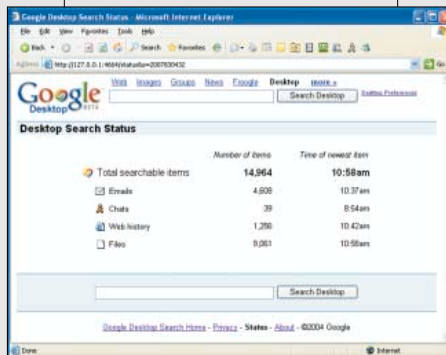
file. On the other hand, the index grows indefinitely, and the only way to renew it totally is to uninstall and reinstall Google Desktop. Note, too, that it doesn't index the entirety of very long documents.

When you make an ordinary Web search at Google.com, Google Desktop gets a chance to run the same search locally. Its local results appear at the top of the results page flagged with a Google Desktop icon. These results don't go through Google.com, and you can click on a link to hide them from nosy coworkers.

If you rely on Google for Web searching, Google Desktop will be your new best friend. It indexes local files and e-mails, logs and indexes your AIM chats and visited Web pages, and can even recover content from deleted or modified documents. It does not, however, provide the detailed field-based search available in Lookout for Outlook.

Google Desktop (beta)

Free. Google, www.desktop.google.com.



GOOGLE DESKTOP'S STATUS page reports just how many items of each type it has indexed, as well as when the most recent was added.

Lookout for Outlook 1.2.4

Lookout for Outlook replaces Outlook's so-called "Advanced Find" with a truly advanced search facility. This past summer Microsoft bought Lookout Software with an eye to incorporating its technology in MSN Search. At that time they cut off new downloads of Lookout. Re-

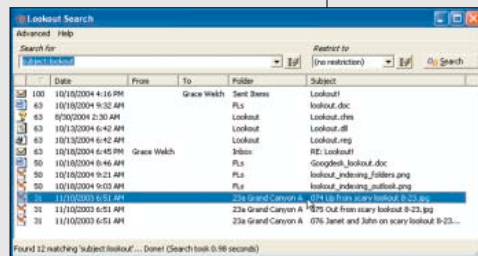
indexed accurately because, as the company admits, "the Lookout parser is primitive." Despite this disclaimer, we found the parser effective at locating files based on their content.

The initial indexing pass for our 4,500 Outlook e-mails did not take long—less than 10 minutes—and Lookout dis-

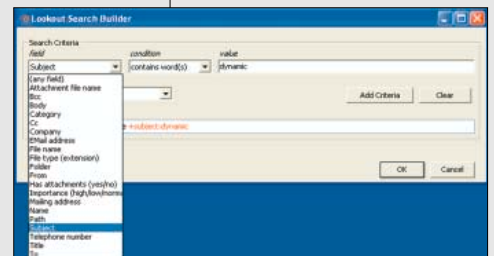
name. Like Google Desktop, it supports phrase search and exclusion of specific terms. Unlike Google, it supports word stemming and allows wildcards; the question mark represents any character and the asterisk represents any string of characters at the start or end of a search term. It can also search for pairs of words near each other or for words that are similar to the search term.

You can specify fields and other criteria by typing them in or use the handy Search Builder. You can even give particular keywords more weight than others. For example, "mars venus^5" (no quotes) would search on the keywords Mars and Venus but give Venus five times the emphasis in determining relevance. Slick, and powerful.

Lookout in its current incarnation is a handy tool for finding



LOOKOUT FOR OUTLOOK'S simple results page (left) lists all found items. The Search Builder makes it easy to compose complex queries based on 20 different data fields.



cently Microsoft has relented, allowing Lookout Software to offer the work-in-progress product for download. Two versions are available, a "stable" version and an "experimental" version with more features. We looked at the latter.

Where Google Desktop gives equal emphasis to files,

played its progress clearly. But when we reconfigured the product to index all the files on drive C:, Lookout took more than 12 hours.

When it comes to searching e-mail, Lookout really shines. You can search in any of 20 fields including To, From, Subject, and even Attachment File-

messages, contacts, and appointments in Outlook. It may not be quite as fast as competing utilities such as X1 Search (First Looks, May 18), but it has more search options and is conveniently integrated with Outlook.

Lookout for Outlook 1.2.4

Free. Lookout Software LLC, www.lookoutsoft.com. ●●●●○

Intel Bumps up P4 Extreme Edition

BY JOEL SANTO DOMINGO

While the rest of us muddle through with regular Pentium 4 CPUs in our PCs, high-end users (typical gamers) can make another choice: the Intel Pentium 4 Extreme Edition (P4EE).

Intel has just increased the speed on the P4EE from 3.4 GHz to 3.466 GHz. That small speed bump is just part of the story, though. The chip's front-side bus (FSB) speed has jumped from 800 MHz to 1,066 MHz. The new P4EE is still based on the older Northwood core (as opposed to the Prescott core of the "regular" Pentium 4 5xx series) and carries over the 2MB of on-board L3 cache.

The P4EE announcement is paired with the introduction of the new 925XE Express chipset, which is similar to the 925X chipset but adds an auto-switching 800/1,066-MHz FSB. With Intel's announcement that R&D efforts at the company will switch from working on the 4-GHz P4 to dual-core processors, the company's move to a 1,066-MHz FSB is a way of continuing to increase performance incrementally while keeping the chip and chipset architecture relatively unchanged. It also lays the groundwork for future versions of the Pentium 4 processor before the inevitable switch to dual-core technology.

We took a look at a couple of new 3.466-GHz P4EE-powered systems, from Falcon Northwest and Velocity Micro, to see how the new chip compares. The verdict: Although the upgraded P4EE is a very good performer, the machines built around it were edged out on almost all of our tests by the Polywell Poly 939N-FX55 with its AMD Athlon FX-55 proces-

sor. Given that the Intel part costs system-makers \$999 each, compared with \$827 for the AMD high-end offering, we're not sure how well the new Extreme Edition will ultimately fare in the market.

Falcon Northwest FragBox 2

Falcon Northwest's FragBox and FragBox Pro were excellent small gaming boxes, and the newest version is an improvement over



THE LUGGABLE
FragBox 2 has room for the latest hardware.

them. The FragBox 2 is two inches wider and deeper than the older FragBox Pro (First Looks, May 4), but it's the same height. The extra space gives Falcon Northwest room to put in the latest nVidia GeForce 6800 Ultra graphics card and give it a little extra breathing space, along with the 520-watt power supply needed for the newest Pentium 4 Extreme Edition CPU, PCIe graphics, and dual 300GB drives.

The FragBox 2 is housed in a sleek "shoebox" case, with a handle on top. The distinctive handle makes it easy to carry the FragBox from your car (or dorm room) to where they're setting up the gaming LAN.

The chassis has windowed panels, showing off the GeForce 6800 Ultra with its distinctive heat sink and fan. You can see the extra space in the new chassis: The previous FragBox had to use a special version of the GeForce FX 5950,

and even that filled the side of the case. The FragBox 2 chassis has more room—enough, even, for another PCI card.

To address customers' concerns, Falcon Northwest has made the FragBox 2 much more customizable than the original FragBox and FragBox Pro: There are now several choices for hard drives and graphics cards, including the mainstream GeForce 6600 GT and lower-priced versions of the GeForce 6800.

With this kind of power, the FragBox 2 is not just about gaming: Configured with two 300GB drives and FireWire ports, it would make a great TV-van PC or transportable video-editing station. The 600GB of hard drive space lets you fit a staggering amount of data or multimedia files (say, 150,000 songs or 140 feature-length films) into a small package. Add in the 20-inch (1,600-by-1,200) NEC monitor included in our bundle, and the FragBox 2 is a tempting sight.

The FragBox 2 isn't the fastest PC we've tested to date, but it's close. Its SYSmark 2004 score of 222 places it among the highest of the high, only a half dozen points behind the top-scoring (and full-size) Velocity Micro Gamer's Edge LX. As a gaming box, the FragBox 2 earns its stripes: It delivered rock-steady images and high frame rates on our Halo and Doom 3 tests.

At almost \$6,000 as tested, the FragBox 2 does cost a pretty penny. While the 300GB hard drives (\$600 upgrade), 20-inch LCD (about \$950), and GeForce 6800 Ultra graphics card (\$450 upgrade) certainly contribute to that price, the 3.466-GHz P4EE chip adds a significant \$1,300 to the system's cost. But if you want this level of performance in a shoe-

box-sized package, give the FragBox 2 a serious look.

Falcon Northwest FragBox 2

With 3.466-GHz Intel Pentium 4 Extreme Edition, 1GB 667-MHz DDR 2 SDRAM, two 300GB SATA hard drives (RAID Level 0), nVidia GeForce 6800 Ultra graphics, DVD±RW drive, 20-inch LCD, Klipsch 5.1 Ultra speakers, Microsoft Windows XP Professional, \$5,995 direct. Falcon Northwest, www.falcon-nw.com.

OVERALL ●●●●○ Music: 80 (out of 100); Photos: 80; Video: 80; Gaming: 100

Velocity Micro Gamer's Edge LX

We challenged Velocity Micro to send us a system that showcased Intel's latest Pentium 4 Extreme Edition chip, and the company didn't disappoint us. The Gamer's Edge LX is a bit pricey, but we can see where those dollars went: performance and an aggressive (but not overly flashy) setup.

The Gamer's Edge LX comes in Velocity Micro's new Signature case: spacious, with decent airflow. The windowed case shows the company's attention to craftsmanship. The internal cables are



UNDER- STATED

good looks set the Gamer's Edge LX apart from other PCs.

carefully tie-wrapped and routed. The arrowhead logo (evoking an old-school Asteroids ship) is fitting on this gaming PC. The arrowhead cutout is functional, too: It feeds air to

LG FLATRON LCDs. Available in LG, XLG and XXLG.



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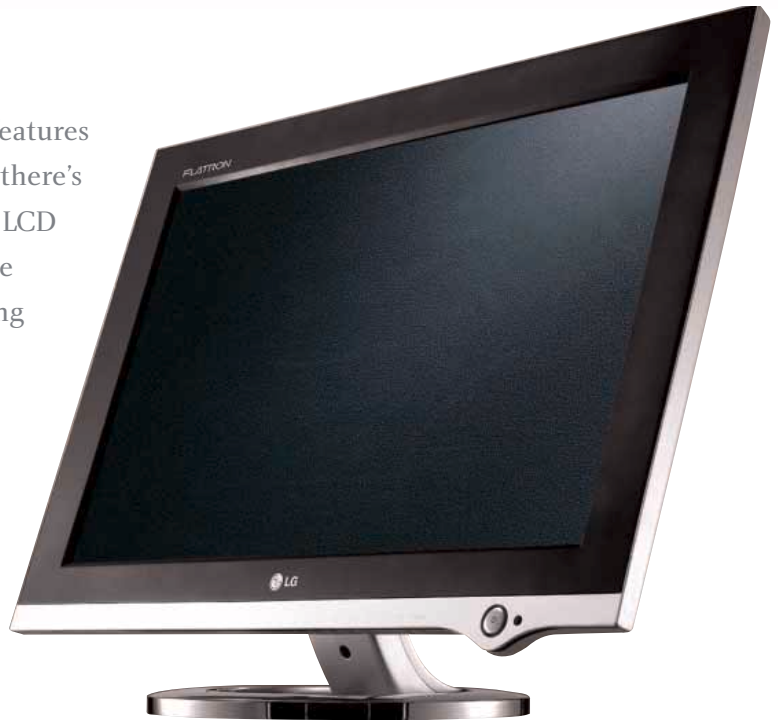
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Working inside the chassis is a breeze, but if you prefer not to get your hands dirty during future upgrades, you can send the tower back to Velocity and the company's techs will handle it all (the service cost is \$99 plus parts and shipping). The techs will even rebuild the system with patches and drivers (if requested) and burn you a new set of recovery DVDs.

As expected, the PC is chock-full of gaming goodies. The windowed case shows off the graphics card and heat-sink-topped CPU, which contribute to the system's gaming perfor-

mance (and its price). The Sharp 19-inch display with 16-ms pixel-response rate helps keep smearing to a minimum. And the black-wired optical mouse and Microsoft multimedia keyboard help the gamer look the part.

The 16X dual-layer Lite-On DVD±RW drive is perfect for backing up video files and anything else that collects on the almost 400GB of disk space. The 7-in-1 media card reader built into the floppy disk drive makes the system a good digital-photo station. If you're sticking your gaming PC in a room away from your DSL or cable modem, note that the Gamer's

Edge comes with a built-in 802.11g wireless adapter.

Naturally, the Gamer's Edge LX is a whiz at everyday tasks. It scored 228 overall on BAPCo's SYSmark 2004 benchmark test suite, the highest score we've seen so far. The 10,000-rpm drives in a RAID 0 array no doubt helped. On gaming tests, the PC proved its worth: The nVidia GeForce 6800 Ultra card helped the system deliver rock-steady frame rates in Halo (both resolutions) and in Doom 3 at the 1,024-by-768 resolution. At the higher 1,600-by-1,200 resolution (high quality), the Gamer's Edge scored a 40-fps rate on Doom 3,

which means that although it's playable, the system may "stutter" occasionally.

Though there are less expensive high-end systems out there, the Gamer's Edge LX provides a good balance between all-out performance and flash.

Velocity Micro Gamer's Edge LX

With 3.466-GHz Intel Pentium 4 Extreme Edition, 1GB 533-MHz DDR 2 SDRAM, dual 74GB 10,000-rpm SATA hard drives (RAID Level 0), 250GB SATA drive, nVidia GeForce 6800 Ultra graphics, dual-layer 16X DVD±RW drive, DVD-ROM/CD-RW drive, Creative Labs Sound Blaster Audigy 2 ZS sound card, Creative Labs Gigaworks S750 7.1 speakers, Microsoft Windows XP Professional, \$4,985 direct. Velocity Micro Inc., www.velocitymicro.com. OVERALL ●●●●● Music: 95 (out of 100); Photos: 95; Video: 95; Gaming: 100

Astaro Delivers Business Security Software

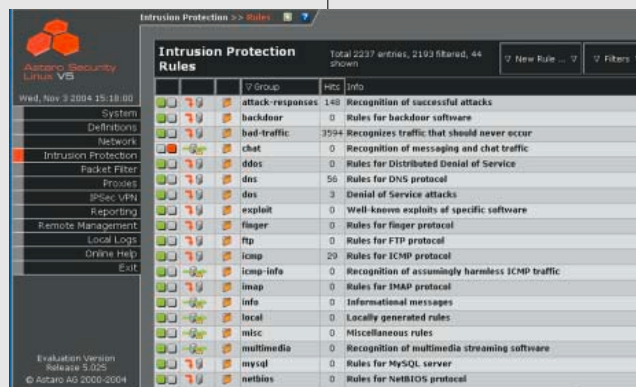
BY OLIVER KAVEN



The new **Astaro Security Linux 5** (ASL) is an all-in-one software-based security solution that should appeal to small businesses and large companies alike. Built on a mix of open-source and commercial components, the suite delivers a remarkably complete array of security applications in one package that will run on very modest hardware.

Version 5 is composed of six network components: anti-virus, antispam protection, content filtering, firewall, intrusion protection, and a VPN gateway. Kaspersky Labs provides Astaro with the antivirus engine, and Cobion (now owned by ISS) contributes the content-filtering solution. Both are solid choices, in our opinion.

ASL's price is extremely competitive: \$1,460 for ten users. (And note that a single-user version is available for just \$59 per year.) Even better, hardware requirements for running the solution are quite modest (400-MHz Pentium II CPU, 256MB of RAM, 5GB hard drive), meaning that most businesses will be able to press an older



ASTARO PROVIDES A HOST of intrusion detection rules that are grouped by network service.

PC into service as the security server. Of course, we recommend running the system on the fastest PC you can afford to ensure good performance.

Installation is easy, especially if you follow the excellent documentation. After initial setup, administrators use a secure browser connection to access the Web-based management interface. This interface is among the best we have ever encountered: It's extraordinarily intuitive and provides excellent built-in help. Administrators can also access ASL through a local command line or SSH (Secure Shell). Those

administrators responsible for large installations will be extremely impressed with the system's logging and reporting sections, which can be easily queried, sorted, and searched. Two add-ons, Astaro Report Manager Enterprise Edition and CM (Configuration Manager), will also be of great interest to enterprise customers.

It is hard to even scratch the surface of all the features ASL includes. The full-featured firewall supports NAT, IP masquerading, and load balancing. It also provides intrusion detection that lets you block suspect traffic. We liked the way the

2,000 rules were grouped in service categories, and that administrators can actually observe which rules are being triggered by particular violations—very helpful in troubleshooting bad traffic. ASL includes several proxy servers, such as an HTTP cache proxy, SOCKS proxy, and SMTP relay with antispam and AV, to name just a few. In addition, ASL is a fully featured VPN endpoint that allows for more in-depth configuration than we have seen in any other product.

Remote management and user authentication against RADIUS, SAM, AD, or LDAP are all further indications that Astaro Security Linux is an extremely well-rounded, capable, and powerful product. We were extremely pleased with the product's performance and liked the fact that everything is completely locked down—not even outgoing traffic is allowed by default. Any administrator contemplating the rollout of a security appliance should check out ASL.

Astaro Security Linux

\$1,460 direct for all available modules with 10-user license. Astaro Corp., www.astaro.com. ●●●●●

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APPLICATIONS - AUTHENTICATION - REMOTE ACCESS - ANTI-PIRACY - LICENSE MANAGEMENT - VPN/SSL

Stymie the Scammers with Antiphishing Apps

BY KONSTANTINOS KARAGIANNIS

Most spam is harmful only to your sanity. Phishing scams, on the other hand, are a newer threat that aim to get juicy info from the unsuspecting.

It all starts with an e-mail claiming to be from a bank or some other trusted institution (eBay, PayPal, and so on) that needs you to update your account information. You click a legitimate-looking link and are taken to a legitimate-looking Web site. You then pass over your

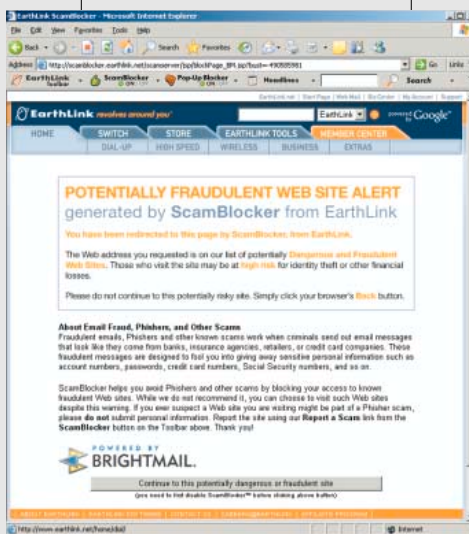
private information to a legitimately skilled miscreant. Two new tools, from EarthLink and Webroot, want to protect against the craftier scam sites.

To test the apps, we hit them with 16 preselected scam e-mails. In addition, we tried them both with phishes that came in during the test period. Neither proved perfect, although EarthLink's offering is more effective and easier to live with.

EarthLink Toolbar

With an "if you can't beat 'em, join 'em" philosophy, the EarthLink Toolbar features a Google query box. EarthLink has also added a pop-up blocker, which nicely complements the one built into Windows XP SP2. The Googlesque features give EarthLink Toolbar a reason for existing. The built-in ScamBlocker tool is all gravy: A good enough way to prevent phishing, it does not cost a thing and (thankfully) doesn't add yet another toolbar to Internet Explorer.

EarthLink Toolbar uses a blacklist to recognize if a clicked link points to a known scam site. If a site is blacklisted, EarthLink Toolbar takes you to a warning



NOT SO FAST. EarthLink Toolbar keeps users from going to a scam site that's out to grab financial or personal information.

Web page (complete with flashing text). This approach is perfect for users quick to ignore pop-up dialog boxes. You can still go on to the scam site if you want, but you can't say you weren't warned. On our tests, EarthLink recognized all of the 16 preselected e-mails, but it failed to catch one of the new ones that came in.

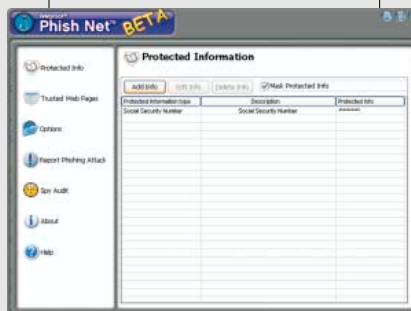
To make up for the lack of real-time analysis (which allows an occasional new phishing site to load), EarthLink Toolbar tells you when a site is safe or is considered neutral. Here, the product needs more work. A few really obvious sites (like Google) show a green thumb-up sign in the ScamBlocker box in Toolbar. Sites like pcmag.com, however, show up as neutral (thanks). The problem: The frequency with which this warning appears during browsing may quickly numb users to this digital form of crying wolf.

EarthLink Toolbar
Free download. EarthLink Inc., www.earthlink.net/earthlinktoolbar.
●●●●●

Webroot Phish Net

While claiming to rely on blacklists, Webroot Phish Net (which we tested in late beta) manages to bring something different to antiphishing. The program runs in the system tray, keeping an active record of the types of information you wouldn't want to send out to an untrusted site. While it looks a little like the company's excellent Spy Sweeper (our Editors' Choice among antispyware utilities; First Looks, September 7), the application doesn't run in quite the same autopilot manner.

Setup requires entry of some of the digits of all your household credit card numbers, other financial accounts, and personal data, such as social security numbers. You then add a list of known,



IF YOU LIKE filling out forms, Webroot Phish Net might work for you—because it won't work without setup and continual tweaking.

trusted sites, such as your bank's log-on screen. You can add sites as you browse to them. Unfortunately, we didn't find a single scam site, old or new, that Phish Net's blacklists prevented us from browsing to. For this reason, you'll want to be careful during setup, as your lists are your primary line of defense.

Whenever you visit a site

and try to type in a preconfigured protected piece of information, such as a credit card, Phish Net will block transmission when you click to submit. A pop-up warns you about the site, saying that it's not on your list of trusted sites, and shows any URL redirects involved in the transmission of your data. We could see how our selected scam sites worked but aren't sure that the URL tricks would register with the average user. As with EarthLink, you have the option to ignore the warning and transmit anyway.

There are a few serious security problems with Phish Net's approach. For one, you actually are allowed to visit many sites and start entering data. What's to stop a malicious hacker from creating a Send button that really behaves like a malicious URL, possibly dropping some code on your system?

Phish Net also suffers from a form of the crying-wolf problem. If you add, say, only three trusted sites to Phish Net, you or someone else in the house might get tired of constantly seeing the warnings and begin to take them too lightly.

Most serious, however, is the shortcoming in the setup box that doesn't ask you to protect your username and password for sites. We were able to go to a bogus PayPal "confirmation" site and

enter an e-mail/username along with a password. Phish Net gave us only the standard dialog box, which states that the site is not on our trusted list. Phish Net is still in beta, though, and we hope that the final version will correct some of these shortcomings.

Webroot Phish Net (beta)
Free download. Webroot Software Inc., www.webroot.com. Not rated.

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Solid Tungsten T5 Could Be Better

BY SASCHA SEGAN

The new palmOne flagship business PDA, the **Tungsten T5**, may be the ultimate digital wallet: It has a massive 256MB of memory for all your photos, music, and documents. It also includes an innovative new USB drive mode that lets you access your data using any PC—no rivers required. But for \$399 (list), where's the Wi-Fi?

The 5.1-ounce T5 is swift and snappy, with a solid stylus and a gorgeous 320-by-480 color screen. And for once, you don't have to worry about running down the battery: The T5 stores its databases in non-perishable flash memory, which doesn't evaporate when your



battery dies. In our testing, the T5 lasted 5 hours on a charge.

The software, Palm Desktop, looks better than ever for PIM use. And DocumentsToGo 7 (now integrated into Palm Desktop) is far better than the options available on PocketPCs for reading Word, Excel, and PowerPoint documents.

The flash drive mode is downright neat. We plugged the T5 into the USB ports of a range of Windows XP and 2000 PCs, and it popped up in My Computer as a disk drive without any drivers necessary.

Video support could be better. The T5 has plenty of juice for full-screen video, but

THE TUNGSTEN
T5 is a good PDA but not a standout.

Windows Media files played in palmOne's Media application often appeared slow and jerky. MPEG-1 files fared better, though we were disappointed by the Media app's lack of a full-screen mode. Third-party solutions are available for playing smooth, fast video on the T5, but none are as easy to use as Windows Media Player 10 on PocketPCs. Music playback relies on RealPlayer, which works only with MP3 files. (PocketTunes, a program you can buy separately, handles unprotected WMAs.)

The nice-size screen and USB drive mode make the T5 a good device for anyone who wants to read and tote around big documents. But the Dell Axim X50 offers superior connectivity and multimedia performance for the same price.

palmOne Tungsten T5
\$399 direct. palmOne Inc., www.palmone.com. ●●●○○

AT&T Wireless Ogo

Pros: Inexpensive instant messaging/e-mail device. Good keyboard.

Cons: No phone capabilities, meaning that most users will wind up carrying two devices. Screen image ghosting problem. Short battery life.

Bottom line: The Ogo is a dandy little IM device aimed at the teen market. But it's a big headache for e-mail junkies who receive long or frequent messages.

\$129.99 direct. AT&T Wireless, www.attws.com. ●●○○○



Siemens CF62T

Pros: Fun design. Good speakerphone. Excellent battery life.

Cons: Annoying keypad.

Bottom Line: A decent basic phone, but a little pricey for what you get.

\$99 list. Siemens Information and Communication Mobile LLC, www.siemens-mobile.com. ●●○○○



Samsung SGH-D415

Pros: Slider design. Pretty good rotating camera.

Cons: Bulky. Difficult user interface. Sound quality problems.

Bottom Line: The slider is a cool design trick, but it's not enough to make up for the phone's bulkiness or difficulty of use.

\$299.99 list. Samsung Electronics America Inc., www.samsungusa.com. OVERALL ●●○○○ Phone ●●○○○ Multimedia/Camera ●●○○○ Data/Messaging ●○○○○ E-mail ●○○○○ Smart Phone ●○○○○



Find Your Own Identity

BY SASCHA SEGAN

If sheer innovation determined our ratings, the **Curitel Identity GA-400B** phone would get six stars. Four years in the making, this curvy handset is packed with unique features guaranteed to send necks craning.

Aimed at teens, the Identity is the first phone with SmartSkins: covers that change the phone's capabilities as well as its color and style. Currently, there are 23 SmartSkins; each one changes your phone's ringtones, menus, and wallpaper. More advanced skins, like Game skins with built-in controllers and an MP3 skin with up to 1GB of memory, will appear in 2005, according to Wildseed, the company that developed the software for the phone.

The phone isn't small (5.1 by 1.9 by 0.8 inches, HWD, and 5.1 ounces), but its curved form makes it comfortable to hold. Fun features abound here. Wave the phone in the air and you can make it spell out words in red light. Assign speed-dial numbers and the appropriate key will light up in different colors if that friend calls or SMSes you. A standard stereo mini-jack lets you use ordinary headphones to listen to the built-in FM radio.

Some more conventional

IDENTITY takes customization to the extreme.

features fall by the wayside in all this coolness. There's no speakerphone, no voice dialing, no Bluetooth, and no e-mail in-box. The VGA camera is

easy to use, but all our pictures came out extremely overexposed. On the plus side, the speaker is happily loud, the user interface is downright adorable, and the battery delivered an amazing 12 hours of talk time.

Alas, the Identity may end up as the coolest handset you can't buy. At the moment, it's available only through Dobson Cellular One, a small regional carrier covering barely 5 percent of the U.S. population.

Curitel Identity GA-400B

\$200. Curitel, www.curitel.com. ●●●○○



PocketMac for BlackBerry

Pros: One-touch syncing.

Cons: Doesn't transfer all fields.

Bottom line: Be patient with its flaws, as it's not perfect. But PocketMac for BlackBerry is the only option for syncing your Mac with your e-mailing device.

\$29.95 direct. Information Appliance Associates, www.pocketmac.net. ●●●○○

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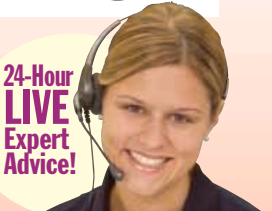
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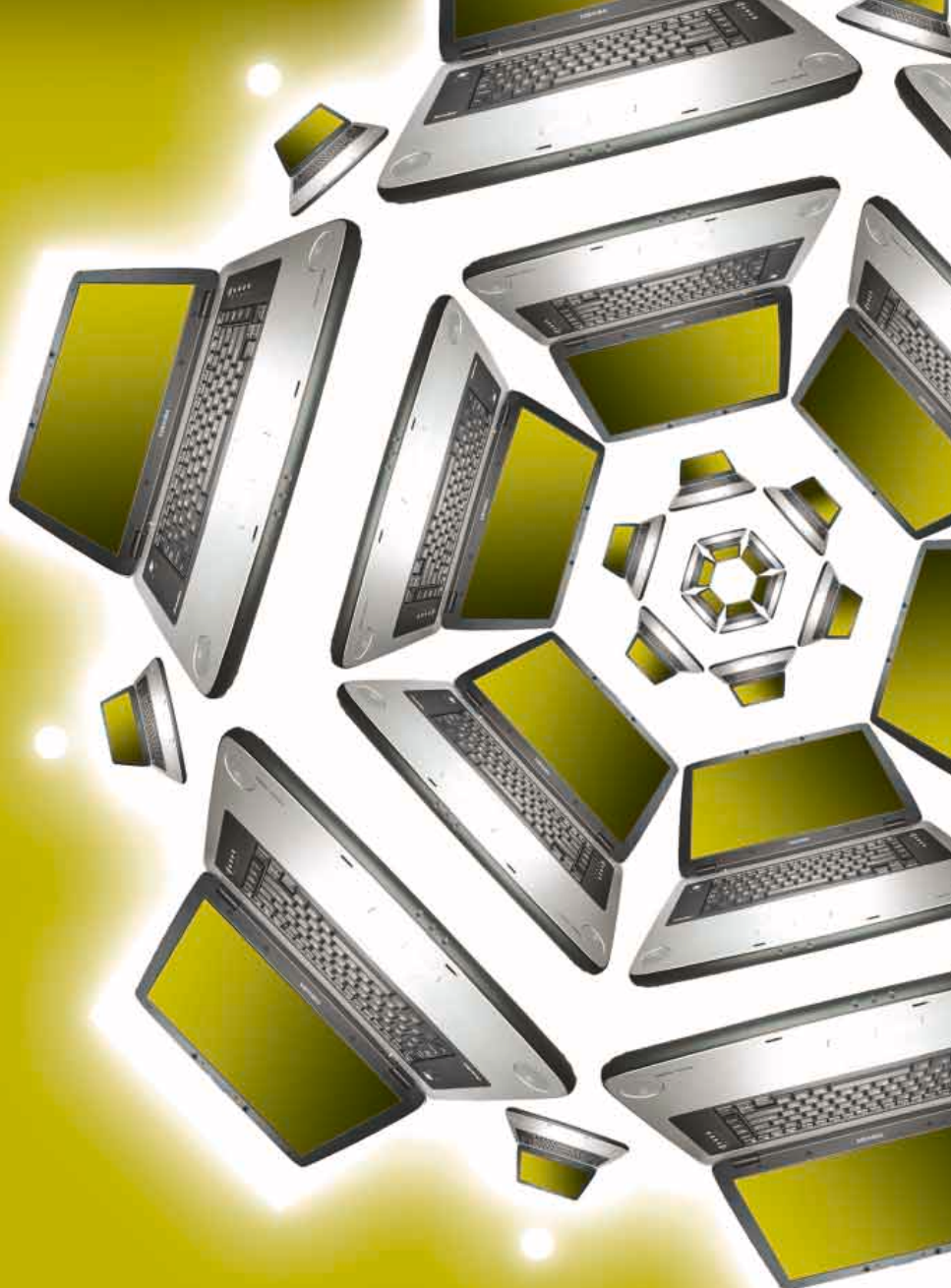
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Apple Gets Animated

BY JAN OZER

Designed for people who want to add professional-looking titles, DVD menu items, and other visualizations to their video and DVD projects, **Apple Motion** is a superlative application. Motion is simple enough for beginners to jump right in, yet advanced enough for professionals to be happy with the results.

Motion's key strength is how easy it is to use. You can design from scratch or by selecting one of 37 project templates. Both approaches are very simple. You start by inserting text, a video, or a still image into your project. You then drag and drop Motion's canned effects onto the asset you inserted. A semitransparent palette provides controls that let you customize each effect to your liking. As you adjust settings, you can preview the changes in real time. Motion offers an extensive range of

effects, including filters (like blur, glow, and matte) and particle effects (smoke, fog).

A variety of *behaviors* offer an especially effective yet simple way to manipulate assets. For instance, the gravity behavior will cause items to fall down the screen in a realistic manner. As with Motion's filters, you apply a behavior by dragging and dropping it onto an asset. You then customize its settings. In no time, you can create a sophisticated animation that acts just as you want. Best of all, you can mix and match effects and behaviors, so there is virtually no limit to the animations.

We tested Motion on a PowerMac G5 with dual 2.0-GHz processors, 2GB of RAM, and an



MOTION makes integrating two behaviors—the PC Magazine logo rotating around the star and the text being repelled from the rotating logo—easy and fun.

ATI Radeon 9800 Pro Mac graphics card with 128MB of RAM. With one or two effects applied, performance was generally at or near real-time. As we added more effects, however, the system slowed considerably.

Output quality was generally good from Motion, but we

found that Final Cut Pro produced better results on compositing and chroma-key tests. Adobe After Effects bested both Motion and Final Cut Pro in these two trials.

After Effects also has the advantage of offering motion tracking, video paint tools, and 3D effects. Of course, After Effects costs hundreds of dollars more than Motion; it isn't nearly as intuitive; and it doesn't offer Motion's real-time control over

filters and behaviors.

Simply put, Motion creates amazing animation effects in very little time. This is a valuable addition to Final Cut Pro or DVD Studio Pro.

Apple Motion

\$299 direct. Apple Computer Inc., www.apple.com. ●●●●●

Image Editing with Impact

BY GALEN FOTT

With **Ulead PhotoImpact 10**, you certainly get more for your money than with the other photo-editing solutions. Version 10 has an assortment of extras, including Ulead's Cool 360 panorama software, GIF Animator 5, and thousands of royalty-free photos. It stumbles when it comes to image management, so if you're looking for an integrated solution you're better off with Adobe Photoshop Elements 3.0 (First Looks, November 30). But when PhotoImpact is used strictly for editing tasks, it is both powerful and approachable.

PhotoImpact's image-editing capabilities are

top-notch. The image-editing module has an extraordinarily flexible interface with many handy amenities, including a new Basic mode that clears away the clutter, making it easier for beginners. The program has abundant tools for improving the quality of your photos

and for creating images from scratch. We only wish that the main image window would automatically preview changes when you're tinkering with the settings inside dialog boxes.

The program excels at working with Web graphics. You can create image maps, rollovers, and entire HTML-coded Web pages. Another knockout feature is PhotoImpact's ability to add a three-dimensional look to flat graphics. It offers unparalleled control over z-depth, light, shadow, bevels, reflections, and bump maps. Among this version's new features is the excellent Touch-up tool. Similar to Adobe's Healing Brush, the Touch-up tool does a fine job of removing blemishes

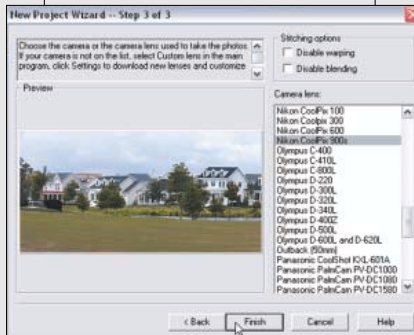
from photos. Meanwhile, the new *Extract Object* command greatly simplifies the task of removing a photo's subject from the background.

PhotoImpact still lacks support for the Camera RAW format, but this is an issue more for serious photographers. This minor caveat aside, PhotoImpact offers enough advanced features to allow users to grow without feeling limited. As an entry-level image editor, it is easily superior to Jasc Paint Shop Pro Studio and is equal to Photoshop Elements.

Our biggest complaint is about the weakness of PhotoImpact's two-pronged photo-management solution. But those concerned with image editing and Web graphics will find PhotoImpact a powerful and feature-rich option.

Ulead PhotoImpact 10

\$89.99 direct. Ulead Systems Inc., www.ulead.com. ●●●●●



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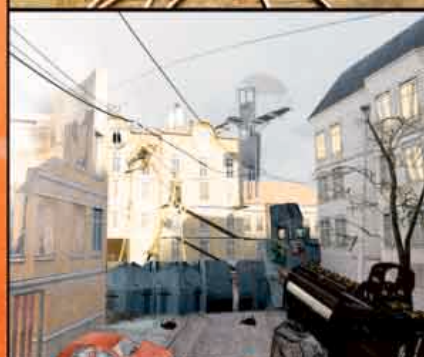
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Set Up Your Own Private P2P Network

BY CADE METZ

PC MAGAZINE EDITORS' CHOICE
It's a peer-to-peer app. But not the kind you're thinking of. **Grouper Beta 1.0** isn't like Kazaa or Morpheus, a way of sharing files (often illegal versions of copyrighted material) with millions of strangers across the Internet. It's a way of sharing private files with people you know—your friends, family, and colleagues. With no more than a few clicks of the mouse, you and up to 29 buddies can instantly share most any file from machine to machine, including photos, videos, songs, and documents. And it won't cost you a penny.

The application is wonderfully intuitive. You simply download a small client from the Grouper Web site, sign up for an account, and, when prompted, type in the name of your first P2P network, or "group." You then key in e-mail

addresses for a few friends, and they'll soon receive links where they, too, can download the Grouper client and seamlessly join your new group. At any point in the future, you can add new members to the group or start an additional group.

Once your network is up and running, sharing files is a snap. An Explorer-like interface lets you instantly move files from your Windows file tree to your Shared folder, a repository that's exposed to the entire group. Anyone who wishes to retrieve a file can simply navigate to this folder, find the file, and double-click on it.

Conveniently, as you swap files back and forth, you and your friends can also trade instant messages. There are two



AN INVITING INTERFACE makes harnessing the power of Grouper's private file sharing a breeze.

built-in chat clients: the first for one-on-one chats, the second for full-group chats. To protect your private data, Grouper uses 256-bit AES and SSL encryption to hide all browsing, file sharing, and chatting from anyone outside the group. Plus, an Activity window notifies you each time someone accesses your Shared folder.

Though most files can be

transferred with ease, you can't actually download a recognized MP3 or WMA file from a remote machine. For legal reasons, the company doesn't want you trading copyrighted material. But you can stream such files from machine to machine (via a built-in player).

When it comes to photo sharing, this app doesn't offer quite as many tools as our dedicated services such as OurPictures or ShareALot (First Looks, May 4). But Grouper does so much more than mere photo sharing. And it's not only wonderfully easy to use, it's also free. The company plans to offer a for-pay version, but the free version won't go away.

Grouper Beta 1.0
Free. Grouper Networks Inc.,
www.grouper.com. ●●●●●

Share Photos and More with ShareGear

BY CADE METZ

There is no shortage of ways to share your digital photos with friends and family. You can upload pictures to a Web site like Ofoto or SmugMug; you can exchange them using IM clients like Microsoft's MSN Photo Swap and Picasa's Hello; or you can set up a peer-to-peer network using services like Grouper, OurPictures, and How2Share's PiXPO. But of all the options available, **ShareGear 2004** is the second most impressive. It's right behind Grouper as our favorite P2P app.

ShareGear 2004 is a downloadable application that runs locally, turning your PC into

a Web server. It lets you share all sorts of files—including photos, office documents, and digital videos—right off your local hard disk. Unlike with typical photo-sharing sites, your storage space isn't limited, you don't have to pay a monthly fee, and you don't have to waste time uploading files to

a distant server. Unlike with photo-sharing IM clients, you don't have to wait for friends and family to log on. And unlike with peer-to-peer clients, your guests can view your files with an ordinary Web browser.

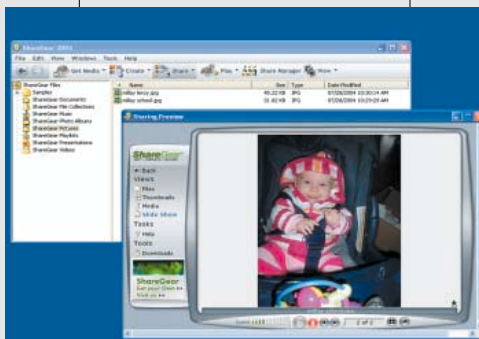
ShareGear is comfortably easy to use. Upon installation, it creates a Windows folder called ShareGear Files. When you want to share a collection of photos or other files, you simply move the files to this folder and, with just a few mouse clicks, tell the app you'd like to share them. ShareGear then generates a Web address that links directly to the files.

When your friends and family go to this URL, a small browser-

embedded app lets them view (or listen to) the files and download them to their system. ShareGear even has a wizard that lets you create slide shows—complete with an MP3 soundtrack—that will open and play automatically. Similarly, you can set up a playlist of songs or a PowerPoint presentation for sharing, and it too will automatically pop up and play back in your friend's browser.

The only major catch is that ShareGear has some difficulties with firewalls. If your PC is sitting behind a router or personal firewall, you'll have to jump through some hoops to configure access. And ShareGear won't run from behind a corporate firewall at all.

ShareGear 2004
\$19.95 direct. XFormx Inc.,
www.sharegear.com. ●●●●●



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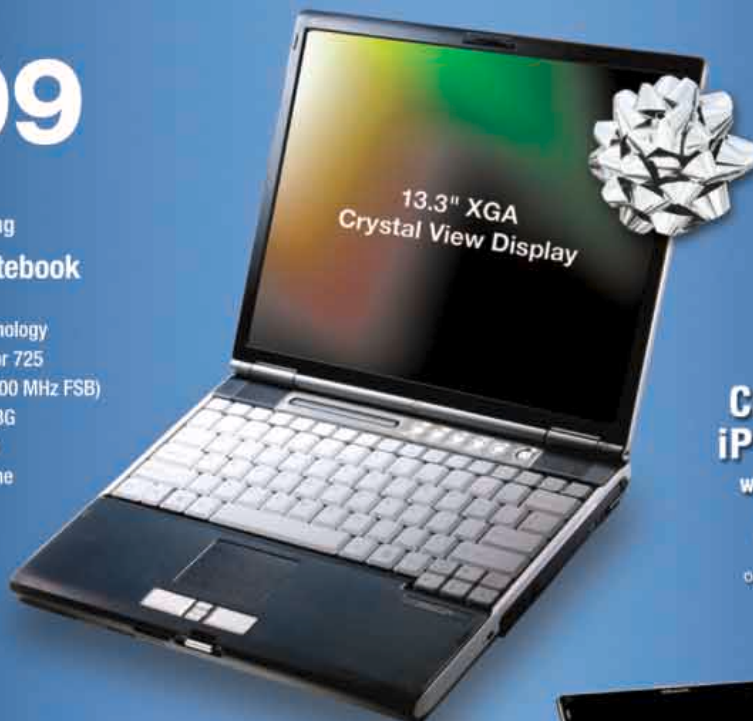
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Two Roads to a Spam-Free In-Box

BY NEIL J. RUBENKING

Looking for a reliable way to stop spam? We have two new options for you. Although **Cloudmark SpamNet 3.0** and **Norton AntiSpam 2005** take different approaches to identifying spam, both are highly successful.

To test their accuracy, we split a spam-infested *PC Magazine* e-mail account into two identical e-mail streams and passed them to both products for a week. We discarded any messages that were neither undeniably valid nor undeniably spam (such as delivery failure messages). Then we calculated the percentage of false positives (valid e-mail flagged as spam) and false negatives (spam allowed into the in-box). Both of these new entries performed well, though SpamNet has the clear edge, earning it our Editors' Choice for spam blockers. It joins MailFrontier Desktop 4.0 (First Looks, August 17) and Qurb 2.0 ("Can E-Mail Survive?," February 17, page 82) as one of the best antispam tools we've tested to date.

Cloudmark SpamNet 3.0

Some antispam products identify spam by analyzing messages. Others rely on whitelists or challenge/response systems.

Cloudmark SpamNet 3.0 casts these technologies aside and relies totally on its million-user-strong group of subscribers. Once a few trusted subscribers identify a given message as spam, the SpamNet database records a digest of that message and blocks it for all other subscribers.

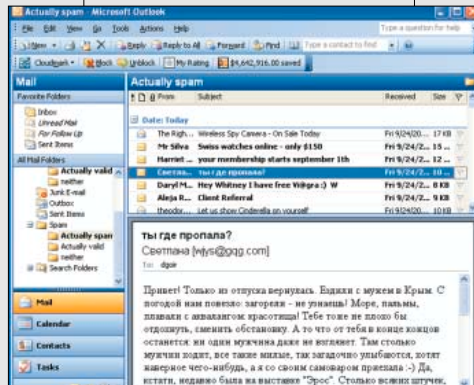
SpamNet handles POP3, IMAP, or Exchange mail through Outlook. An automatic

member-rating system prevents a spammer from simply subscribing and marking messages as not spam. You start with a neutral trust rating. Each time your block/unblock choices match those of the group, your trust rating gets a boost; when you unblock a message that most call spam, your rating goes down.

This approach may seem odd for those used to filtering and whitelist/blacklists systems, but it works: In our week-long test, SpamNet didn't put one valid message in the spam folder. It did let a bit over 5 percent of the spam it received into the in-box, but this was in part because our test system checked for new e-mail about every 7 minutes. If you set your e-mail to check less frequently, messages are more likely to have been already marked by other members.

When we reprocessed the missed spam messages at the end of the test, SpamNet flagged more than half of them, leaving just over 2 percent misfiled. By comparison, MailFrontier Desktop 4.0 misfiled just one legitimate message as spam (a 0.6 percent false-positive rate), while letting 8.4 percent of our test spam through to the in-box.

Cloudmark SpamNet 3.0's



FROM SPAMNET'S TOOLBAR you can choose to block or unblock the current message. You can also view overall stats and your personal trust rating.

community-based filtering does a remarkable job of blocking spam without discarding valid e-mail. As long as you're using Outlook or Outlook Express, it's a very good choice.

Cloudmark SpamNet 3.0

\$39.95 a year. Cloudmark Inc., www.cloudmark.com. ●●●●●

Norton AntiSpam 2005

Norton AntiSpam 2005 starts with a set of standard rules to identify spam and then refines them, learning from you just how you define spam. It can import your address books into its whitelist, along with people you send e-mail to and senders of messages you rescue from the spam folder. A whitelisted sender will never be blocked. If you mark a message as spam it can blacklist the sender, and you can also add addresses and domains manually. NAS doesn't handle IMAP or Exchange accounts, but it integrates with Outlook, Outlook Express, or Eudora, and can filter mail for any POP3 account. It will also filter Hotmail and Yahoo! accounts directly.

This version introduces AutoBlock: non-context blocking for

specific types of spam. For example, AutoBlock blocks phishing scams by detecting Web forms or visible URLs that don't match the actual link. On Symantec's advice, we disabled AutoBlock in our testing to avoid false positives, left the filter level set to Medium, and blocked all languages except English. Before testing, we filtered three weeks of backed-up messages and manually corrected those that were mis-

filed. The training was effective: It halved NAS's error rates.

We turned off the blacklist and whitelist features and let NAS filter e-mail for a week. The results were good: Just 2 percent of valid mail was marked as spam, and 7 percent of spam reached the in-box. That approaches, but doesn't quite equal, MailFrontier Desktop 4.0's performance (the best we've found among filter-based antispam tools).

Users can define word-based spam rules, but we feel that training the filtering engine is more effective. You can set it to block all mail from senders not on the whitelist; however, in the absence of any challenge/response system, you'll have to carefully check your spam folder for valid mail from new or changed e-mail accounts.

NAS does integrate nicely with Norton Internet Security 2005, our Editors' Choice among security suites (First Looks, November 30), and includes ad blocking and pop-up blocking as bonus features. NAS should prove good enough for most users, especially when used as part of the comprehensive Norton Internet Security 2005 suite.

Norton AntiSpam 2005

\$39.95 direct. Symantec Corp., www.symantec.com. ●●●●●



THE STATISTICS VIEW gives you an idea of how well Norton AntiSpam has been protecting you.

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Projector is a Winning Combo



At 8.2 pounds, the **Toshiba TDP-T91U** is more of a room-to-room portable projector than an airport-to-airport model, but it packs a lot of presentation power in those extra pounds.

The DLP projector has a document camera attached to one side that can be used to display documents and even three-dimensional objects. If you want, you can detach it and use the short cable provided to position it separately from the projector. Or you can just leave it behind and shed 2 pounds of travel weight.

The TDP-T91U is an impressive performer. It delivered a bright 2,018 lumens on our tests. The measured contrast was one of the highest we've encountered in

years of testing, at 336:1. Our tests using the DisplayMate utility (www.displaymate.com) showed generally excellent image quality. Response to dark and light-gray shades was exemplary, there were no apparent pixel defects, and focus was excellent across the entire image. As with most DLP projectors, yellows tended to look more mustard. We also saw slight banding on color ramps and a faint reddish-brown tint to midrange gray shades on the color tracking test. These are small flaws, how-



BRIGHT IMAGES and a camera set this unit apart.

ever, and not likely to affect a typical PowerPoint image.

The built-in speaker has better tonal quality than the average portable projector, though it does distort a bit at maximum volume. Video performance is also good.

Setup and operation is easy. There are two analog RGB inputs and a pass-through connector for an external monitor. A USB connection provides remote mouse support for the bundled remote control. The projector comes with good printed documentation and an even better manual on CD.

The Toshiba TDP-T91U is a versatile and powerful performer worth consideration for a wide range of settings, from the classroom to the boardroom.

Toshiba TDP-T91U
\$2,099 direct. Toshiba America Information Systems Inc., www.toshibadirect.com. ●●●●○



Dell 2300MP

Pros: Very bright image. Exemplary documentation.

Cons: Limited mouse functions on remote control. Some image flaws.

Bottom line: The Dell 2300MP has an attractive price for a sub-5-pound XGA-resolution projector, and that's before you find that it can pump out more than 2,000 lumens. It's not perfect, however; limitations on image quality and mouse features take a bit off the product's luster. Whether this projector suits you depends on how its strengths line up with your specific needs.

\$1,499 direct. Dell Inc., www.dell.com/projectors. ●●●●○

HP mp3130

Pros: Wired and wireless network connectivity. Compact design.

Cons: Auto-sync required some tweaking of settings. Some minor image-quality flaws.

Bottom line: The HP mp3130 projector delivers XGA resolution in a compact package under 4 pounds. Its most appealing feature is its versatile wired and wireless networking connectivity, along with some utilities that make it easy to share the projector among computers.

\$2,499 direct. Hewlett-Packard Development Co., www.hp.com. ●●●●○



Fine Value from Sharp

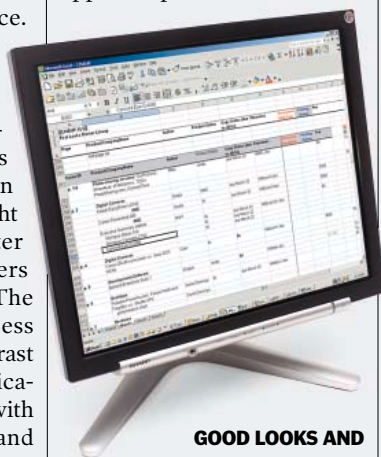
BY ALFRED POOR

The **Sharp LL-172G** is priced in the middle of the range for 17-inch LCD monitors with 1,280-by-1,024 resolution. It has a few small flaws, but it delivers full value for the purchase price.

The front controls are well marked, giving fast access to brightness, volume, mode, and signal select. The volume controls the two speakers mounted in the panel; they are a bit bright but sound noticeably better than the typical speakers found in LCD monitors. The mode settings let you access preset brightness and contrast settings for different applications. The monitor comes with a standard analog cable and a DVI-D digital cable.

On our image-quality tests

with DisplayMate (www.displaymate.com), we saw generally good results. The auto-sync feature worked well to eliminate any pixel jitter on an analog signal, and we saw no apparent pixel de-



GOOD LOOKS AND GOOD IMAGES make the Sharp LL-172G a good buy.

fects. Brightness uniformity looked good on both all-white and all-black screens, and color tracking was good.

Viewing-angle performance was good but short of the best we've seen. Dark-gray response was good, but response was weak for the lightest gray shades with both analog and digital signals. We also saw noticeable smearing on moving images, but no more than would be expected from a panel with a 16-ms pixel speed rating.

The Sharp LL-172G has some good features and some minor flaws. The end result is an attractive display that justifies its higher cost better than much of its competition.

Sharp LL-172G
\$479 direct. Sharp Systems of America, www.sharpsystems.com. ●●●●○

IBM M400 Projector

Pros: Tiny projector. Excellent remote control.

Cons: Uses nonstandard video connectors. Fairly noisy.

Bottom line: The IBM M400 is just about small enough to slip into a coat pocket, yet it projects colorful, XGA-resolution images. It's not as bright as larger projectors but should be sufficient for small audiences under typical room-lighting conditions.

\$1,849 direct. IBM Corp., www.ibm.com. ●●●●○



For an in-depth look at these products, go to www.pcmag.com/displays.

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This Flatbed Shines for Slides

BY M. DAVID STONE

PC Most flatbed scanners that offer slide and film scanning do so as a convenience feature, not for serious scanning. The **Canon CanoScan 8400F** is the exception: Its scans rival those of more expensive, dedicated film and slide scanners. And the flatbed design and bundled software let you use the 8400F for both OCR and scanning documents to PDF format.

The keys to the 8400F's high-quality scans are high resolution and bit depth. The claimed 3,200-pixel-per-inch (ppi) optical resolution is enough to scan a 35-mm slide and print sharp, high-quality prints at 8 by 10 inches or larger. The 8400F's output was comparable to scans from the Konica Minolta DiMAGE Scan Dual IV, a dedicated film and slide scanner.

Lots of scanners claim 48-bit

color depth, but the 8400F delivers, with an ability to see detail from white to black that's much greater than with most scanners. The difference is most apparent in slides. For example, in one slide we use with a dark tree line against a bright



FOR SLIDES and photos, this Canon is hard to top.

sky with clouds, the 8400F shows more detail in both the trees and clouds than any flatbed we've tested lately.

The 8400F is also notable for speed. On our tests, it took 8 to

14 seconds to scan 4-by-6 and 5-by-7 photos at 400 ppi. It took just 30 seconds to scan a slide at 2,400 ppi.

Of course, it also has a few flaws. For example, although its tool to restore faded colors works reasonably well, the companion tool for removing scratches and dust had little effect on our tests. The scanner also scored poorly on the OCR tests.

Although it managed to translate the 12-point Arial font on our test without mistakes, errors crept in at smaller font sizes and with different fonts. Since this is not a business scanner, though, we're inclined to forgive these problems. For scanning slide and photo images on a flatbed, the 8400F is the one to beat.

Canon CanoScan 8400F
\$149.99 direct. Canon U.S.A. Inc., www.usa.canon.com.
OVERALL ●●●●○ Photos ●●●●○
Slides ●●●●○ OCR ●●●●○

Brother QL-500 PC Label Printer

Pros: Works with a variety of label sizes. Fast speed, at 50 mailing labels per minute.
Cons: Software is relatively complex and takes time to learn.
Bottom line: The Brother QL-500 delivers faster speed plus a wider variety of label formats than other label printers, along with the ability to switch from one format to another quickly.

\$100 street. Brother International Corp., www.brother.com. ●●●●○



HP LaserJet 2420dn

Pros: Fast performance. Duplexer and Ethernet card. Excellent text quality.
Cons: Modest paper handling choices.
Bottom line: The HP LaserJet 2420dn's scores for performance and quality are among the best for any monochrome laser we've tested. Despite including a duplexer, however, it comes up short on paper handling, the only option being a tray to boost capacity from 350 sheets to 850.

\$900 street. Hewlett-Packard Development Co., www.hp.com.
OVERALL ●●●●○ Text ●●●●○
Graphics ●●●●○ Photos ●●●●○



Lexmark AIOs Step Up a Notch

BY M. DAVID STONE

Though it's billed as a photo printer, the **Lexmark P6250 Home Photo Center All-In-One** is equally at home printing your office documents. The AIO comes with only a tricolor cartridge and photo cartridge. You can swap between the photo cartridge for six-color printing and a black cartridge for four-color printing.

Features that make the P6250 easy to use include showing ink-loading instructions on the 2.5-inch color LCD when you open the printer top. Similarly, if you plug in a memory card, the LCD menu reads *I Want To...* along with such choices as *Save to Computer*, *View Photos*, and *Print*. Bundled software for your PC makes it easy to copy, scan, and even scan and fax (if your PC has a fax modem).

On our performance tests (using QualityLogic's hardware and software for timing, www.qualitylogic.com), the P6250 earned points as one of the few ink jet AIOs we've seen that does well on both of our test suites. Total time for our business applications suite was 20 minutes 57



THE PHOTO-ORIENTED Lexmark AIO delivered good image output.

seconds, second only to the 20:24 score for the Brother MFC-3420c (our Editors' Choice for business-oriented ink jet AIOs). With photos, it averaged a quick 2:32 for each 4-by-6 picture and 5:34 for each 8-by-10.

Unfortunately, the P6250's output quality isn't as impressive. We rated it as good across the board, with photos at the high end of good using six ink colors. That's certainly acceptable, but we expected better (especially with the word "Photo" in the name). Even so, the P6250 offers a reasonable mix of features, speed, and output quality for the price.

Lexmark P6250 Home Photo Center All-In-One
\$199.99 direct. Lexmark International Inc., www.lexmark.com.
OVERALL ●●●●○ Text ●●●●○
Graphics ●●●●○ Photos ●●●●○

Tally 8016

Pros: Good output quality.
Cons: Outdated, fully manual network setup requires substantial knowledge of networks.
Bottom line: The Tally T8016 has a lot in common with what were the best color lasers two or three years ago, with a 16-page-per-minute (ppm) engine for both color and monochrome. It's relatively slow for a single-pass color laser by today's standards, but it delivers high-quality output.

\$1,499 direct. TallyGenicom, www.tally.com.
OVERALL ●●●●○ Text ●●●●○
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DVD Burners: Spinning as Fast as They Can

BY DON LABRIOLA

The advent of 16X DVD+R recording could have been a non-event. Because 16X drives reach their highest speed only at the outermost edge of a disc, they're not much faster than current 12X models and can burn a full disc only a few minutes more quickly than the best 8X units. But that doesn't mean that there aren't compelling reasons to upgrade to a 16X DVD+R burner. Many of these new models have additional selling points beyond speed, such as more reliable (and faster) dual-layer recording and the ability to burn 8X-certified DVD-R media at 12X or 16X (which means you don't necessarily have to pay extra for the higher-rated discs).

The four 16X models we received for this story were all early production units, most of which were still being tweaked as we began testing. We were pleased to see that all had resolved most of the compatibility problems we encountered when recording dual-layer media in our recent DVD+R DL roundup ("Double-Stuff DVDs," September 7, 2004). That said, when burning at the highest speeds, we found that the quality of our output often depended on the brand of media we used. (As always, our benchmark tests were conducted with Verbatim media.)

The good news is that DVD manufacturers are already aggressively addressing these issues with rapid-fire firmware upgrades. So by the time you read this, these drives will probably be able to burn most brands of high-speed media reliably—and a few may have even added a new recording mode or two. So be sure to check vendor Web sites for spec changes before you make a purchasing decision.

BenQ DW1620

The BenQ DW1620 is an improvement on the company's earlier offerings, with enhancements such as dual-format (DVD±R) 16X recording



AT JUST \$100, the BenQ DW1620 is a treat for bargain hunters.

and the ability to burn DVD-R and DVD-RW media. It's a competitive product, and we recommend it to anyone looking for functionality and performance at a reasonable price.

One of the BenQ drive's strengths is its blazing DVD-ripping speed. Our test unit took a mere 5:38 to rip an entire 4.37GB single-layer DVD-Video disc to our hard drive, easily the best performance we've seen lately from a rewriter. The drive also ranked first when packet-writing 2GB of data to DVD+RW media. But the DW1620 took longer than the other drives we tested to burn a dual-layer DVD+R DL disc at 2.4X, and its 16X DVD+R and DVD-R single-layer recording times were closer to the best 8X results we've measured than to those you'd expect from a 16X drive.

The DW1620 ships with a cornucopia of software, including InterVideo's WinDVD Creator authoring system and WinDVD movie player, Sonic Solutions' RecordNow! disc-burning suite, and BenQ's QVideo 2.0 video capture program. Rounding out the package is the BenQ Book-Type Management utility, which helps make RW media more

compatible with older players.

The drive also incorporates BenQ's error-reducing Write Right technologies, which include a disc auto-centering mechanism and the ability to adjust laser angle and intensity continuously to compensate for media defects. Except for one Video CD that locked up one of our test players, all the discs we burned with our evaluation unit worked perfectly.

Despite several performance figures that are a few minutes behind the state of the art, we believe that the drive's many other strengths make it a fine choice at the price.

Ben Q DW1620

\$100 street. BenQ America Corp., www.BenQ.com. ●●●●○

Lite-On SOHW-1633S

Although the Lite-On SOHW-1633S is one of the few 16X rewriters to come in below the \$100 price barrier, the company doesn't appear to



THE LITE-ON SOHW-1633S isn't the best 16X burner on the market, but it's priced right.

have cut too many essential corners to get there. True, the device doesn't offer 16X DVD-R or 4X DVD+R DL recording speeds. But it stands up to the competition in most other ways and even managed to earn first place on our DVD+R and CD-R burning tests.

Lack of 16X DVD-R support resulted in relatively slow -R recording, but the SOHW-1633S

burned a 4.37GB disc image to 16X DVD+R media in 6:03, the fastest single-layer DVD+R recording time we've ever measured. The SOHW-1633S inched ahead to a first-place finish on our Burn 30-Minute VCD test, but it produced mixed results in other areas tested: It yielded one of the slowest DVD-RW times we measured (7:37) and one of the fastest DVD+RW times (6:57).

Our test unit exhibited scattered compatibility problems. Its 16X DVD+R recordings locked up the TEAC DW-224E-A DVD-ROM drive in our HP Pavilion zt3000 notebook; our hoary Pioneer DVR-A05 rewriter could not play its dual-layer output; and one of our set-top boxes would not display menus on the Video CDs it produced.

The SOHW-1633S's bundled version of Ahead Software's Nero digital-media includes the core Nero Express 6, NeroVision Express 2, BackIt-Up, InCD 4, and Nero Media-Player components. But the Lite-On drive lacks other important modules, such as Nero Recode 2, which lets users copy and edit DVD-Video discs and encode content in Ahead's MPEG-4-based Nero Digital format. (Ahead includes some of this functionality in the bundled version of Nero Express.)

Despite these caveats, we feel comfortable recommending the SOHW-1633S to buyers for whom price is important. The industry as a whole is quickly solving its 16X and DL compatibility problems, and the drive's outstanding performance on some of our most important benchmark tests outweighs its less impressive results elsewhere.

Lite-On SOHW-1633S

\$99 list. Lite-On IT Corp., www.liteonamericas.com. ●●●●○

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Storage

Memorex 16X Dual Format Double-Layer DVD Recorder

The Memorex 16X Dual Format Double-Layer DVD Recorder is a fine product that combines top-notch performance with exceptional software. It did reveal a few compatibility problems in the lab, and it can't burn DVD-R media at 16X, but its many strengths more than compensate for these deficiencies.

Although still far behind the Pioneer DVR-A08XL's 4X results, the test drive produced the second-fastest Burn 8.5GB +R DL recording time we've measured to date, burning an entire 8.5GB disc image in 38:56. Its 48X/48X/24X CD performance placed it 1 second behind the first-place Lite-On drive on our Burn 30-Minute VCD test (1:48), and it ripped a 65-minute audio CD to MP3 files in a jaw-dropping 2:33—once again, the fastest time we've recorded lately.

Using its bundled Nero software, the



GOOD SPEED and a complete software bundle make the Memorex entry competitive.

16X Dual Format translated 30 minutes of DivX content into an MPEG Video CD image in 20 minutes flat, the best time in the roundup. The drive also scored well on our 16X Burn 4.37GB +R recording test, burning a 4.37GB disc image in 6:24.

But, not surprisingly, it did poorly on our Burn 4.37GB -R test because of its lack of support for 16X DVD-R recording.

The 16X Dual Format ships with an Ahead Software Nero bundle that, unlike the version packaged with the Lite-On SOHW-1633S, contains the key Recode 2 module. Memorex also throws in a copy of SimpleStar's terrific PhotoShow Deluxe 2.5 image editor. Other luxuries include a vibration-damping internal suspension system and an automatic read-speed adjustment that optimizes performance for different types of discs.

The only media compatibility problem we encountered during our testing occurred when the TEAC DVD-ROM drive installed in our HP Pavilion zt3000 notebook proved incapable of reading the Memorex drive's 16X DVD+R output. More troubling was the discovery that our evaluation drive could not successfully burn dual-layer media while its bundled InCD 4 drag-and-drop packet-writing utility was running in the background. Memorex is investigating this problem.

These relatively minor (and presumably solvable) problems keep the Memorex 16X Dual Format from being our favorite DVD burner on the market (a mantle that goes to the Pioneer DVR-A08XL). But it doesn't stop us from recommending the drive to anyone who wants fast +R, +RW, +R DL, and CD performance at a reasonable price.

Memorex 16X Dual Format Double-Layer DVD Recorder

\$120 street. Memorex Products Inc., www.memorex.com. ●●●●●



THE BEST 16X DVD burner we've found is the Pioneer DVR-A08XL.

Pioneer DVR-A08XL

From its fine performance to its complete software bundle, the Pioneer DVR-A08XL is a class act. It's the first drive we've tested to offer all three of the new 16X DVD+R, 16X DVD-R, and 4X DVD+R double-layer recording speeds. It also incorporates several advanced hardware features designed to reduce recording errors, and it includes a comprehensive Ulead-based software bundle that provides a broad range of disc copying and burning, video production, and data backup functions.

All these features evidently aided the DVR-A08XL on the test bench. Every disc it burned played correctly in each of our computer and set-top DVD test drives. It got middling results on our DVD+R, DVD+RW, and Burn 30-Minute VCD tests and ranked dead last on our Rip 65-Minute Audio CD test. But it greatly outperformed every other model in the roundup when burning DVD-R media, requiring only 7:10 to fill a 4.37GB 8X disc at 16X.

Our test drive's DVD-RW performance was equally impressive: packet-writing 2GB of test files in 6:45, slightly faster than the best times we've ever measured with either -RW or +RW media. The drive also produced one of the fastest DVD-ripping

speeds we've seen, copying a 4.37GB DVD-Video disc to our hard drive in 6:05, a figure surpassed only by the BenQ DW1620.

Most impressive was the drive's 4X DVD+R DL performance. Our test unit recorded an entire 8.5GB dual-layer disc image in a breathtaking 23:52, more than 15 minutes faster than any other drive we've tested.

The Pioneer drive ships with Ulead's complete and easy-to-use DVD MovieFactory 3.5 Suite Deluxe, which includes DVD MovieFactory 3.5 SE, VideoStudio 8 SE DVD, Photo Explorer 8.5 SE, Burn.Now 1.5, DVD Player 1.5, and NovaBackup 7.1. Although not in a class with pricier standalone applications (and lacking integrated DivX support), this wizard-driven suite provides considerable power and flexibility for a consumer offering.

The DVR-A08XL incorporates significant error-reducing features, such as a resonance-damping suspension system and a liquid-crystal tilt/thickness compensator designed to improve laser focus when burning warped, out-of-spec, or dual-layer media. It can automatically slow rotational speed during DVD-Video and audio CD playback to reduce noise.

All this adds up to an innovative and functionally rich product that is well worth the relatively low price. The Pioneer DVR-A08XL is our first choice for anyone interested in fast, reliable dual-layer DVD recording.

Pioneer DVR-A08XL

\$119.99 list. Pioneer North America Inc., www.pioneerelectronics.com. ●●●●●

All times are in minutes:seconds. Low scores are best. Bold type denotes first place.

	Rip 4.37GB DVD-Video	Burn 4.37GB -R/+R disc	Burn 8.5GB +R DL disc	Write 2GB -RW/+RW/-RAM	Create 30-minute VCD Image	Burn 30-minute VCD	Rip 65-minute audio CD to MP3
BenQ DW1620	5:38	8:15 / 8:38	45:39	N/A / 6:52 / N/A	20:47	2:37	N/A
Lite-On SOHW-1633S	6:50	9:20 / 6:03	42:50	7:37 / 6:57 / N/A	20:32	1:47	5:20
Memorex 16X Dual Format Double-Layer DVD Recorder	6:51	9:24 / 6:24	38:56	7:30 / 6:58 / N/A	20:00	1:48	2:33
Pioneer DVR-A08XL	6:05	7:10 / 7:09	23:52	6:45 / 7:10 / N/A	N/A	2:54	6:50

RED denotes Editors' Choice. N/A—Not applicable: The drive bundle does not support this feature.

THE BUSINESS VALUE OF COLOR

Today's color imaging and printing devices are easier to use and more cost effective than you may realize. They're helping IT professionals and business executives around the world to make a bigger impact and become more successful.



Many of the technology tools used by small and midsize businesses today are solutions that companies wouldn't consider conducting business without. From PCs and e-mail to imaging and printing devices, all are integral parts of the daily workflow that IT professionals rely on to help employees be more productive, and businesses in general need to be more efficient.

What about color? Color imaging and printing, to be precise. You've probably heard a lot about color, and all of the benefits that it can bring to a business. Like some, however, you may be thinking that color is difficult to manage and maintain, as well as costly and slow—even a non-essential luxury that, in times of tight tech budgets, is tough to justify.



① Take a free HP course on using color effectively

② Buy an HP Color LaserJet printer for only \$499

ADVICE

+

TECHNOLOGY

+

SUPPORT

HP's online classes and graphic design templates help you make color work harder.

The HP Color LaserJet 2550L and HP-engineered supplies put professional-quality color within reach of any business.

24/7 hardware support is always there. HP reliability means you'll rarely need it.



— HP's Smart Office

Prices shown are direct prices; reseller and retailer prices may vary. Prices shown are subject to change and do not include applicable state and local sales taxes or shipping to recipient's destination.



3 Print a customized brochure for your prospect

4 Get a brand-new client worth a lot more than \$499



More advice before you buy and more support after.
www.hp.com/smb/color



program: A broad range of hardware, service and support for small and medium businesses.



Screen is simulated. © 2004 Hewlett-Packard Development Company, L.P.

For Milestone Architectural Ornamentation, color means cost-effective, customized, highly professional marketing collateral that's helped the company build its reputation worldwide and increase sales. Based in Amarillo, Texas, Milestone is an expert manufacturer of reproductions of ancient antiquities. The company has mastered its market, and it has done so by concentrating on the needs of its customers.

Early on, however, Milestone found it needed to stand out in the crowd. Like many companies, Milestone had a great product, but was faced with several daunting business challenges that are common to companies around the world. To succeed, it needed to make a big impact with current and future customers.

In the words of Milestone CEO Melody Brenna, "We were a little company with a totally new product, and we didn't have the sales volume or funding to hire an advertising agency. In our business, everything is ultimately visual. We have to be able to portray to a client exactly what the end project will look like to pique their interest and win the business."

The means to that end was color. And today, it's easier to use, more readily available and more cost effective than you may realize.

ENABLING SUCCESS WITH COLOR

Using color came naturally to Milestone, which relies so heavily on the visual appeal of its products. Like many businesses, it started producing its own marketing materials in-house as a way to reduce costs, increase contract closure percentages and boost quality control.

To make the most of these internal capabilities, it enlisted the help of HP printing solutions. Milestone started using HP printers for two basic reasons: ease of access to the hardware and supplies, and low price combined with high-quality results.

In addition to four HP Business Inkjet 1100 series printers, the firm's principal graphic designer Jay Ferranti uses an HP Photosmart printer for professional-quality photos in eight-color or black and white. The Photosmart printer that Ferranti uses allows direct photo printing from a digital camera, which Ferranti describes as highly useful in the brochure

design process. Milestone also relies on an HP Designjet large-format printer for line drawings, presentations and signs.

Printers are not the only HP products in use at Milestone. The company also uses HP supplies—including ink, paper and special media—because the printers and the supplies work together as a system to produce exceptional results.

"We're a very small company, but with the professional look of our proposals

powerful, enabling message to small and midsize businesses that are trying to carve out market share—on any continent or in any country. So by using color in customer-facing materials, sales and marketing employees, for example, may increase their chances for success with potential customers. Color is the great equalizer, and color technology—particularly color imaging and printing—is the vehicle for that equality.

COLOR SUCCESS STORY

- **Company:** Milestone Architectural Ornamentation, Amarillo, Texas
- **Challenges:** Create professional marketing collateral and proposals cost-effectively, customize proposals, print top-quality color and monochrome photos.
- **Solution:** HP Business Inkjet 1100 printers, HP Photosmart printers, HP media.
- **Results:** Individualized proposals create client trust in company's work. Eighty-five percent success rate winning business with customized packages.

and posters that we print in-house, we look huge, and HP has given us that capability," says Milestone CEO Brenna. "The consistent quality and flexibility of our HP printers not only makes it possible for us to compete against much larger companies, it enables us to succeed."

CONNECTING WITH COLOR

The natural connection that Milestone made between "visual" and "color" is increasingly being made by organizations around the world that are seeking to optimize sometimes limited exposure to marketplace opportunities.

Usage of color in business documents such as presentations, sales collateral and marketing brochures, for example, bridges the gap between concept and comprehension. It connects and persuades its audience. Black and white, by comparison, is valuable in a different way—it conveys content accurately, and it provides the informational infrastructure. Color creates lasting impressions and appeals to the powerful sense of vision.

"Color is the easiest and most effective way to increase the clarity of a document," points out Robert McCullough, president of McCullough Research, in "The Definitive Guide to Office Color Printing" (realtimepublishers.com, 2004).

The guide further claims that color communications can improve comprehension by 75 percent over black-and-white communications. That's a

Given the increasing business value of color, it's not surprising that the market for color laser printers is taking off. And the good news for buyers is that growing popularity is driving affordability and features. According to analysts at Lyra Research, color laser printers priced under \$1,000 will account for 56 percent of total color laser printer shipments worldwide by 2008 ("Color Laser Printers: Worldwide Market Forecast and Analysis," August 2004). Lyra further predicts that by 2008, 10-23 ppm (page per minute) color laser printers will replace 1-9 ppm units as the dominant devices shipped.

DEBUNKING COLOR MYTHS

Despite numerous advantages, color imaging and printing devices may still be below the cut line on some companies' IT-budget-expenditure priority lists. Given the history, this view is a bit more understandable. At the high end, the output was good, but the devices were expensive and complex, and therefore out of reach for the average small business. At the other end of the spectrum, personal color devices also produced good output, but weren't designed for office use.

Indeed, why should an IT professional keeping a watchful eye on the budget make the commitment to color under those circumstances? The truth is that those circumstances have changed significantly. Color has become fast, affordable and practical—as well as easy to use and more reliable.





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SPEED

In the past, all color laser printers employed four-pass printing, which meant that colors were applied to the paper individually, one after the other. As a result, printers were faster when printing black and white because with black and white printing, it is only necessary to apply the black. Thanks to technology advances, four-pass color laser printing is being supplanted by single-pass technology, in which all four colors are laid down simultaneously.

Now, it's possible to purchase color laser printers from HP that print up to 24 pages per minute in color. Inkjet printers have also benefited from advances in technology—models from HP now reach color printing speeds of 24 ppm as well. And some HP color multifunction devices reach color print speeds up to 22 ppm.

AFFORDABILITY

The best way to appreciate the financial value of color printing is to understand the value in terms of time to market, impact with customers, and total cost of ownership.

Eager to better manage their publishing expenses, Bellevue, Washington-based ArtSource, a digital media staffing and design agency, purchased multiple HP printers—including HP Color LaserJet 5500s, Color Inkjet cp1700s and Business Inkjet 1100s—that work together seamlessly to help increase productivity and customer satisfaction.

ArtSource founder Melody Christensen estimates that the business marketing packet her company created using Microsoft® Publisher 2003 and printed in-house on HP printers costs less than \$5 per unit, but will generate eight new customers per month worth \$5,000 each. She further predicts that the annual revenues from this new source of income could reach \$500,000 per year.

The bottom line is that professional-

Reliability, as well as ease of use and interoperability of HP digital imaging solutions is helping the UK's BMW WilliamsF1 Team, a Formula One racing team, make a big impression with its Paddock Club guests on race weekends. Using HP Photosmart digital cameras and printers, the team's hospitality staff can take photos of the guests with their favorite drivers during tours of the pit lane, and then print those photos imme-

COLOR SUCCESS STORY

- **Company:** BMW WilliamsF1 Team, Oxfordshire, UK
- **Challenges:** Enhance guests' experiences of Formula One race weekends, provide a fast, easy-to-use solution for printing photographs for guests on race days.
- **Solution:** HP Photosmart digital cameras and printers.
- **Results:** Better customer relations, ease of use helps staff be more productive.

quality digital color is becoming more and more affordable. In fact, total cost of printer ownership (TCO) and cost per page have declined dramatically from the early days of color printing in the office.

RELIABILITY AND EASE OF USE

To their credit, monochrome laser printers from HP have developed stellar reputations for reliability and ease of use. The downside is that, in the past, this created unrealistic expectations for color laser printer performance. And unfortunately, many early color models failed to live up to those expectations.

According to Gartner, reliability has a large impact on printing costs, which is why it's so crucial in a business environment. The firm stated, "Reliability, quality and ease of use are key drivers of printing cost because they drive labor—the single biggest cost of printing."¹ User-required maintenance, end-user downtime and technical service were cited by Gartner as primary cost culprits.

Those culprits have become less culpable as color printer reliability has improved. Vendors such as HP have dedicated themselves to increasing reliability, which has led to significant improvements in the areas of design, manufacturing and testing. And more reliable devices help IT spend less time troubleshooting and fielding calls for help, and more time on strategic initiatives.

diately, so guests may take autographed pictures home with them.

"This kind of initiative could not succeed without products that are extremely easy to use," said Jonathan Odell, sponsorship account manager for the BMW WilliamsF1 Team. "Hospitality is very important to the BMW WilliamsF1 Team. In order for guests to capture the moment, we use the innovative HP Photosmart solution. It is a great way of enhancing people's experience of Formula One racing as guests of the Paddock Club."

MAKING A DIFFERENCE WITH MEDIA

The enhanced quality of ink and media has also bolstered the image of color printers. Consider the opinion of David Axelbank, production manager at Magnum Photos, one of the world's largest global cooperatives of professional photographers, with offices in New York, London, Paris and Tokyo.

"As for the quality of ink on paper, in my opinion, the HP Designjet [printer] produces prints that very closely resemble traditional C-type prints. The colors were beautifully saturated and highly accurate."

Magnum used HP Designjet six-color printers to reproduce images for a recent series of international exhibitions. All prints were created using HP satin-finish photo paper and HP state-of-the-art inks designed for rich color depth, gloss uniformity, color stability and consistency.

Axelbank was also impressed with the HP Designjet's ease of use in terms of cal-





HP recommends Microsoft® Windows® XP Professional.

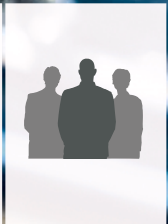


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HP's Smart Office program: A broad range of hardware, service and support for small and medium businesses.

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ibration. “Essentially there is nothing for the user to think about beyond the initial command and the result was highly accurate color rendition from our files.”

Results like these make it clear that color printing products have improved to the point where companies of all sizes can use them with confidence.

THE HP ADVANTAGE

HP’s worldwide presence allows the company to consistently provide an unparalleled depth of products, services and support, while offering local advice based on an intimate knowledge of indigenous business environments. It’s the best of all worlds for imaging and printing customers such as Netopia (Phillipines), Yuen Foong Paper (Taiwan) and IndoChine (Singapore).

For Netopia Internet Café, the luster wore off its inexpensive, non-HP inkjet printers when it came time to purchase supplies. The printers’ high cost per page drove up the company’s expenses on supplies, while the service and support needed to address frequent printer breakdowns was inadequate.

“If you look at the total cost of ownership, we were not saving at all,” said Raymond Ricafort, president of Digital Paradise, Inc., owner and operator of Netopia. “We had to discard the [non-HP] inkjet printers altogether if we wanted to provide the best professional printing service to our customers in the long run.”

So the company turned to its local HP office for help. The recommended solution included color laser and business inkjet printers.

“The level of customer support and technical expertise we have been getting from HP has just been amazing,” Ricafort said. “Your partners must understand what your business needs and where you want to bring it. By partnering with HP, we’ve achieved entirely new levels of productivity, efficiency and cost savings to give us that winning edge.”

CONTROLLING COSTS

Yuen Foong Paper Co., a subsidiary of the Yuen Foong Yu Group, found itself in a stalemate when the five HP Color LaserJet 5500 printers it purchased for external presentations became increasingly popular for the production of internal documents due to the printers’ superior image quality. This led to a proliferation of unauthorized color print jobs and an increase in printing

expenses, for which the source could not be traced. To resolve the dilemma, Yuen Foong Paper, which is one of the largest commercial printing enterprises in Taiwan, sought help from its local HP office.

HP responded with a solution that enabled the company to allow only authorized personnel to use the printers, and to determine where all print jobs originated—a cost-management tool for color. As a result of the improved proce-

enjoy the latest HP imaging and printing technology,” reports IndoChine CIO Ian Aniszewski.

“The proactive monitoring by the HP service center directly eliminates workload and taxi expenses for our stretched IT department, allowing our staff to be productive in other areas. With HP managing our fleet, we have the assurance of reliability, efficiency and availability always.”

The bottom line: IndoChine estimates a

COLOR SUCCESS STORY

- **Company:** Yuen Foong Paper Co., Taipei, Taiwan
- **Challenges:** Control escalating print costs, restrict staff usage of color laser printers for printing internal documents.
- **Solution:** HP JetCAPS solution for Yuen Foong’s HP Color LaserJet 5500 printers restricts usage to authorized personnel only and helps track usage.
- **Results:** Imaging and printing costs lowered by 30 percent.

dural controls, Yuen Foong has reduced costs by 30 percent.

“It is a cost-saving solution,” explains Yuen Foong President Y.C. Huang. “We find it a unique way to continue enjoying the high quality of color printing while keeping our costs of consumables low.”

“But what we appreciate most has been HP’s desire and commitment to make its solutions work better for us. With HP, we can really derive the maximum benefit from our investments.”

DRIVING PRODUCTIVITY

With restaurants, bars, cafes and galleries located throughout 20 outlets in three countries, The IndoChine group determined that it needed a more advanced imaging and printing solution that included a service package to eliminate in-house device maintenance. IndoChine also wanted reliable all-in-one devices to handle high-volume color printing needs in the office and at its food and beverage outlets.

Enter HP. Based on its local knowledge of IndoChine’s needs, the company brought in the right mix of printers, network capabilities, all-in-one products and pay-per-use services to optimize the company’s productivity.

“The commercial deal with HP’s imaging and printing division has allowed us to deploy laser printers into every office and outlet cost effectively without the traditional capital outlay and no internal skills required from our staff to


75 percent savings in printing costs and a threefold improvement in productivity in the graphics department alone.

COLOR FOR ALL

The benefits of color imaging and printing can be experienced by all business functions. Color enables IT professionals to serve their customers better while managing costs. It allows sales and marketing to make a professional impact with potential clients. And color may help the business overall to become more successful by effectively distinguishing its products and services from those of its competitors.

There are as many ways to optimize business opportunities with color as there are imaginative, innovative companies. And many of those companies, recognizing the value of color, are already using it to drive a competitive advantage.

HP has been helping businesses experience the value of color for a long time, providing expert, up-front advice based on local knowledge and experience, leading-edge products and solutions, and industry-recognized service and support. So no matter what your business objectives, or where your business is located, HP is there to help you get

better business results through the value of color imaging and printing. 



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FEEDBACK

“ The Fall 2004 cover has *real* people on it!!
My virtual world has been turned upside down. ”



SHUCKS, WE'RE SPEECHLESS

Recently, whenever I've received your latest issue, I've found myself thinking "This is a great mag! I should write them and tell them." So here goes.

I almost stopped subscribing during the years the Internet took over with everyone's love for surfing the Web, but I'm always aware of the value of magazine advertisements; even if I'm not interesting in buying, it is an education to see what is popularly offered and the prices.

But you've done a terrific job lately of printing articles that are practical and timely—just as *PC Magazine* did before the Internet. Having the magazine makes browsing easy for people who stop by my desk here at work. If there's something to follow up on, I know I can find it on your site. The Web site is so packed with great stuff that it's impossible to keep up; something will always be missed. So I appreciate the printed magazine because I know it highlights the most practical stuff.

You have done a great job of finding the right balance between a useful and interesting printed magazine and an unbelievably detailed and useful Web site. Congratulations to the entire staff!!

TOM FRISKE

HIDDEN IDENTITY: PROS

Is John Dvorak so out of touch with Internet opinion and advice ("The Zeros and the Ones," Fall 2004, page 61) that he thinks that only paid columnists have anything worthwhile to say? Whether regarding computing problems or forged documents, the more forum contributors and bloggers that you have looking at a problem, the more likely you are to come up with insights and solutions.

My experience is that 70 percent of my computing problems are solved by forum contributors writing under colorful screen names. Maybe it's John who needs to get out and mingle a bit. Regular people have a lot more wisdom and insight than he gives them credit for.

TERRI WILLIAMS

...AND CONS

John Dvorak certainly described me, an otherwise decent and responsible person. When I play *Battlefield 1942* through *GameSpy*,

my behavior is sometimes outrageous. When I perceive people to be cheating, or exceptionally ignorant, I fly off the handle with insults and words I would never use around my family. I ruin the game for others (and for myself) with my textual screaming. I have decided not to play online anymore, because I am not controlling my temper. The hidden identity factor has emboldened me beyond reason.

MICHAEL GAFF

STOP PICKING ON JOHN

Recently I have seen a lot of insults hurled toward one of your columnists, John Dvorak. It is sad that people would insult a columnist to express their views instead of discussing or debating what he actually wrote.

It is an injustice for *PC Magazine* to print such derogatory feedback. While you are only reprinting what others have sent, the comments fit well in the "bashing" category. It is not very professional for a magazine to reprint such libel.

Dvorak isn't perfect, but whether he's right or not, whether his views are popular or not, he is a visionary and his reputation is respected. If it is my goal to prove him wrong, it seems logical that I would debate him with facts, not insults. An insult used in debate invalidates the argument being offered. A professional does not resort to slander.

I hope that you keep Dvorak's column in your magazine.

ROBERT DELAHUNT

THAT COVER

Loved the cover to your Special Issue (Fall 2004). At last I see how laptops are supposed to work.

WILLIAM BENNETT

Not to use too technical a term, but the cover of your "Digital Home" issue was the dorkiest I have seen in more than 20 years of subscribing to *PC Magazine*. I don't mind that you cover computer-connected consumer electronics, but try to keep your cover art up to a more professional standard.

JOHN MORRIS

What the !?! My Fall 2004 *PC Magazine* cover has *real* people on it!! My geeky, virtual world has just been turned upside down. Oh well, I guess I can spend a few moments in the real world.

JOEL N. KRUEGER

How to Contact Us

We welcome your comments and suggestions.

When sending e-mail to Letters, please state in the subject line of your message which article or column prompted your response.

E-MAIL pcmag@ziffdavis.com

MAIL Letters, *PC Magazine*, 28 East 28th Street, New York, NY 10016-7940.

All letters become the property of *PC Magazine* and are subject to editing.

We regret that we cannot answer letters individually.

Corrections and Amplifications

■ In our First Looks review of the Disney Dream Desk PC (November 30, page 32), we stated that this PC has a 15-inch LCD monitor, while in fact it has a 14-inch (14.1").



THREE QUESTIONS YOU SHOULD ASK BEFORE YOU DECIDE WHERE TO BUY RAM...

Can you guarantee your RAM will be compatible with my system?

Use the Crucial® Memory Advisor™ tool, and we guarantee that our memory will be compatible with your system, or your money back.

The Memory Advisor is a one-of-a-kind online tool that contains detailed information about more than 110,000 upgrades for more than 20,000 PCs, including many older systems. Our database is so specific that we know more about the memory in your PC than your computer manufacturer does. The information comes from our close working relationship with computer manufacturers and from the Crucial Compatibility Lab, where seven certified lab technicians perform tests on nearly 3,000 different motherboards.

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Do you actually make the memory chips you sell?

Other memory companies may claim to manufacture memory, but what they actually do is just attach chips to a memory module—someone else makes the chips.

Why does it matter? Quality. Those other guys buy the cheapest chips they can find—often chips that haven't even been individually tested to make sure they'll work in your PC. If you install inferior memory, your computer might not boot. Or it might seem to work fine at first, but later experience mysterious crashes and error messages.

Crucial is the only consumer memory upgrade supplier that's part of a major DRAM manufacturer, Micron. We actually make (and test) our own chips—100 percent of them! In fact, because the world's leading computer manufacturers rely on our high-quality RAM, chances are good that the OEM memory in your system came from Micron. Crucial brings this same high-quality memory directly to you. It just costs less because you don't pay middleman mark-up fees.

What kind of support do you offer if I have questions?

We offer superior customer service right from the start. The Memory Advisor tool is so easy to use that most customers find exactly what they need on their own, but if you ever do have a question, we make it easy to find fast, free answers. You can call us directly, e-mail us, chat with a live Expert Online, or learn on your own with our 3,000 articles and FAQs.

And our free tech support really is free. Our certified support agents are true Memory Experts™, averaging 15 hours of technical training each month and 20 hours a month "hands-on" in the Crucial Performance Lab. We don't keep you waiting when you have a problem—the average hold time (over a six-month period) is just over one minute, and the average time spent resolving an issue by phone is about three minutes.

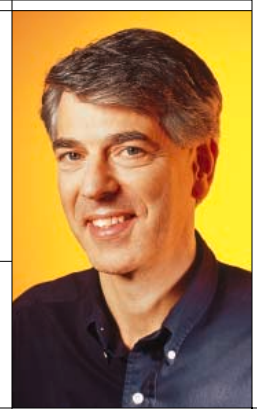
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Bill Machrone



I Know You Talk to Bill Gates

Actually, I hardly ever talk to Bill Gates anymore, but I used to. An attendee at our recent DigitalLife show, however, wanted me to talk to the Microsoft CEO on his behalf. Aharon, the gentleman in question, was deaf. Not hearing impaired—deaf.

We had no problem communicating. Aharon speech-read as I spoke, and he spoke phonetically and supplemented his speech with quickly jotted notes on a pad he carried. He was the director of the computer department of an international business, and his question was straightforward: Why don't we have cell phones for deaf people?

What's Bill Gates got to do with it? Pocket PCs, smart phones, and similar devices can exchange e-mail from anywhere, but they can't communicate with TTY/TDD machines, the standard terminals for deaf communications. It would take an order from fairly high up the chain to support the TTY protocol, which uses the old five-bit Baudot code system instead of ASCII. I suspect that Aharon had done his homework and perhaps knew that I had chided Microsoft in the past on similar disability issues, most notably the way Windows was incompatible with existing text-to-speech readers for the blind and vision impaired. Microsoft fixed the problem and now has an entire department devoted to disability and impairment issues.

CONSIDER THE PROBLEM

You're away on business, your meeting runs late, and you dash to the airport but miss the last flight. No big deal—before you even get out of your rental car, you whip out your cell phone, call the airline, make a reservation for the first morning flight, then call a likely airport hotel and get yourself a room.

Now imagine doing the same thing if you're deaf. You've got to park, go into the airport, and look for either a special services desk or a TTY/TDD machine. The airlines and hotels have TTY terminals, so after a bit of back-and-forth messaging, you get your flight and your room. But by the time you get back to your car and exit the airport, the guy with the cell phone has his room and is perusing the dinner menu.

If we were starting today, the whole deaf-communication system could be handled by a blend of instant messaging and text messaging, but the TTY system is too deeply embedded to be replaced any time soon. So what's needed is an interface from the existing system to the new wireless world.

I did some research on Aharon's behalf, and am pleased to report that others are aware of the problem and are working on it. Lormar Logic, www.lormarlogic.com/iptty.htm, offers Lormar Internet TTY, a service that extends TTY access to Sidekick, BlackBerry, Treo, and Palm devices. The service lets you use your keyboard phone as a TTY device; you can also reach relay operators, who are the human interface between the deaf and the hearing, typing words from your voice calls and giving voice to your caller's TTY-originated messages.

I also found a version of the Danger hiptop smart phone (www.danger.com), which is tailored for deaf and hearing-impaired use. The hiptop² has a stronger vibration motor, and with its flip-up screen, a more spacious keyboard than many competing devices. In addition to instant messages and e-mail, the hiptop² supports a variety of services, including MCI's Wireless IP-Relay and Sprint Relay Wireless; both are available as free downloads from a preloaded catalog of services.

Others will offer their own versions of wireless IP relay services. Another version of the hiptop design, the Sidekick II, plays on the T-Mobile service. The Sidekick phone uses GoAmerica's WyndPower 2.0 to allow full-duplex TTY calls as well as relay-operator calls. It even includes built-in access to InSight Cinema, which gives local listings for captioned movies.

WISHES AND DREAMS

These are very recent—and very welcome—developments, sure to please the deaf and hearing-impaired community, which numbers nearly 28 million people in the U.S. The above list is not meant to be exhaustive, just indicative of the progress being made.

As good as this is, Aharon wishes for more: built-in TTY/TDD compatibility in all Pocket PC and Palm devices, at both the hardware and operating-system levels, with support for folding keyboards. He says that a larger keyboard is essential for the rapid typing in customer conversations. His dream machine? A phone from the Nokia 9000 Communicator series, with full TTY/TDD support, which has already gained wide acceptance among deaf users. I urge the manufacturers to make these dreams come true.

MORE ON THE WEB: You can contact Bill Machrone at Bill_Machrone@ziffdavis.com. For more of his columns, go to www.pcmag.com/machrone.

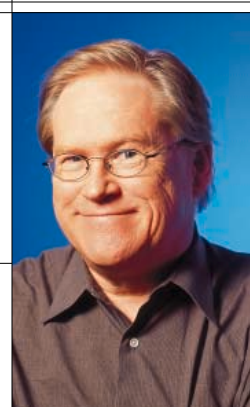
Pocket PCs, smart phones, and similar devices can't communicate with TTY/TDD machines, the standard terminals for deaf communications.



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John C. Dvorak



The Wi-Fi Rip-Off

The entire personal-computing revolution has been centered on doing things cheaply. We started off with simple computing, then word processing and accounting, then typesetting and photo editing. And today, data retrieval, data storage, and personal publishing, as well as those legacy applications, are all done cheaply on incredibly powerful machines.

This theme of cheapness is continually overlooked by old-school businesses as they come in and out of the modern computing scene with overpriced services usually promoted as “business class,” robust, or some such thing to justify what can only be viewed as gouging. Nothing epitomizes this more than the wireless-connectivity schemes. Numerous providers charge a typical rate of \$39 a month just to link you to various Wi-Fi networks in airports, hotels, and other locations. Over the course of two years, that’s \$936. For the price of a new computer, I get a connection for a few minutes here and there?

The alternative to this is free hot spots, which exist by the tens of thousands. Starbucks, McDonalds, the Metreon complex in San Francisco, the JetBlue terminal in JFK Airport in New York, and Sea-Tac Airport in Seattle all have free access. There is so much free access that when you encounter a roadblock it’s quite annoying—all the more so because it’s overpriced. In an airport you might need to be online for 20 minutes, but they want you to pay \$10 for 24 hours.

Hotels are the worst offenders, as third-party companies set up Wi-Fi networks so customers have the privilege of high-speed access for a mere \$10-\$15 per 24 hours. You never actually get 24 hours of access, since the system seems to reset at most hotels at checkout time. But what difference does it make? At an exorbitant \$15 a day (not uncommon), this amounts to a connectivity charge of \$465 a month. And you thought the booze in the minibar was a rip-off!

What’s worse is that this wireless service often doesn’t even work. I’ve been to many hotels where the wireless network is down, and someone is supposed to be fixing it. But nobody knows when.

At a hotel recently, I saw the newest ploy. For \$15, I could get wireless connectivity, plus all the local and long-distance calls I wanted to make on the room’s phone. They might as well throw that in, since nobody in their right mind uses hotel phones anymore. These same telecom companies long ago

worked the hotel folks to make the room phone a profit center: Call home, \$25. Call local information, \$1. Call the office, \$20. Once mobile phones became popular, nobody used hotel phones anymore because of the ridiculous charges.

Given the choice, I stay only at hotels that have free Internet access, such as the slick little Park South Hotel near the *PC Magazine* offices in New York. When traveling, I try to do a little research on free hot spots and work the rest of the time offline.

There is a war between the pay-as-you-go Wi-Fi world and the free hot spot world, and it will get worse with the 802.16 initiative, which will supposedly bring high-speed wireless access to a larger area. Also called WiMAX, 802.16 is actually a metropolitan area network (MAN). Instead of using the unlicensed radio frequencies of 802.11, this technology uses specific licensed frequencies intermixed with unlicensed frequencies to deliver area-wide wireless Internet connectivity at DSL speeds.

The idea is for 802.16 to be a fixed wireless competitor to DSL and cable modems but designed so the user can also do voice and video over the 802.16 network. One architecture would have a fiber cable going to a pole and the signal distributed from there via an 802.16 mesh to a neighborhood. While such a system could be cheap and cost-effective, you can be sure that the argument will go as follows:

“Look, Bill, this technology is going to be deployed in an area that does not have cable modems or DSL. These people have no other choice. We can easily get \$50 a month from them. And we can still charge them for video downloads and other services too. Or charge \$39.95 for the connection, but make them pay \$10.95 more for an ISP, which would also be us.”

This is why people flock to free hot spots and why many people poach their neighbors’ 802.11b connections. The Internet is more like water than electricity and should be sold as such. Water doesn’t have to be generated or “made.” It exists. The water companies just collect it and distribute it. They put pipes in the ground, maintain them, and sell the water for less (in most parts of the country) than what we pay for an Internet connection. Something is overpriced—and it’s not the water.

The Internet is more like water than electricity and should be sold as such. Water doesn’t have to be generated or “made.”

MORE ON THE WEB: Read John C. Dvorak’s column every Monday at www.pcmag.com/dvorak. You can reach him directly at pcmag@dvorak.org.



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Inside Track

C hip Watch Dept.: So what do you do with all of those unwanted Itanium chips? You put them in one big box, call it a super-computer, and sell it to the government. At least that looks like the next ploy for the beleaguered Itanium chip from Intel, as SGI has used the chip to build a **42-teraflop machine** that it claims is the most powerful computer in the world. The machine is more powerful than the vaunted Bluegene/L from IBM and the NEC Earth Simulator. There's a newer product, the NEC SX-8, which NEC claims can deliver almost 60 teraflops, but who is quibbling about a flop or two?

Whatever the case, the chip seems to work out nicely as a **building block** for large-scale systems. The SGI machine will be used for weather predictions and hurricane tracking. Dubbed Project Columbia, the machine costs a mere \$50 million and is installed at NASA's Ames Research in California. It consists of **10,240 processors in 20 cabinets**. I don't think it's running Windows.

All Hail the Great Robot Overlords Dept.: I went to the RoboNexus show in San Jose to see the Kawada Industries HRP-2 **walking, talking humanoid robot**; it was being shown in the U.S. for the first time. It's a standing, **self-balancing robot** similar to the Honda Asimo, though the HRP-2 is taller. It walks around as gingerly as Asimo but can also balance itself for a long time on one foot, and it can lie down completely and get up, something Asimo cannot do since it has a backpack full of gear.

I noticed the **short duration** of the demonstration; it ran only about 10 minutes. It was apparent that HRP-2 doesn't have the battery life of Asimo, which wasn't at the show. (I had seen it earlier in the year). Still, HRP-2 was most impressive. It is also much more "Japanese," in the sense that the colors and design elements have a Japanese look with little wings and other peculiar touches. In fact, the entire bot **looks like a transformer** or a cartoon character. Its small head actually makes it look like some sort of **evil device**, whereas the Asimo has a friendly and cute appearance. That said, when you see either of these things walking around you are creeped out—at least I am, and I've talked to others who felt the same way. **Fascinating, but deeply creepy**. At first I thought this might stem from watching too many science fiction movies, but no. I realized that the robot itself is not creepy; it's the strange gait that is. I have never seen anything like that movement in a movie.

Otherwise, there were the **usual hobby bots**, including the reintroduction of the **i-Cybie dog robot**, a \$229 competitor to the Sony Aibo. While not as



There is demand for an old-fashioned computer show where cool products are showcased. I'm predicting a great future for DigitalLife if it stays on track.

complex, the new 2004 dog has been tweaked, is hackable, and is a great bargain by comparison with the Aibo. Sold exclusively at www.buy-robot.com, this dog has an **interesting tale** attached to it. Apparently it was discontinued only because a bunch of catty companies consolidated and the dog was not wanted. The rights reverted to the inventors, who are remaking the dog. The owner of Buy-Robot chatted with me and said simply that this is one great dog for the money. He said this as fondly as if it were a real dog.

There were also **weight-lifting robots** that lifted 1,500-pound dumbbells, and a slew of the BattleBot robots with saws and drills and all sorts of destructive gizmos attached. Quite an unusual show.

The week before, in New York City, Ziff-Davis rolled out its DigitalLife Expo at the Jacob Javits Convention Center. The show, which highlighted new products—especially stuff that you'd find in a home—was a resounding hit. Since DigitalLife was **open to the public**, there were a lot of children there. There were a lot of kids at the robot show as well, but mostly they came in as classrooms or study groups.

Most conventions and trade shows do not allow children, and it is true that they can get in the way of doing business. But in this situation, the children added an interesting and unique dimension that I had not considered—**real-time market research**. Since this was a show about the digital home, you could immediately see what kids thought was really cool as opposed to what adults thought was really cool for kids. We are **often wrong** when trying to predict what children will and will not like.

Another thing this show indicated to me is that since the closure of Comdex and CeBIT America and the inability of TechXNY (formerly PCExpo) to get traction, **there is a pent-up demand** for an old-fashioned computer show where cool products are showcased. I'm predicting a great future for this show if it stays on this track. People enjoy going to computer shows to see new stuff. Apparently understanding this simple notion is rocket science to most promoters.

New Buzz Term Dept.: I hate it when new buzz terms or acronyms sound like already existing buzz terms but have zero relationship to them. It's even worse with monikers such as IP, which can stand for Internet Protocol, Intellectual Property, Incentive Pay, Index Pointers and about 50 other things. So along comes **FTTP**, which you would think is **some sort of protocol** since it sounds like FTP and HTTP, right? No, it actually means Fiber to the Premises. Aggh!



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Bill Howard



Holiday Goodies

Technology products are so good now that your ultimate satisfaction hinges on seemingly secondary features. For example, with cars, rather than horsepower or cornering, it would be the availability of integrated satellite radio and back-seat DVD player for all the hours you spend stuck in traffic or putting up with children bored by drives longer than 30 minutes. With that in mind, here's a personal CliffsNotes accompaniment to the holiday buying guide.

Virtually all desktop PCs perform adequately unless you're blasting away at Doom, in which case none are nearly fast enough. Focus instead on getting a system with Windows XP Media Center Edition. Now that Microsoft no longer requires manufacturers to include a remote or TV tuner, Windows XP MCE is only a few dollars more than vanilla XP Home. Also, look for units with ultraquiet cooling fans, including systems based on the Intel BTX motherboard design. As for mainstream features, the best bang for the buck comes in buying CPUs one or two speed levels down from the top. DVD burners are so cheap that you should choose a system that has one instead of DVD (read-only)/CD-RW. If digital photography is important, buy a PC with a front-mounted flash card reader. If you're thinking of buying a PVR (personal video recorder), get a Media Center PC with integrated TV tuner/PVR. You'll love the monthly fee for TV listings: free.

Notebooks are seldom used away from AC power. But if you're a road warrior, you want one that has the options of an extended-life battery (a few offer it) and a battery replacement for the optical drive (most offer it). If your eyesight isn't perfect and you're working more with text than graphics, forgo the SXGA+ (1400-by-1050-resolution) LCD panels for XGA (1024-by-768) LCDs that make fonts a third bigger. If you want to use your laptop as a back-seat DVD player for two kids, be aware that HP offers a couple of models with two headphone jacks. Widescreen LCDs are cool for playing DVDs and for putting two documents side by side, but a 15-inch 16:10 widescreen has no advantage in surface area (square inches of display) versus a normal 14-inch 4:3 display.

LCD displays are so affordable you can easily move up to a 17-inch panel or bigger. As with laptops, they're fixed-resolution, so consider your vision quality when buying. The biggest fonts are on 19-inch panels with XGA resolution—one-quarter bigger than XGA on a 15-inch panel, which is already ade-

quate for a notebook. For best quality, use a digital (DVI) connector, which may require a new graphics adapter, rather than an analog (VGA) connector. A luxury gift is a \$1,000 21-inch LCD panel; a cheaper solution with even more screen area is a pair of 17-inch displays plus a second graphics adapter, creating an extended Windows desktop.

Digital media hubs that take music, photos, and video from your PC and play them on your stereo and TV seem like perfect year-end gifts, but too many are immature, clumsy products. If they don't improve, they're going to be bowled over by Microsoft Windows Media Extender devices. There are several decent music-only hubs and one good music-photos-video hub, the Roku HD1000, which displays photos in HD on HDTVs—the image quality is outstanding.

Look for digital cameras with long battery life using rechargeables (some approach three hours as opposed to 45 minutes) and docking station options (Casio, Fuji, HP, Kodak, Sony) for simplest recharging and picture transfer. In addition, with a dock you'll always know where the camera is when you need it in a hurry. If you want to take sports pictures, look for a camera with a 10X optical zoom, not 3X, and remember to ignore the multiplier effect of digital zoom; only optical zoom matters. You'll hear experts say megapixels don't matter. I believe they do, and 5 are better than 3, all else being equal.

DV camcorders vary more in image quality, but if you want one that also takes still photos, look for the handful with 3-megapixel imagers, not VGA (yuck). If you have an ailing DV camcorder over three years old, buy new, don't repair, not even if you paid \$1,500.

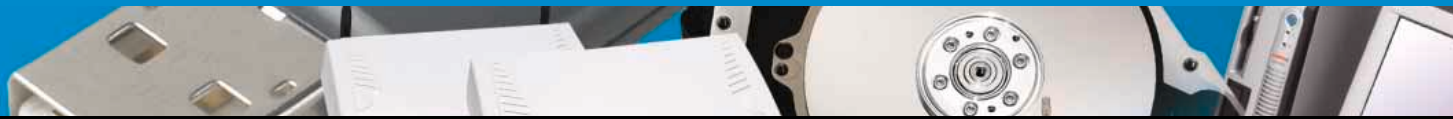
For the road warrior who has almost everything, get a portable router (about \$75; 3Com is our current favorite) that turns any wired broadband hotel room into a wireless broadband hotel room. Check out the Always On Wireless WiFlyer (\$150), which adds a dial-up modem for hotels that lack broadband.

You'll disappoint your kids if you give them anything other than an Apple (or HP) iPod. It's the best-designed, highest-status, coolest music player. Still, iPod won't play WMA files and lacks a built-in voice recorder. At least take a look at iRiver players, best of the non-iPods.

Now that Microsoft no longer requires manufacturers to include a remote or TV tuner, Windows XP MCE is only a few dollars more than vanilla XP Home.

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Manage Multiple Operating Systems

Here's how to run more than one environment on a single system. **BY JOHN CLYMAN**

If you're a power user—as many *PC Magazine* readers are—you've probably contemplated running more than one operating system on a single machine at one time or another. Maybe you'd like a chance to explore Linux without dedicating a PC to it full-time, or to torture-test a new Windows Service Pack in a controlled environment before rolling it out on your production system. Perhaps you're responsible for computers in an educational or training facility where different students need to gain experience in different environments. Or you could be a developer or tester who needs to characterize your software's behavior on a variety of platforms.

No matter what your goals, there are ways you can effectively host multiple op-

erating systems on a single system. Here are some of the things you can do to make managing more than one OS on a single system easier.

MULTIBOOTING

The time-tested technique for hosting more than one operating system on a single PC is multibooting—that is, independently installing different environments on multiple physical disks or logical disk partitions, then selecting the operating system you want to launch from a menu that appears when you boot the system.

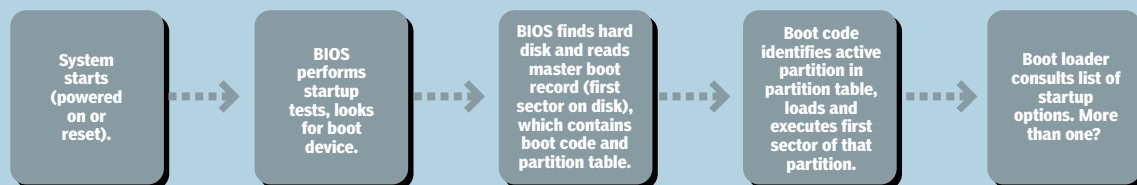
The starting point for setting up a multiboot PC is creating a separate area on your hard disk (or disks) for each environment you want to run. You may also want to create additional areas for your data, a topic we'll discuss in further detail below.

If your PC has more than one hard disk, defining these separate areas may be as simple as choosing to assign a physical disk to each environment. More commonly, though, you'll need to divide a single hard disk into multiple partitions first. To understand how partitioning and multiboot systems work, it helps to have a bit of technical background. On the first sector of

each PC hard disk is an area known as the Master Boot Record, or MBR. The MBR contains a *partition table* that specifies how the physical disk is to be separated into four logically distinct “primary” partitions. Because four partitions aren't always enough, one primary partition can instead be denoted an *extended partition*, which can define a number of logical partitions. The partition table also indicates which one of the four primary partitions is currently active or bootable.

When a PC boots, the system BIOS—stored in nonvolatile CMOS memory—looks for a suitable boot device, which could include a floppy disk or CD-ROM, depending on your BIOS configuration. If the first suitable device it finds is a hard disk, as is usually the case, the BIOS reads the disk's MBR and begins executing a small amount of *boot code* found there. The boot code examines the partition table to determine the active partition, then loads the information (known as the *volume boot sector*) at the beginning of that partition and executes it, transferring control to the operating system loader for that partition. On operating systems derived from Microsoft Windows NT, such as

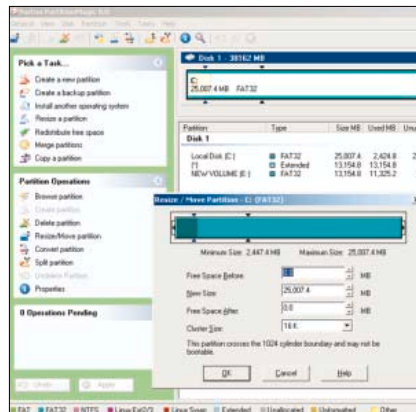
How Multibooting Works



86 **HARDWARE:**
Better display
readability.

90 **SECURITY WATCH:**
Proliferating BOT worms.

95 **USER TO USER:**
Tips and tricks.



NORTON PARTITIONMAGIC is an indispensable tool for managing multiple partitions, as the tools Windows provides wipe out existing data when changing partition information.

Windows XP, the operating system loader is a file called NTLDR.

If you're running on a single-partition system, the rest of the process is straightforward; NTLDR or its equivalent continues loading the operating system. On a multipartition system, you are first presented with a choice of which partition to boot from. You might choose to continue booting that very same OS, or you might transfer control to another partition (and another OS) instead. This boot menu typically contains a timeout feature, so your default OS will start up automatically if you don't respond within a certain period.

If you want to see how the boot menu is constructed on a Windows system, you can peek at the contents of the system file c:\boot.ini, or open the Control Panel, select *System*, select the *Advanced* tab, press the *Settings* button under *Startup* and Re-

covery, and note the entries under "System startup."

PARTITIONING

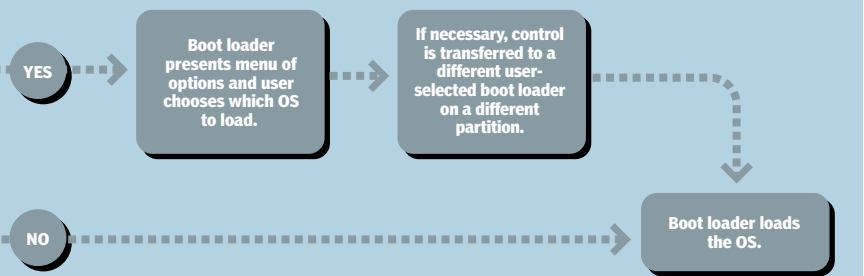
Let's now look at how to manage partitions and how to install multiple operating systems. We strongly recommend that you back up your system and create a system-rescue disk before you begin manipulating your hard disk configuration in any way.

Windows has built-in capabilities for managing disk partitions, but they're relatively primitive and can make changes only in a destructive manner. You'll lose any data that's already on the disk—a serious nuisance if you want to convert an existing single-boot system into a multiboot one.

The solution is to use a tool like Norton PartitionMagic 8.0 (\$69.95 direct, www.symantec.com), which lets you resize, move, and otherwise manipulate disk partitions nondestructively. What's more, it includes a wizard to walk you through the entire process of installing another operating system on an already working machine.

If you don't want to use a third-party product, you'll probably have to do a destructive re-partition and reinstall your OS, applications, and data from scratch. To do this, you'd need to boot from your Windows CD, delete the existing Windows partition, and then create new partitions in the sizes you desire. You'd then complete the Windows installation on one of those partitions, boot the operating system CD-ROM for the next OS you want to install, and install it into a different partition.

If the second operating system you install is some version of Linux, you may find that you have a choice of two boot loaders—LILO (Linux LOader) or GRUB (GRand Unified Boot loader)—that per-



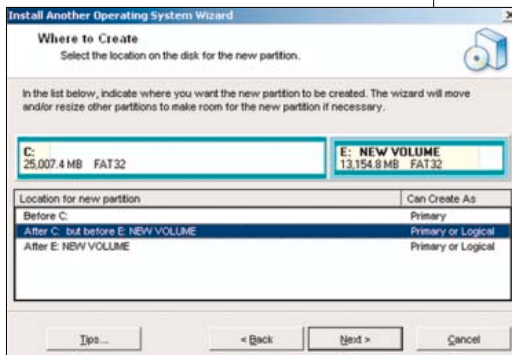
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NORTON PARTITIONMAGIC includes a wizard to help you walk through the process of installing a new operating system on a working machine.

form a function similar to what NTLDR does with boot.ini, letting you select the OS to boot during the system startup process.

WHERE TO STORE DATA

Once you have multiple partitions on your hard disk, you'll soon run into the question of where to store your data. If you spend most of your time in one OS, it may make sense to keep your data in the same partition as your primary OS. Alternatively, if you want to keep your data centralized rather than have it associated with a single OS, you could set up an additional logical partition solely for your data.

Whichever operating system you boot, it should be able to see the contents of other logical partitions on your hard disks, as long as they are formatted using a file system that the currently running OS understands. For example, Windows XP can view files on NTFS and FAT partitions from other versions of Windows; those partitions will be assigned separate drive letters. You can control this assignment with PartitionMagic or in the Windows Control Panel, under *Computer Management | Storage | Disk Management (Local)*; right-click on a partition and select *Change Drive Letter* and then *Paths*. If the Disk Management plug-in fails to work, you may need to temporarily disable the Windows Firewall if you're running Windows XP Service Pack 2. Linux can also "mount" FAT, and in some cases NTFS, partitions so you can access them directly.

If you'd rather hide partitions from one another, it's possible to change the partition table using PartitionMagic and other tools—but be aware that this sort of security isn't very effective and can be defeated by anyone with access to similar tools.

VIRTUAL MACHINES

A totally different approach to hosting multiple environments on a single PC is to run some of them within virtual machines (VMs). VMs provide a way for a computer to simulate a complete hardware environment within software. While running one operating system, you can fire up a VM just as if it were another application, but the VM can host its own operating system that thinks it's running on its own real computer.

Virtual machines offer advantages such as the ability to run multiple operating systems side by side and concurrently. Since each VM can have its own IP address and virtualized network connection, you can even simulate a small network of computers within a single PC (provided you have sufficiently powerful hardware to handle multiple VMs running simultaneously).

Another benefit of VMs is that they let you roll a system back to a known initial state. A different way to achieve a similar effect is to use software like Norton Ghost 9.0 (\$69.95 direct, www.symantec.com), which takes a complete snapshot of a disk's contents, compresses it, and stores it in a file. You can later restore the system's state completely from that file.

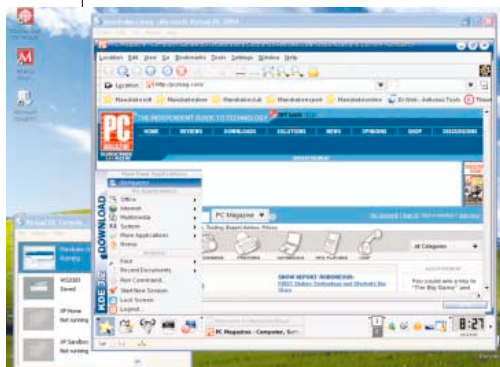
The disadvantages of virtual machines are reduced speed—a consequence of emulating hardware with software—and the additional cost of the VM software itself.

Two VM programs for PCs are VMware Workstation (\$189 direct, www.vmware.com) and Microsoft (formerly Connectix) Virtual PC (\$129 direct, www.microsoft.com). Both work in a similar fashion: You create a new virtual machine, speci-

fying parameters such as the amount of RAM and hard disk space it should appear to have, and then install an OS of your choice onto the VM. A small console application lets you choose a virtual machine to start up.

UNIX FEATURES WITHOUT UNIX

Sometimes you may not need a full alternate operating system on your PC, just access to some of its capabilities. For example, if you need to run Unix-based software, Cygwin (free, www.cygwin.com) is indispensable. Cygwin's DLL provides a Unix-like API that lets many programs designed for Unix run within Windows—in essence, fooling those programs into thinking that they have access to all the Unix services and capabilities they expect. (Cygwin won't run Unix binaries natively,



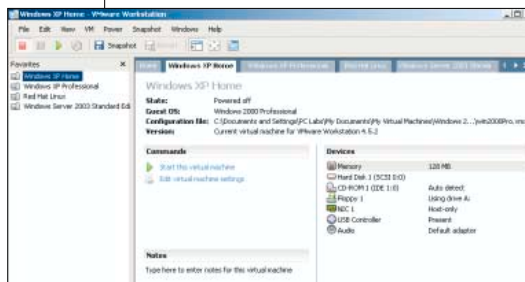
HERE WE USE Microsoft's Virtual PC software to run Mandrake Linux on its own virtualized hardware and in a window on top of Windows XP.

though; you'll have to recompile them from source code.)

Cygwin also provides a bash shell and GNU toolset that give you the full richness of a traditional Unix command line (which is far superior to the cmd.exe command prompt in Windows XP), and it lets you access your existing NTFS files stored outside of Cygwin by making them directly accessible through directories like `/cygdrive/c`.

An article like this one can only hope to scratch the surface, particularly in regard to the complexities that can arise in multi-boot scenarios involving older hardware and operating systems. But by using one or another of the techniques here, you should be on the road to achieving the convenience and cost savings of running multiple environments on a single system.

John Clyman is president of technology consulting firm Narrative Logic, LLC, and a contributing editor of PC Magazine.



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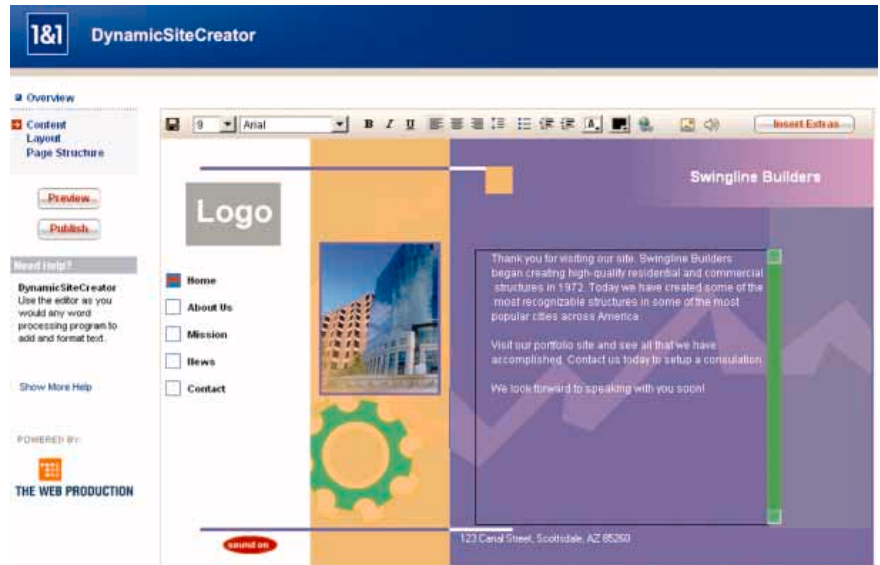


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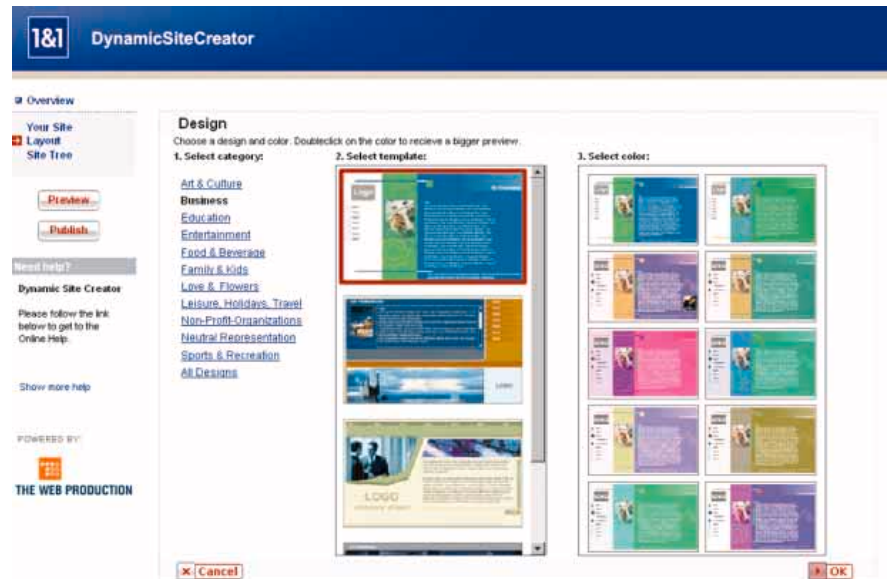
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HARDWARE

How to Improve Display Readability

Ironically, better displays can mean worse readability.

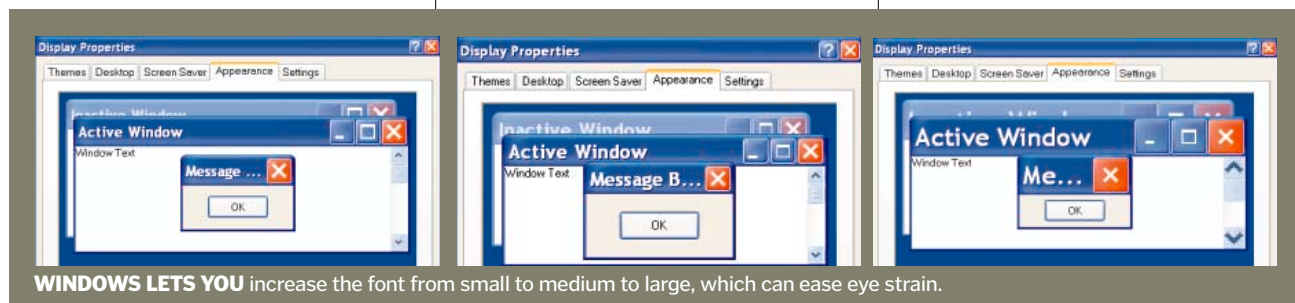
Here's what you can do to solve the problem. **BY BILL HOWARD**

It's been a long day at the computer, and you can barely read the screen anymore. Is it that you're overworked, or is this an equipment problem? Most likely, the display is at least contributing to

480-pixel DOS box on an SXGA+ screen, fonts are less than half as wide, 0.061 inches, or 16 characters per inch. Manual typewriters, in comparison, typically provided 10 characters per inch; fewer cpi in-

and select ClearType. (Do note, though, that some users say they find ClearType *harder* on the eyes.)

Consider using Portrait Display's Liquid View utility, which does a more sophisticated—but not perfect—job of intelligently scaling Windows fonts (as well as tools in Microsoft Office), and doesn't require a Windows restart to take effect. Download the software for \$30 at www.portrait.com. Two other utilities improve the sometimes tiny type on Microsoft Internet Explorer: Portrait's Liquid Surf (\$20 download), which amplifies the browser window, and Ion Systems' Web Eyes (\$25 download, www.ionwebeyes.com), which reformats



WINDOWS LETS YOU increase the font from small to medium to large, which can ease eye strain.

your blariness. It may seem harder to read because it is harder to read. With new monitors, resolution has gone up even faster than display size, yielding more dots (pixels) per inch. The result is crisper photos (good), more windows you can put on a screen (good for productivity), and type that's smaller (not good).

Most users are comfortable with standard fonts on a display with a resolution of 100 dots per inch (dpi). That's XGA resolution (1,024 by 768 pixels) on a 13.3-inch notebook (96 dpi) or a 15-inch CRT. If you switch to SXGA+ resolution (1,400 by 1,050 pixels) on the same size display, text will only be four-fifths (81 percent) as big. As LCDs get larger, their fixed resolutions increase too. This means that fonts don't get much bigger and may sometimes shrink, since they are programmed to appear in a given number of pixels, often 8 wide by 12 high for a screen font.

To see how far we've regressed, try opening a DOS window and see how small the fonts are. Before the advent of Microsoft Windows, the so-called "DOS box" of 80 characters by 25 lines filled the entire screen. Each 8-by-12 pixel character was about 0.133 inches wide, roughly eight characters per inch. When you open a 640-by-

480-pixel DOS box on an SXGA+ screen, fonts are less than half as wide, 0.061 inches, or 16 characters per inch. Between the fixed resolutions of LCD panels and Windows font-scaling difficulties, it's little wonder your eyes get bleary.

FONT-ENHANCEMENT UTILITIES

Windows does provide some help in making fonts and menus easier to read. To increase the size of menu, dialog-box, and task-bar fonts, go to the Windows desktop, right-click on a blank area, left-click on *Properties*, choose the *Appearance* tab, and select *Font Size* (normal, large, or extra-large). If you want to make everything—not just fonts—bigger, choose the *Settings* tab and click on the *Advanced* button and then the DPI selector. "DPI" is a misnomer; it actually magnifies the entire screen. Choosing 120 dpi instead of the normal 96 makes everything 25 percent larger. Doing so may make some elements of certain applications display incorrectly, with fonts spilling outside list boxes or not aligning properly.

Try ClearType, Microsoft's font smoothing technology for color LCDs. Go to the Windows desktop, right-click, choose *Properties*, *Appearances*, and then *Effects*,

and enlarges the page. All have free trials. You could also change to a different browser, such as Opera, that does better sizing.

OFFICE APPS, E-MAIL

Most office apps let you magnify the work area and use font utilities to enlarge the type on the menus. To enlarge fonts in Microsoft Office, select *View* and then *Zoom*, and try setting it to 125% or 150%. Also consider changing your default font from 10 to 12 points so printouts are easier to read. Choose *File* and then *Open*, select the file type *Document Templates*, open *normal.dot*, and choose *Format*, *Styles*, and then *Formatting*. Then, right-click on the Normal style, right-click on *Modify*, change the typeface and point size, click on *OK*, then save the file.

For e-mail, using a larger font helps both you and your recipients. To modify font size in Microsoft Outlook, choose *Tools*, select the *Mail Format* tab and then *Fonts*, make your changes, and click on *OK*. Instead of using Arial, consider display-friendly fonts such as the slightly wider Verdana or the slightly narrower Tahoma. Try Georgia instead of Times New Roman. Book Antiqua is an excellent printer font and is also good on screen.

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THE WINDOWS user interface can be hard on your eyes (left), but Liquid View lets you resize components such as fonts, menus, and icons to increase legibility, regardless of your display's native resolution (right).



Mac users running either MS Office or Internet Explorer will have Georgia, Tahoma, and Verdana (it's part of the installation), and all Macs have the Book Antiqua equivalent, Palatino. But Microsoft has discontinued the free TrueType fonts download program that allowed Mac or Linux PC users to install these typefaces.

FINE TUNING THE DISPLAY

Setup and adjustment can be monitor-specific. In general, let Windows try to auto-discover the resolution and refresh rate. If not, choose a moderately high refresh rate for CRTs (around 85 Hz) and a low refresh rate for flicker-resistant LCDs (60 Hz is fine; faster than that will slow down the graphics). With CRTs, you can pick a comfortable resolution and then adjust the image size and screen geometry. With LCDs, you absolutely should stick with the native resolution. If there's a one-button auto-set or auto-tune adjustment, use that and then try minor manual adjustments using the maker's tuning patterns or DisplayMate's DisplayMate for Windows (\$69 download, www.displaymate.com). With a digital LCD, only a few adjustments are possible or necessary, so that kind of display is your best bet for a great image.

Dust on a monitor may block half its light output. Clean it gently with a microfiber cloth soaked in almost-hot water. If

possible, orient the monitor so neither you nor the display face a bright window. A dark shirt, if it suits your style, cuts reflections. To reduce glare from overhead lights, tape matte board with a six-inch overhang over the top of the display and wear a baseball cap.

UPGRADE YOUR MONITOR

If you've had it with your current display and want to start anew, focus on LCD

technology. LCDs are easier on the eyes and less sensitive to indifferent setup. Wide displays (16:9 or 16:10 aspect ratio) are useful for showing side-by-side apps on one screen, but they don't necessarily have more total pixels or space than a comparable 4:3 display, because they may be an inch shorter as well as an inch wider.

With virtually all laptops and some desktop PCs, you can run dual monitors. You could use one for word processing, for instance, and use the second for your music player, e-mail, and utilities. Activation is simple (providing you have either two graphics cards or a card with two outputs): Plug in a second display, and in the *Display Properties Settings* tab, check the box "Extend my windows desktop onto this [second] monitor."

Dual displays aren't as crazy as you might think: Two \$200 to \$500 15-inch LCD panels have slightly more screen area than a single \$1,000 to \$1,500 21-inch LCD. The single panel is better for video or photo editing, and it will also let you view two full-size 8.5-by-11 pages side by side. A pair of 17-inch displays, which will still cost less than one 21-inch display, will have one-third more screen area.

These days, though, your best bet for big, readable type without scaling is a 19-inch 1,280-by-1,024 (SXGA) digital LCD. For more information on these eye-savers, check out our LCD Product Guide at <http://go.pcmag.com/lcdguide>.

Bill Howard is a contributing editor of PC Magazine.

DPI: Crispness vs. Readability

Most users find standard fonts readable at 100 dpi and marginally readable at 125 dpi. Conversely, higher resolution (and dpi) makes pictures and video look better. Font-scaler software can help. The table shows dpi based on actual screen diagonal of 4:3 aspect ratio LCD; 5:4 diagonal for SXGA.

		SCREEN RESOLUTION				
		XGA 1,024 x 768	SXGA 1,280 x 1,024	SXGA+ 1,400 x 1,050	UXGA 1,600 x 1,200	QXGA 2,048 x 1,536
LCD SIZE	10.4"	123	158	168	192	237
	13.3"	96	123	132	150	185
	14.1"	91	116	124	142	175
	15.1"	85	109	116	132	163
	17"	75	97	103	118	145
	19"	67	86	92	105	130
	20"	64	82	88	100	123
21"	61	78	83	95	117	

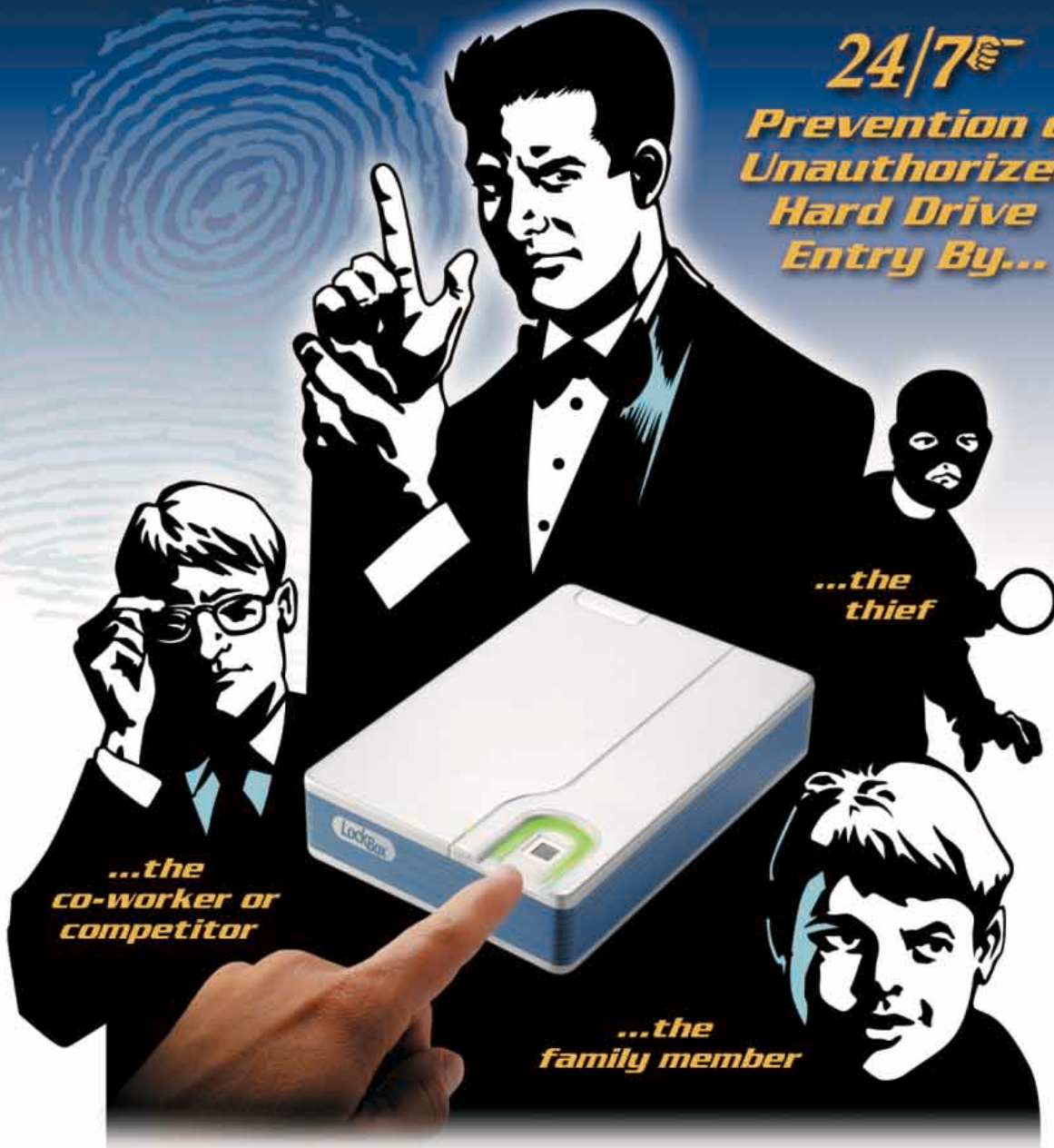
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Fingerprint Access Hard Drive

24/7

Prevention of
Unauthorized
Hard Drive
Entry By...



...the
co-worker or
competitor

...the
thief

...the
family member

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SECURITY WATCH

Bots March In

These worms could “zombify” your computer, but you can give bots the boot. **BY JAY MUNRO**

Last year we warned you that hackers were increasingly striving to take control of computers and, unbeknownst to their owners, turn them into “zombies” to propagate porn and spam, or to launch denial-of-service (DoS) attacks against Web sites or networks (see <http://go.pcmag.com/zombies>). Although *PC Magazine* readers may have listened, apparently many others didn't, because Symantec's Internet Security Threat Report for the first six months of 2004 stated that the number of bot worms—frequently used to create armies of “zombie” computers—was up 600 percent in the past six months, making bots the second most common attack threat in that period.

Bots are small scripts designed to perform automated functions; they are not inherently bad. They are often used for unattended system and user maintenance, and they are occasionally found on instant-messenger networks as robotic helpers for users.

Malicious bots, though, are essentially Trojan-horse programs that open up a victim's machine to remote access. They are

capable of spreading through a number of methods, but the majority use IRC networks and network shares to propagate, and IRC channels to “call home” to their attackers. Bot worms have among the most variations of any kind of worm; these variations include Rbots, SDBots, Gaobots, spybots (no relation to the antispyware software), and half a dozen others.

A recent 30-day Symantec listing of viruses and worms included five spybots, five IRCBots, and three Gaobots, all of which spread via IRC channels. There were also two SDBots, which spread through network shares, and several Microsoft vulnerabilities, such as MS04-011.

Sophos antivirus tracks the Rbot extensively; there are over 840 variations in its virus library. The latest, W32/Rbot.KZ, uses weak passwords on network shares and on three Microsoft vulnerabilities (MS03-007, MS04-011, and MS04-012).

McAfee lists a number of bots. One, the W32/Gaobot.Worm.gen bot, was reported to have 1,350 variants as of May 2004. Gaobot exploits vulnerabilities on unpatched Microsoft systems and weak pass-

THE LOOKOUT

ANTIVIRUS PRODUCTS MISS MALWARE

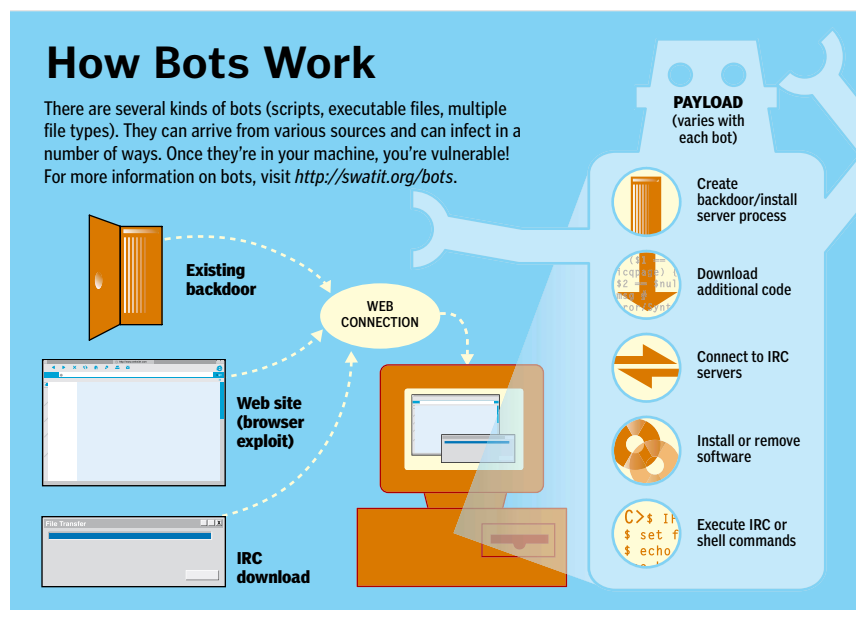
An anonymous researcher has reported through several sources that antivirus products from six vendors fail to detect malware contained in a corrupted Zip file. The modification to the Zip file prevents the programs from detecting files in it, but it doesn't prevent users from accessing those files, according to an advisory from security research firm iDefense. The products are from McAfee Inc., Computer Associates International Inc., Kaspersky Labs, Sophos plc., Eset Software, and RAV. To read the full story, visit <http://go.pcmag.com/modifiedzip>.—Larry Seltzer

words on networks. Trojan or bot functionality varies between the different Gaobot varieties, but all use IRC to communicate with the attacker.

There is no concrete demographic information about the bot authors, but some versions, such as the SDBot.AB, hint at what type of people they might be: This bot attempts to steal product license keys for a wide range of computer games. SDBot.AB can also accomplish a number of remote tasks: perform a DoS attack against a target host, retrieve system information, connect to a URL, upload and download files, execute programs, log keystrokes, sniff network packets, conduct port scans against other computers, or steal the Windows Product ID.

Bots' ability to sniff network packets has network professionals worried, as hackers could use this to obtain secure information such as passwords and financial data. A keystroke logger may capture passwords and usernames, but a packet sniffer can watch for log-ons to target sites such as banks or stock sites.

The best way to prevent bot infection is to keep Windows and your antivirus protection up to date. If you're on a network, using strong passwords will help prevent propagation through network shares. Disable any unused shares and services such as FTP. Use a firewall that monitors both incoming and outgoing activity, particularly one that is aware of applications usage of the Web, if you use IRC, and one that can block IRC ports (6667 is the most common) if you don't. A stateful packet inspection (SPI)-based firewall is the best. Both of our Editors' Choices, Norton Personal Firewall and ZoneAlarm Pro, are among the products that fill the bill.



Fujitsu recommends Microsoft® Windows® XP Professional

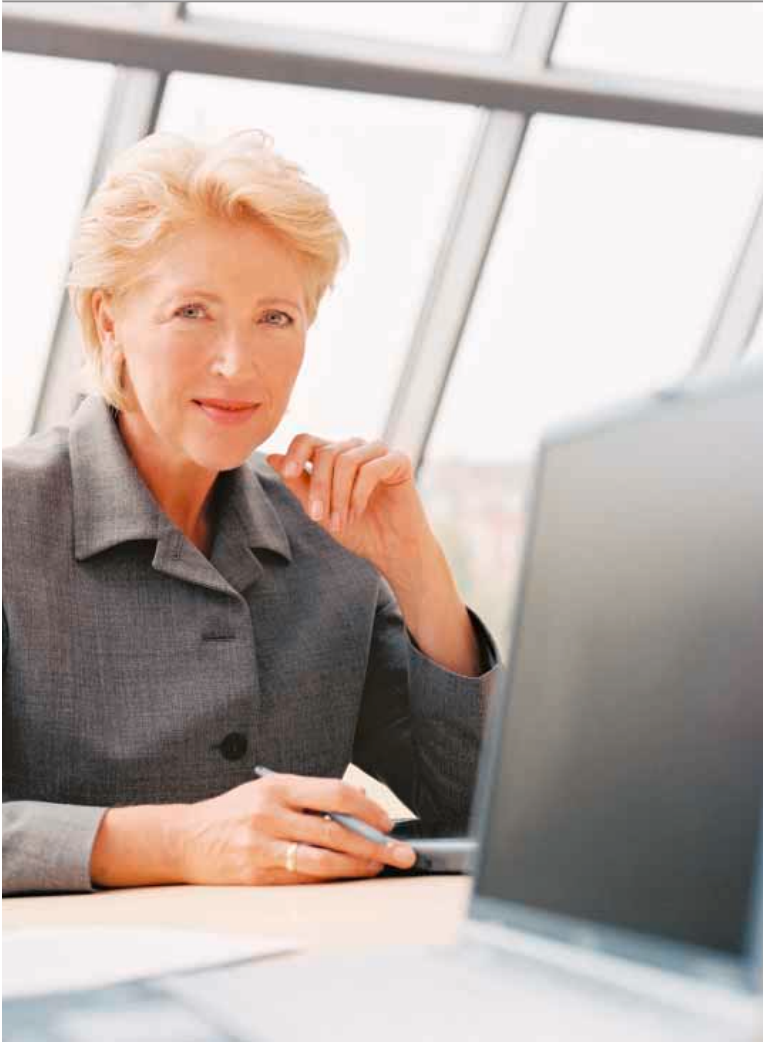


FUJITSU

Improving the Notebook Experience:

Quality and Reliability from the Start

In today's society, the need for easy access to our information and to the internet has made the notebook PC an indispensable tool in everyday life. It would be unimaginable to try and complete all we need to accomplish without having a world class product in our hands. This reality has created a tremendous need for a top quality and highly reliable notebook. As prices of notebooks have stabilized and the costs of lost productivity due to failed systems remain high, the key criterion for many customers when choosing a notebook PC is the level of excellence and dependability proven by a manufacturer. As one of the top five worldwide suppliers of notebook PCs, Fujitsu is a leader in providing customers with proven, high quality, and highly reliable products in this category.



⚡ Ultra-Portable

LifeBook® P7000 Notebook
Award-winning, smallest Ultra-Portable notebook with modular bay. With a 10.6" wide format XGA Crystal View display, it's the ultimate travel companion.



⚡ Thin & Light

LifeBook® S7000 Notebook
Weighing just 4.3 lbs, it's one of the lightest 14.1" notebook available. With wireless LAN connectivity and modular bay it delivers exceptional portability and performance.



⚡ Tablet PC

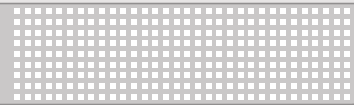
LifeBook® T4000 Tablet PC
Convertible for tablet and notebook use. The unique modular bay enables you to use an optical drive or a second battery for longer work days.



⚡ Desktop Replacement

LifeBook® N6000 Notebook
A true desktop replacement with 17" Crystal View display, full-size keyboard, and incredible stereo sound. 128MB dedicated RAM for multimedia enthusiasts.





Ultra-Portable



LifeBook® P1000 Notebook
Touch screen notebook PC in the smallest available form factor. It has an 8.9" wide format screen, weighs only 2.2 lbs and boasts an amazing battery life.



LifeBook® B3000 Notebook
A powerful ultra-portable notebook with intuitive touch screen technology. Weighing only 3.3 lbs, it's an ideal notebook for on-your-feet computing.

Thin & Light



LifeBook® S6000 Notebook
Stylish, wireless-ready design with a build-in bay. With a 13.3" Crystal View XGA display capable of outdoor viewing, it lets you work and play virtually anywhere.



LifeBook® S2000 Notebook
Affordable, powerful, and full-featured lightweight notebook. It's the perfect companion at home, in the office, or on the road.

Based on first-hand experience in using various branded notebook PCs, consumers are becoming more aware of the need for improved reliability. According to PC Magazine's 2004 Reader Survey, on average, 19% of notebooks require repair each year. Within all the manufacturers included in the survey, Fujitsu had far and away the lowest incidence of notebook PCs in need of repair—a low 13%—significantly below the industry average. (For complete survey results, please visit <http://www.pcmag.com/article2/0,1759,1623706,00.asp>). Fujitsu is a company that takes a different approach and addresses the concerns of customers who are frustrated with reliability issues when using mobile PCs. The company combines innovative designs, world-class manufacturing, and rigorous testing to drive higher quality and increased reliability.

The Decisions that Create Superior Products

Many of the choices that notebook PC manufacturers make have a huge impact on the quality and reliability the customer experiences. Combining exceptional design and world-class manufacturing is essential to building a quality product, yet few vendors focus on design and manufacturing skills in the same way Fujitsu does. Fujitsu does not cut corners, or rely on other parties to do the testing that makes for a better user experience.

As the notebook PC industry started to become concentrated around pricing, a few things occurred that negatively affected

quality and reliability for many manufacturers. A key contributor to this was the trend toward the separation of design, manufacturing and testing. In some cases, three different companies were chartered with these different tasks, creating divisive problems. Fujitsu has always made it a point not to separate these disciplines. Instead, Fujitsu combines its world-class skills in all three areas to build reliable systems.

Maintaining control and preserving the nec-

essary feedback loops among people who work around hard drives. The company uses a soft material to buffer drives against vibrations that come from the system or motherboard, and the reduced vibrations help preclude errors and enhance drive life. In addition, drives are protected by a hard covering designed to prevent damage due to shock as well as relieve pressure on the drive connection to increase reliability.

Fujitsu also protects hard drives from magnetic corruption through the use of special

Fujitsu is a company that takes a different approach and addresses the concerns of customers who are frustrated with reliability issues when using mobile PCs. The company combines innovative designs, world-class manufacturing, and rigorous testing to drive higher quality and increased reliability.

Design and Manufacturing Practices
Fujitsu product development practices are designed to improve the customer experience, and product reliability. One of the best examples of such a design practice is the dual system of protection that Fujitsu builds

shields between palm rests on notebook PCs and hard drives. The wearing of some bracelets and watches with magnetic properties can cause data corruption when positioned above the hard drive. The shields inhibit this from occurring.

One of the most notable features of Fujitsu notebook PCs is "thermal suede". This feature minimizes temperature variations resulting from higher heat components that can create hot-spots on the bottom of the system. The suede has a lower surface temperature resulting in a more comfortable user experience.

Fujitsu recommends Microsoft® Windows® XP Professional



Tablet PC



Stylistic® ST5000 Tablet PC

Flexible form factor—tablet, notebook and desktop. An integrated fingerprint sensor secures your data. Less than 1" thin and 12.1" screen with up to 180° viewing angles.

Desktop Replacement



LifeBook® E8000 Notebook

Stable yet powerful performance with configurations ranging from everyday basic computing to a top-of-the-line performance machine.



LifeBook® C2300 Notebook

Powerful and affordable all-in-one notebook with dazzling multimedia features. Offers Multi-Format DVD writer and loaded with ports.

Rigorous Product Testing

One look at the battery of tests that Fujitsu uses during manufacturing makes clear why such great reliability and quality ratings are given to Fujitsu notebook PCs. Here are some examples of Fujitsu Product Tests:

❖ **Drop Test:** Systems are dropped from various heights to determine how best to build cases and mount components

❖ **Single Point Loading Test:** Many LCD panels are destroyed when a point of pressure is applied to the top of the case. Fujitsu tests to prevent this from occurring

❖ **Shock Test:** Fujitsu subjects notebooks to sub-100G shock tests to protect against the rigors of daily use

❖ **Case Opening/Closing Test:** The cover of a notebook goes through a lot of stress as it's opened and closed during its lifetime; Fujitsu does extensive reliability tests in this area

❖ **Insertion/Withdrawal Testing:** Fujitsu tests insertion and removal of all connectors in systems, so customers can expect them to function properly

An Extensive Line of Mobile Products

A good notebook PC provider should offer appropriate product solutions for each and every type of customer. Fujitsu has a broad and capable product line with options for every usage pattern. This wide range of products is typified by commitment to quality and reliability.

Services for Differentiation

A great customer experience requires not only quality products, but a commitment to services. Fujitsu rigorously focuses on providing a wide range of world-class services that enhance the customer experience.

For the mobile business professional, Fujitsu offers its Executive Mobile Service. This executive level of support provides on-site PC repair or exchange—as soon as the next business day in many cases. The Executive Mobile Service means business professionals won't be without their notebook for days on end.

Fujitsu also provides a number of business critical services to help customers simplify their lives. One of the most interesting examples is how

the company ports applications to new Tablet PCs, so customers can use the specific software offerings that they need and with which they are familiar. Fujitsu can also manage and maintain any customer's required software image, so there is consistency and stability—simplifying software licensing and technical support.

Finally, Fujitsu offers a data migration service that makes it easy for customers to get information and applications moved from old machines onto new PCs. This service not only saves time for the individual user, but it offloads one of the time consuming aspects of PC management from a company perspective.

Summary

For customers who are frustrated with reliability issues when using mobile PCs, and for those spending thousands of dollars for systems that don't meet expectations, Fujitsu has the solutions. Their commitment to high-quality design, manufacturing, and testing will help many organizations and individuals get more done, each and every day.

■ To learn more about the expansive product line
 ■ from Fujitsu, please visit www.shopfujitsu.com
 ■ or call 1-800-FUJITSU.

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THE POSSIBILITIES ARE INFINITE

A new *twist* on mobile computing.



**Fujitsu recommends Microsoft®
Windows® XP Tablet PC Edition 2005**

Trouble deciding if a Tablet PC is right for you?

Fujitsu just made your choice a lot easier. Whether you want a sleek, lightweight, high-powered notebook, or the freedom and versatility of a Tablet, the Fujitsu LifeBook™ T4000 Tablet PC is the perfect choice. Want mobile notebook performance? Simply open it up and use its full-size keyboard. Want to sketch, write, or take notes? Just twist and secure the screen and it instantly turns into a Tablet PC. The LifeBook T4000 Tablet PC also uniquely configures to your work habits. Relax and watch a movie on the bright, wide-viewing angle display via your integrated modular DVD optical drive. When done, easily swap your DVD/CD drive for an extra battery and continue working. It even comes with built-in wireless access thanks to the latest Intel® Centrino™ Mobile Technology, and offers dedicated SmartCard, TPM Security and a host of other features. So stop trying to decide on whether to get a new notebook or Tablet PC. Instead, get the functionality of both, for the price of only one. Go to www.shopfujitsu.com/T4000 or call **1.800.FUJITSU** today for details.

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MOBILE
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USER TO USER

PC MAGAZINE'S COMMUNITY OF EXPERTS AND READERS

Excel's Custom Formats

Contributing editor Edward Mendelson wanted to format a cell in Excel so that if its value is positive, it is formatted with the Accounting format and looks like this: "\$ 456 ". But in the Accounting format, a zero is displayed as "\$ -", which was not suitable for his purposes. He wanted the cell to display a zero as the Currency format does, like this: "\$0", but to look like the Accounting format: "\$ 0 ".

Luckily, Excel's custom number formats are very flexible. An Excel number format can have up to four distinct sections separated by semicolons that define formatting for positive numbers, negative numbers, zero, and text items. Expressed as a custom format, the Accounting format with no decimals looks like this:

```
_(($* #,##0_);_($* (#,##0);_($* "-"
_);_(@_)
```

Each underscore creates a space the width of the character that follows it (the character itself is not displayed). In the Accounting format, negative values are enclosed in parentheses. The format for positive numbers ends with an underscore followed by a parenthesis, creating a space the width of the parenthesis. This keeps positive and negative numbers aligned with one another. An asterisk within a number format creates as many repetitions of the character that follows it as are needed to fill the available space. Here the asterisk followed by a space has the effect of "pushing" anything before the asterisk to the left edge of the cell.

To create your custom format, first format one cell with the Accounting format. Then select Custom. The current format will be copied into the custom format area. Modify the Accounting format to change the single dash to a zero, thus:

```
_(($* #,##0_);_($* (#,##0);_($*
"0");_(@_)
```

One more thing: If you wish, you can color-code any or all of the four portions. For example, it's not uncommon to show negative numbers in red:

```
_(($* #,##0_);[Red]_($* (#,##0);_($*
```

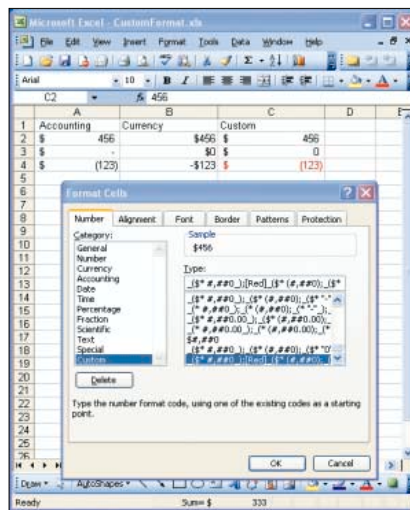


FIGURE 1: Excel's custom number formats offer a lot of flexibility.

```
"0");_(@_)
```

Only eight colors are available: Black, Blue, Cyan, Green, Magenta, Red, White, and Yellow.—Neil J. Rubenking

Copy Word Document Without Hidden Text

I have a Microsoft Word document with hidden text, but when I highlight the document and paste it into a Microsoft Outlook Express e-mail, the hidden text is no longer hidden. How can I keep the hidden text from appearing in the e-mail? I don't want to remove the hidden text permanently, but I need to send the document, and I don't want to share that hidden text.

JOSEPH W. CHERNER

You're going to have to remove all the hidden text temporarily before you copy/paste and restore it afterward—but that's easier than it sounds. Start by saving the current version of the file, just in case. Press Ctrl+H to bring up the *Find and Replace* dialog, and click on the *More* button to show the additional options. Click on the

Format button and select *Font* from the menu that appears. Check the *Hidden* box and click on *OK*. At this point both the "Find what" and "Replace with" boxes should be empty, and the word "Hidden" should be displayed below the "Find what" box. Click on the *Replace All* button and all of the hidden text will disappear, replaced with nothing. Copy and paste the document into your e-mail message. Now press Ctrl+Z to undo the removal of the hidden text. Or simply close the document without saving and revert to the previously saved version.

You may want to choose *Tools | Options*, click on the *View* tab, and check the "Hidden text" box to make Word show hidden text onscreen, so you'll remember when you need to remove it. When hidden text is made visible in this way, Word sets it off with a dotted underline.—NJR

DIY Karaoke

I run Microsoft Windows XP on an HP 7965 Pavilion computer with an integrated sound card. I have karaoke songs on my hard drive, and I can play them on the computer, sing into the computer's microphone, and hear my voice amplified over the computer's speakers. I would like to be able to hear the music track through my headphones, sing into the microphone, and have the computer record both tracks to the hard disk. Can this be done? Does it require additional hardware or software? If so, what would I need?

DENNIS MCGINNESS

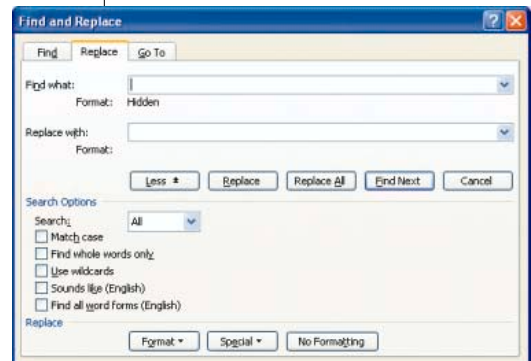


FIGURE 2: Use the *Find and Replace* dialog to remove hidden text from a Word document.

You're going to have to remove all the hidden text temporarily—but that's easier than it sounds.

You can use a single array formula to rank students—or anything else.

Yes, you can do this; you just need some multitrack recording software.

All you have to do is import your accompaniment tracks into the software, which can play and record at the same time. Your voice will be recorded on additional tracks, in sync with the accompaniment tracks. You can also add chorus, reverb, or other effects to your vocal tracks to make them sound fuller and more polished. You can even sing harmony with yourself and build up multiple tracks. You can then play all of the tracks together and mix them down into a single pair of stereo tracks if you like.

Two inexpensive multitrack programs are Power Tracks Pro Audio from PG Music (\$49, www.powertracks.com) and n-Track from Fasof (\$49, www.ntrack.com). You can find more extensive capabilities in products from Cakewalk (www.cakewalk.com) and Steinberg (Cubase SE Hybrid, \$149.99, www.steinberg.net). You can even generate your own accompaniments with PG Music's Band-in-a-Box Pro (\$88, www.pgmusic.com), or for dance-oriented tracks, try Cakewalk Kinetic (\$119) or M-Audio GrooveLab (\$129.99; www.m-audio.com).—*Bill Machrone*

Advanced Ranking in Excel

I have columns of students, band instruments, and tryout scores. I want to rank them automatically with some sort of formula. I know I could get the highest and lowest using Max and Min, but I need to have them ranked 1, 2, 3, and so on, from the highest score down. I also need the ranking for each instrument separately. The solution should also give the same number to any ties (there aren't supposed to be any ties, but I want to be prepared).

BOB C.

This seemingly knotty problem can be solved with a single formula. We'll assume the student names, instruments, and scores are in columns A, B, and C respectively, with column headers in row 1 and data starting in row 2. Select the range containing the instru-

ments, choose *Insert | Name | Define* from the menu, and name that range Inst. Select the scores and name the range Score.

Click in cell D2 and type this formula: =B2&" "&SUM(IF(B2=Inst, IF(C2<=Score, 1, 0), 0)). After typing the formula, press Ctrl+Shift+Enter to identify it as an array formula. If you accidentally press Enter alone, Excel will complain—just press F2 to edit the formula, and then carefully press Ctrl+Shift+Enter. Excel will surround the formula with curly brackets ({}), flag its status as an array formula. Copy this formula down column D to the last row containing data. You'll see that column D now contains

Student	Instrument	Score	Rank
Alice	Trumpet	97	Trumpet 1
Betty	Bass Clarinet	95	Bass Clarinet 1
Carla	Clarinet	71	Clarinet 5
Doreen	Clarinet	71	Clarinet 5
Eileen	Ophicleide	87	Ophicleide 1
Frank	Trumpet	83	Trumpet 2
Gussie	Saxophone	94	Saxophone 1
Hallie	Clarinet	84	Clarinet 3
Ida	Flute	95	Flute 1
Joanna	Ophicleide	68	Ophicleide 3
Klara	Trumpet	60	Trumpet 4
Myna	Saxophone	92	Saxophone 2
Nellie	Clarinet	64	Clarinet 6
Oprah	Ophicleide	70	Ophicleide 2
Queenie	Tuba	67	Tuba 1
Raelynn	Trumpet	61	Trumpet 3
Sophie	Saxophone	63	Saxophone 4
Tracy	Clarinet	96	Clarinet 1
Uma	Flute	77	Flute 3
Violet	Tuba	64	Tuba 2
Wanda	Flute	87	Flute 2
Xian Wei	Saxophone	72	Saxophone 3
Yolanda	Clarinet	88	Clarinet 2
Zelda	Flute	75	Flute 4

FIGURE 3: You can use a single array formula to rank students—or anything else.

an instrument and ranking for each student, like "Flute 2" or "Clarinet 1." In the figure, you can see that the third and fourth students are both clarinet players with a score of 71, and both are assigned the rank Clarinet 5.

How does it work? The initial portion up to the second ampersand (&) simply prefixes the instrument name and a space to the calculated rank. It's the remainder of the formula that calculates the rank. The outer IF statement compares the single cell B2 with the entire range named Inst—in an array formula, Excel repeats the calculation for every member of that range.

If the instrument does not match the value in B2, the IF statement returns 0. If it does match, it checks whether the score in C2 is less than or equal to the corresponding element in the range called Score. If C2 is less than or equal to a given value, the inner IF returns 1; otherwise it returns 0. And the SUM function surrounding it all sums up the

results. When you copy the formula down the column, the relative references B2 and C2 change to match the current row, but the named ranges Inst and Score don't change.

Let's look at a specific example. In the figure, the four flute players have scores of 95, 87, 77, and 75, respectively. The score of each will be compared only to those four scores. 95 is less than or equal only to itself in this list, so that player is ranked 1. 87 is less than or equal to two scores, itself and 95, so that player is ranked 2. Each player's rank is the number of players with an equal or better score.

This precise example will be of use only to a school band director, but the principles involved can be applied to many problems in Excel.—*NJR*

Slow Opening of File Dialogs
In Microsoft Word 2000, Access, Media Player, or Excel, I select *File | Open* and get the Open dialog box. I then click on the down arrow to the right of the "Look In:" drop-down box and wait up to 30 seconds for the drop-down to appear. Why the delay? There is no delay with Microsoft Internet Explorer, Adobe Acrobat 4.0, or WordPerfect file drop-down boxes.

ROB MOODY

An intermittent slowdown opening file dialogs or Windows Explorer listings is often caused by a mapped network drive. You can select *Map Network Drive* from Windows Explorer's *Tools* menu to make a drive or a folder on a remote PC appear as a simple drive letter on your computer. This will let you access that drive or folder as if it were a local drive. After a restart, Windows reestablishes the connection when it's needed—for example, when you open the drop-down box that displays a tree containing My Computer and all drives below it. This initial connection can sometimes be slow the first time in a session. If the remote PC is not accessible, each attempt to display the folder tree may be slowed. Most likely the reason that some of your file-open dialogs are slow and some aren't lies in their initial display mode.

If the inconvenience of this slowdown outweighs the convenience of having a mapped network drive, simply click on *Tools* in Windows Explorer's menu and select *Disconnect Network Drive*. Select the drive to disconnect and click on *OK*.—*NJR*

See more tips online at www.pcmag.com/usertouser.

HOW TO CONTACT US

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After discarding a few other ideas (including “Kwanzaa Bonanza” and “Twenty-Two Holiday Tips for the Technosexual in Your Life”), we present you with a profusion of products targeting the people you shop for. Take a close look at the characters on these pages: You might see somebody you know who could use a high-tech gift this year.

Illustrations by Monika Melnychuk
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MOM & DAD 116



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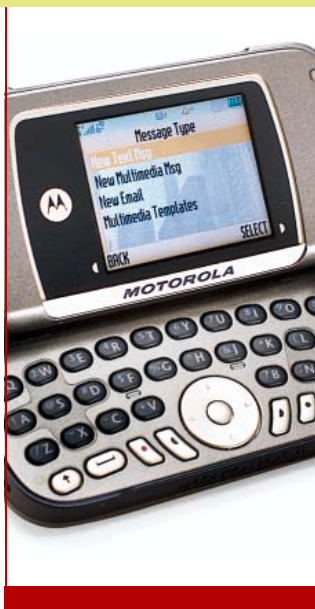
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120 Acer Ferrari 3200 | **101** Alera Copy Cruiser | **106** Apple iBook G4 | **120** Apple iMac G5 | **106** Apple iPod mini | **100** Archos Gmini400 | **120** Atlantic CD Wallet | **110** Belkin Wireless Pre-N | **124** Bose Lifestyle 38 DVD | **101** Bose QuietComfort 2 | **108** Brother QL-500 | **116** Compaq Presario V2000 | **108** Concord Eye-Q 4360z | **118** Dell Dimension 8400 | **100** Delphi XM Roady2 | **104** Disney Dream Desk PC | **100** D-Link AirPlus G DWL-G730AP | **104** Epson Stylus Photo R200 | **123** Falcon Northwest FragBox 2 | **126** Falcon Northwest Mach V | **108** Gateway M520CS Plus | **124** Hasbro Darth Vader Voice Changer | **106** Hasbro VideoNow Color | **100** Hawking HWL1 802.11b/g WiFi Locator | **118** HP Deskjet 6540 | **108** HP Pavilion a750y | **124** ILY SlimDVDup | **100** JBL On Tour | **101** JVC MP-XV841 Mobile Mini Note PC | **101** Kanguru Zipper HD | **106** KidzMouse Keys, Scroll Mouse | **123** Klipsch ProMedia GMX D-5.1 | **116** Kodak EasyShare LS743 | **106** LeapFrog Spider-Man LeapPad | **126** Leica Digilux 2 | **108** LG VX7000 | **116** Logitech Harmony Remote 676 | **122** Logitech Rumblepad 2 | **104** Mattel Juice Box | **118** M-Audio Transit | **121** Motorola A630 | **106** Nextel i830 | **116** Nikon Laser 500G LaserCaddy | **104** Nintendo Donkey Konga | **101** Nokia 6820 | **126** OQO model 01 | **122** Overdrive PC Torque.FX | **122** Plantronics Gamecom Halo 2 Edition Xbox Headset | **122** Pyramat PM300 | **118** RadioShack ionKids Child Monitoring System | **116** RadioShack RadioFlyer Battery Wagon | **104** RadioShack ZipZaps | **122** Rhino Skin GBA SP Case | **121** Rio Carbon | **110** Samsung SC-D6040 | **110** Sierra Wireless Voq | **124** Sonex Acoustic Room | **110** Sony BW-RU10 | **120** Sony Cyber-shot DSC-T1 | **118** Sony MV-900SDS | **108** Sony DPP-FP30 | **123** Thrustmaster 2-in-1 Gamepad | **124** Tiffany Stylus | **121** Timbuk2 Laptop Sleeve | **126** Tivoli Satellite Radio | **101** TomTom GO | **121** Tumi T-Tech Vest | **110** Velocity Micro NoteMagix S90 | **124** Vertu Cell Phone | **110** VoodooPC Rage F:5 SLI | **126** Waves MiniWoofer | **123** XaviXGames



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JBL On Tour

A 12-ounce portable speaker system that isn't much larger than an eye-glasses case, the On Tour squeezes out fine sound. Stylish and practical, it's a great companion on the open road.

\$100 list. Harman International Industries Inc. www.jbl.com. ●●●●○



D-Link AirPlus G DWL-G730AP Wireless Pocket Router/AP

The portable and convenient Router/AP delivers 802.11g connectivity. The unit will create a wireless connection, share an Internet connection, or link to an existing wireless network.

\$80 street. D-Link Systems Inc., www.dlink.com. ●●●●○



Delphi XM Ready2

This iPod-size 100-channel satellite radio tuner is easily mounted anywhere on the dash or console of a car. The integrated FM modulator makes it simple to broadcast the signal to the radio.

\$130 street. Delphi Corp., www.shopdelphi.com. ●●●●●



Hawking HWL1 802.11b/g WiFi Locator

With just a press of a button, the stylish, pocket-size HWL1 will search for any 802.11b/g wireless network in the vicinity and display the signal strength on five LEDs. The HWL1 filters out all unwanted 2.4-GHz signal interference from Bluetooth, cordless phones, and micro-waves, providing an accurate reading every time.

\$30 street. Hawking Technology, www.hawkingtech.com. ●●●●●



Archos Gmini400

The lightweight, slim Archos Gmini400 portable media player can hold up to 300 hours of music, 200,000 digital photos, or 80 hours of MPEG-4 videos. The unit features a 2.2-inch color LCD screen, a CompactFlash reader for transferring photos and data, and a selection of games.

\$399.95 list. Archos, www.archos.com. ●●●●●



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\$300 direct. Bose Corp., www.bose.com. ●●●●●

Kanguru Zipper HD

Only slightly larger than a USB 2.2GB flash drive, this pocket-size, lightweight USB 2.0 hard drive is cable-free. Requiring no external power, it won't leave you high and dry. \$179.95 direct. Kanguru Solutions. www.kanguru.com. ●●●●●



Alera Digital Photo Copy Cruiser Plus

Alera's newest CD recorder/flash card reader combo is light and compact. It adds a rechargeable lithium ion battery and a flexible wireless remote and can now play movies, photo slide shows, and MP3 files on CD and DVD.

\$270 street. Alera Technologies LLC, www.aleratec.com. ●●●●●



Nokia 6820

A petite phone that doubles as a sleek IM and e-mail machine, the 6820 flips open to reveal a full keyboard and has a Bluetooth modem for laptop data on the go.

\$369 direct. Nokia, www.nokia.com. ●●●●○

JVC MP-XV841 Mobile Mini Note PC

JVC's first U.S. computer system is ultraportable, weighing only 3.2 pounds, and its 8.9-inch-wide screen and long battery life (more than 4 hours) make it ideal for travelers.

\$2,399 list. JVC, www.jvc.com. ●●●●○



TomTom GO

Portable and easy to use, the TomTom GO is a triple treat—a GPS receiver with maps and navigation software. Travelers will appreciate the sharp 2D and 3D views and the clear, spoken instructions available in multiple languages.

\$799.95 direct. TomTom BV, www.tomtom.com. ●●●●○

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RadioShack ZipZaps

These teeny-tiny radio-controlled cars come in tons of makes and models, including the new Monster Truck versions. They make your old Hot Wheels look lame in comparison.

\$24.99 direct. RadioShack Corp., www.radioshack.com. ●●●●○



Mattel Juice Box

A personal media player from Mattel! The cool lime-green Juice Box is the first of its kind specifically designed for "tweens." Mattel will offer specially licensed premium audio and video content from outlets like BMG Music, the Cartoon Network, and the WWE.

\$44.99 list. Mattel Inc., www.mattel.com. ●●●●○

Epson Stylus Photo R200

With six color photo inks in large-capacity cartridges, the Epson Stylus Photo R200 may be the ideal photo printer. It has a maximum resolution of 5,760 by 1,440 dots per inch, produces borderless 4-by-6, 5-by-7, and 8-by-10 images and can print directly on CDs and DVDs.

\$100 street. Epson America Inc., www.epson.com. ●●●●○



Disney Dream Desk PC

This snazzy PC features a 2.6-GHz Celeron processor and a CD-RW/DVD combo optical drive. Disney preloads each system with a range of games and learning tools, as well as Internet- and e-mail-filtering software.

\$599 direct. Disney, <http://disney.store.go.com>. ●●●●○



Nintendo Donkey Kong

This is one fun bongo-banging Nintendo GameCube game. Following on-screen directions, you try to match a song's rhythm by clapping your hands (a microphone senses the claps) and hitting the bongos.

\$49.99 list (includes one set of bongos); additional bongos, \$29.99 each. Nintendo, www.nintendo.com. ●●●●○



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**KidzMouse
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Along with kid-size mice, KidzMouse now has keyboards and headsets. Features like squeezable buttons and color-coded keys enhance your kids' computing experience.

Headset, \$19.95 direct; Keys, \$29.95; Scroll Mouse, \$24.95. KidzMouse Inc., www.kidzmouse.com. ●●●●○



Apple iBook G4

Besides a slick look and feel that students will love, the 12-inch G4 laptop has great battery life and a better processor. Make sure to upgrade the RAM and hard drive to get the most out of this system.

\$1,099 direct. Apple Computer Inc., www.apple.com. ●●●●○



**Hasbro
VideoNow Color**

This successor to the popular VideoNow personal video player provides kids and teens with their favorite Hilary Duff and SpongeBob videos in full color. The \$8.99 per proprietary disc won't tax their allowances too much, either.

\$75 list. Hasbro, www.hasbro.com. ●●●●○



Nextel i830

We're told that teens love this cell phone's chirp when you push the button to talk. And the i830 is the sleekest chirper out there.

\$299 list. Motorola Inc., www.motorola.com. (Carrier: Nextel Communications, www.nextel.com.) ●●●●○



Apple iPod mini

The 4GB iPod mini will be the envy of all your kid's friends. The mini retains much of what we love about its larger sibling and comes in yummy pastel colors.

\$249 direct. Apple Computer Inc., www.apple.com. ●●●●○

**LeapFrog
Spider-Man LeapPad**

Today's kids have it much better than we did, with interactive tools like the Spider-Man LeapPad to help them learn to read. This special edition comes with a Spider-Man book narrated by Stan Lee—Spider-Man's creator.

\$49.99 list. LeapFrog Enterprises Inc., www.leapfrog.com. ●●●●○



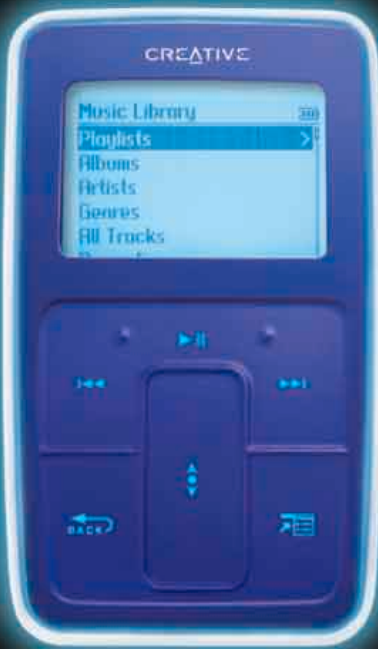
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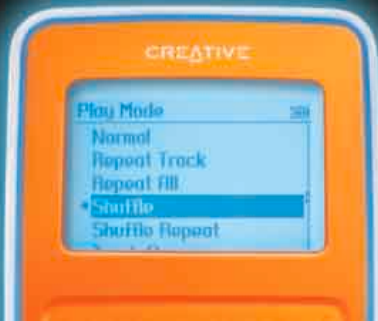
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Concord Eye-Q 4360z

The Eye-Q 4360z is a 4-megapixel digital camera at a remarkable price. It's perfect for the casual user who doesn't need optional settings and doesn't demand superlative image quality or speed.

\$200 street. Concord Camera Corp., www.concordcam.com. ●●●○○



LG VX7000

A big, bright screen and large buttons make this phone easy on the eyes, ears, and fingers. It's also a camera phone, in case Grandma wants to show off her cruise photos to her bridge club.

\$299.99 direct with one-year contract; \$249.99 with two-year contract.

LG Electronics, www.lge.com. (Carrier: Verizon, www.verizonwireless.com.) ●●●○○



Gateway M520CS Plus

The M520CS is a great low-cost, multimedia laptop for Grandma. It's got a luminous 15-inch display and a built-in media card reader, so she can easily transfer all those pictures of her spoiled grandkids.

\$999 direct, Gateway Inc., www.gateway.com. ●●●○○

HP Pavilion a750y

With a memory card reader, 160GB of storage, and HP Image Zone Plus, this PC has all you need to process digital photos and more.

\$999 direct. Hewlett-Packard Development Co., www.hp.com. ●●●○○



Brother QL-500 Quick PC Label Printer

If Grandma tends to forget things—specifically, the names of things—help her out with labels. Although the QL-500 is a little larger than most label printers, it is speedier and offers lots of label formats.

\$100 street. Brother International Corp., www.brother-usa.com. ●●●●●



Sony PictureStation DPP-FP30

This printer is easy to install and use, prints directly from PictBridge cameras and computers, and produces excellent image quality—for, yes, pictures of the grandkids.

\$150 street. Sony Electronics Inc., www.sonystyle.com. ●●●●○





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Sierra Wireless Voq Professional Phone

This is one powerful, bleeding-edge smart phone. It runs Microsoft's Windows Mobile OS and has a built-in keyboard, but it still looks and feels like a phone.

\$500 list. Sierra Wireless, www.sierrawireless.com.



Belkin Wireless Pre-N Router

The first wireless router on the market to support MIMO technology, its performance is unmatched. And its three antennas, ensure a robust signal and greater range.

\$149.99 list. Belkin Corp., www.belkin.com.



VoodooPC Rage F:5 SLI

Early adopters love to get the most screaming machines before the Dell buyers of the world do—and Voodoo delivers. The 3.4-GHz Xenon processor and dual nVidia GeForce 6800 Ultra cards crank out frames at a blistering pace. Muahahaha.

\$7,995 direct. Voodoo Computers Ltd., www.voodoo.com.



Velocity Micro NoteMagix S90

If portable gaming tops your early adopter's list, this sexy notebook fills the bill. You could forgo the splashy, eye-catching red paint job and save \$300, but c'mon, it's the holidays.

\$3,875 direct. Velocity Micro Inc., www.velocitymicro.com.



Sony BW-RU101 External Hi-Speed USB 2.0 ProData Drive

High-definition blue-laser movie DVDs are still a ways off, but that hasn't stopped Sony from shipping its new ProData removable storage line.

Blanks cost just \$40 a disc.

\$3,299 list. Sony Electronics Inc., www.sony.com/prodata.



Samsung SC-D6040 DuoCam

The early adopter will love this camera with its new swiveling-lens design: He can use it as a 4.1-megapixel still camera and as a DV camera.

The DV lens offers 10X zoom, and the Schneider still-camera lens provides 3X optical zoom. It supports multiple media card formats, as well as both FireWire and USB.

\$799 list. Samsung, www.samsungusa.com.



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It makes managing wireless access easier from almost anywhere. These IBM ThinkPad® notebooks come equipped with Intel® Centrino™ Mobile Technology, so users can work wirelessly when they're, well, far away from the office.⁽¹⁾ But they're also equipped with something that only IBM has — Access Connections. It makes switching between different network connections easier than ever. Once a connection profile's been created, simply select a location and it all happens automatically. There's no need to manually reconfigure settings or reboot each time the location changes. When it's easier for users to connect to a network on their own, a funny thing happens. It's also easier to disconnect from the help desk. To see a demo, go to ibm.com/shop/m524. **Houston, we have a connection.**

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LCD or other component replacement. IBM may choose to perform service at the depot repair center. Calls must be received by 5pm local time in order to qualify for Next Business Day service. **(10) Full-size keyboard:** As defined by ISO/IEC 15412. **(11) Thinness:** may vary at certain points on the system. **(12) Travel weight:** includes battery and optional travel bezel instead of standard optical drive in Ultrabay bay; if applicable, weight may vary due to vendor components, manufacturing process and options. **(13) Public network access limited:** Subscription may be required and fees may apply. **(19) SuccessLease:** SuccessLease program, rates and terms are provided by third-party financiers approved by IBM Global Financing to credit-qualified business customers installing in the U.S. Featured monthly lease payments based on prespecified end-of-lease purchase option; documentation fee and first month's payment due at lease signing; taxes are additional. Options cannot be leased separately. IBM and IBM Global Financing reserve the right to alter product offerings, specifications or financing terms at any time, without notice. **Trademarks:** The following are trademarks or registered trademarks of IBM Corporation: IBM, the IBM logo, Rapid Restore, Rescue and Recovery, ThinkPad, Ultrabay, UltraConnect 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.

Take a look at some of our latest models. And get connected.



Why IBM ThinkPad Notebooks?

To make IBM ThinkPad® notebooks even more valuable, each one featured here can give you the efficiency, productivity and edge you need and comes with all the following ThinkVantage™ Technologies:

IBM Active Protection System:

Butterfingers unite! Select IBM ThinkPad notebooks now include airbag-like technology to help protect your hard drive from some damage caused by drops and jolts.

NEW! Rescue and Recovery with Rapid Restore:

Lost your data because of a software crash or virus? Recover previously saved data in minutes with our one-button solution.

Access Connections:

Switch between wired and wireless connections.

Embedded Security Subsystem 2.0:†

Hackers and thieves, beware. Our combined hardware and software solution is designed to protect user data and keep it private.

Access IBM:

Get the help you need, when you need it. One button on your ThinkPad notebook brings you a world of resources and assistance.

IBM ThinkPad R51

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 715 (1.50GHz)†
 - Intel® PRO/Wireless Network Connection 802.11b/g†
- Microsoft Windows XP Professional*
- 15" XGA TFT display (1024x768)
- 256MB DDR SDRAM†
- 40GB hard drive†
- Integrated Ethernet and modem
- IBM Ultrabay™ Enhanced CD-RW/DVD-ROM combo
- IBM UltraConnect™ Antenna for increased signal strength†
- 1-yr system/battery limited warranty†

NavCode 1836H7U-M419

THINK EXPRESS MODEL
PRICED AT: **\$1,449***

\$53/mo for 36 months

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IBM ThinkPad T42

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 1.50GHz
 - Intel® PRO/Wireless Connection 802.11b/g
- Microsoft Windows XP Professional
- 15" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500 graphics
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 1-yr system/battery limited warranty†

NavCode 2378DWU-M419

THINK EXPRESS MODEL
PRICED AT: **\$1,629**

\$59/mo for 36 months

SuccessLease for Small Business

ServicePac Service Upgrade[†]:

3-yr Depot Repair #30L9192 **\$132**

IBM ThinkPad T42

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 735 (1.70GHz)
 - Intel® PRO/Wireless Network Connection 802.11b/g
- Microsoft Windows XP Professional
- 15" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500 graphics
- 512MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 1-yr system/battery limited warranty†

NavCode 2378FZU

THINK EXPRESS MODEL
PRICED AT: **\$1,899**

\$62/mo for 36 months

SuccessLease for Small Business

ServicePac Service Upgrade:

4-yr Depot Repair #69P9195 **\$249**



IBM ThinkPad X40

System Features:

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor LV 1.20GHz
 - Intel® PRO/Wireless Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- Intel Extreme Graphics 2
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM fullsize keyboard†
- 7.5hr Li-Ion battery[†]
- 1-yr system/battery limited warranty†

NavCode 23866GU-M419

THINK EXPRESS MODEL
PRICED AT: **\$1,699**

\$61/mo for 36 months

SuccessLease for Small Business

ServicePac Service Upgrade:

3-yr Onsite Repair/9x5/Next Business Day

Response #30L9195 **\$243**

IBM ThinkPad X40 Solution Pack

IBM ThinkVantage Technologies:

- Longest standard battery life of any leading-brand notebook[†]

System Features:

- Intel® Centrino™ Mobile Technology
 - 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 warranty†

Accessories Included:

- ThinkPad X4 UltraBase Dock
- IBM Ultrabay Slim CD-RW/DVD-ROM combo

NavCode 23826UU-M419

THINK EXPRESS MODEL
PRICED AT: **\$2,199**

\$78/mo for 36 months

SuccessLease for Small Business

ServicePac Service Upgrade:

5-yr Onsite Repair/9x5/Next Business Day

Response #69P9200 **\$449**



(Monitor not included)

Why IBM ThinkCentre PCs?

Only IBM offers these features to protect your users, connect them, and keep them working. Each ThinkCentre™ desktop featured here can give them the efficiency, productivity and edge they need with the following ThinkVantage Technologies:

Rescue and Recovery with Rapid Restore:

Lost your data because of a software crash or virus? Recover previously saved data in minutes with our one-button solution.

Access IBM:

Get the help you need, when you need it. One button on your ThinkCentre desktop brings you a world of IBM resources and assistance.

ImageUltra™ Builder:

Need to roll out new systems? Image and copy your operating system across your network in a flash. (Order separately)

IBM ThinkCentre A50

System Features:

- Intel® Pentium® 4 Processor with HT Technology 3.0GHz
- Microsoft Windows XP Professional
- Tower form factor
- 256MB DDR PC3200[†]
- 40GB hard drive • CD-ROM
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite® Millennium license
- 1-yr parts limited warranty with 1-yr limited onsite service^{††}

NavCode 814821U-M419

THINK EXPRESS MODEL
PRICED AT: **\$649**

\$25/mo for 36 months

SuccessLease for Small Business

ServicePac Service Upgrade:

2-yr Onsite Repair/9x5/Next Business

Day Response #54P1859 **\$75**

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*Availability: All offers subject to availability. IBM reserves the right to alter product offerings and specifications at any time, without notice. IBM is not responsible for photographic or typographic errors. *Pricing: does not include tax or shipping and is subject to change without notice. Reseller prices may vary. Warranty: For a copy of applicable product warranties, write to: Warranty Information, P.O. Box 12195, RTP, NC 27709. Attn: Dept. JDJA/B203. IBM makes no representation or warranty regarding third-party products or services. Footnotes: (1) Embedded security system: requires software download. (2) Mobile Processors: Power management reduces processor speed when in battery mode. (3) Wireless 11a, 11b and 11g: based on IEEE 802.11a, 802.11b and 802.11g, respectively. An adapter with 11a/b, 11b/g or 11a/b/g can communicate on either or any of these listed formats respectively; the actual connection will be based on the access point to which it connects. (4) Included software: may differ from its retail version (if available) and may not include user manuals or all program functionality. License agreements may apply. (5) Memory: For PCs without a separate video card, memory supports both system and video. Accessible system memory is up to 64MB less than the amount stated, depending on video mode. (6) Hard drive: GB = billion bytes. Accessible capacity is less; up to 4GB is service partition. (7) Wireless capability: requires compatible wireless-enabled options, sold separately. (8) Limited warranty: Support unrelated to a warranty issue may be subject to additional charges. (9) 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.

IBM recommends Microsoft® Windows® XP Professional.



(Monitor not included)

IBM ThinkCentre A50 Ultra small form factor

System Features:

- Intel® Pentium® 4 Processor with HT Technology 3.0GHz
- Microsoft Windows XP Professional
- Ultra small form factor — 74% smaller than a standard IBM desktop¹⁴
- 256MB DDR PC3200
- 40GB hard drive CD-ROM
- Norton AntiVirus with 90 days of virus definition updates
- Lotus SmartSuite Millennium license
- Gigabit-Ethernet Integrated
- 1-yr limited warranty with limited onsite service¹⁷

NavCode 809021U-M419

THINK EXPRESS MODEL
PRICED AT:

\$799

\$29/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite/9x5/Next Business Day
Response #54P1861 **\$132**

IBM ThinkCentre A51p

(model not shown)

System Features:

- Intel® Pentium® 4 Processor 530 with HT Technology
 - Processor speed 3.0GHz
 - 800MHz FSB
- Microsoft Windows XP Professional
- Tower form factor
- 256MB DDR2 PC2-3200 • CD-ROM
- 40GB hard drive
- Gigabit Ethernet-Integrated
- IBM Embedded Security Subsystem 2.0
- 1-yr parts limited warranty with 1-yr limited onsite service¹⁷

NavCode 842721U-M419

THINK EXPRESS MODEL
PRICED AT:

\$799

\$29/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite/9x5/4-hr Response
#54P1862 **\$239**



IBM eServer BladeCenter

System Features:

- Flexible - full performance and manageability of traditional rack optimized platforms
- Infrastructure integration - help lower TCO and increase control
- Simplify - easy to deploy, easy to install, easy to manage.
- HS20
 - Intel® Xeon™ 2.8GHz/533MHz FSB
 - 40GB IDE/2GB DDR2 PC2100
 - 3-year limited warranty
- NavCode 8832LEX **Price 2,589**
- BladeCenter Chassis
 - 7U rack mount chassis—up to 14 blades per chassis
 - 2000W power
 - Cisco Ethernet switch module

NavCode 86773EU

EXPRESS MODEL PRICED AT: **\$7,289**

\$92/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
3-yr Onsite/9x5/4 hr Response
HS20 #69P9517 **\$279**
BladeCenter Chassis 41L2736 **\$600**

IBM eServer xSeries 336

System Features:

- Leading performance with Intel's EM64T technology - 32 and 64bit simultaneous computing
- High Availability with redundant power and hot swap fans - Calibrated Vectors Cooling enables density and performance
- Simple Management with on board service processors and optional remote management support - take control of your server environment
- Intel Xeon 2.8GHz/800MHz FSB
- Two 73GB SCSI/2GB DDR2 PC3200

NavCode 88370EU

EXPRESS MODEL
PRICED AT: **\$3,349**

\$119/mo for 36 months
SuccessLease for Small Business

ServicePac Service Upgrade:
4-yr Onsite/9x5/4-hr Response
#69P9243 **\$609**



The IBM Infoprint® 1412

System Features:

- Monochrome Laser/200 MHz processor
- Speed: Print up to 27 pages-per-minute (ppm)¹⁸
- First page-out time as fast as 8 seconds¹⁸
- Print quality: up to 2400 image quality
- 32MB of memory
- Parallel and USB attachment and 10/100 Base TX Fast Ethernet interfaces
- 1-yr limited warranty¹⁷

NavCode 75P5759

PRICED AT **BASE = \$429**

NavCode 75P5760
NETWORK = \$519

250 Sheet Tray #75P6112 **\$92**

ServicePac Service Upgrade:
1-yr Onsite/9x5/Next Business Day
4-yr Response #29R5518 **\$47**

The Infoprint® 1422dn

System Features:

- Monochrome Laser/366 MHz processor
- Speed: Print up to 32 pages-per-minute (ppm)²⁰
- First page-out time as fast as 9 seconds¹⁸
- Print quality: up to 2400 image quality
- Up to 64MB of memory
- Parallel and USB attachment and 10/100 Base TX Fast Ethernet interfaces
- Duplex capability
- 1-yr limited warranty¹⁷

NavCode 75P5984

PRICED AT: **\$799**

\$29/mo for 36 months
SuccessLease for Small Business



IBM Think Express Program:

We've designed and priced many of our products specifically for small and medium businesses. And best of all, they're available direct from IBM or through select IBM Business Partners.

IBM ThinkPad Accessories

Belkin Components Universal Notebook Travel Surge Protector #22P712T **\$20**

Targus Wireless Optical Mini Mouse #22P7438 **\$27**

IBM ThinkPad Carrying Case™ - Expander #73P3597 **\$59**

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

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

IBM ThinkCentre Accessories

IBM UPS 500 #33L3477 **\$99**

IBM ThinkVision™ L150 15" Flat Panel Monitor with system purchase #W9SPAB1 **\$379**

IBM Server Accessories

IBM S2 42U Standard Rack Cabinet #930745X **\$1,489**

IBM Rackmount XLV 3000VA UPS #2130R30 **\$1,799**



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repair center. Calls must be received by 5pm local time in order to qualify for Next Business Day Service. (14) **Full-size keyboard:** As defined by ISO/IEC 15412. (15) **Battery:** These model numbers achieved the Ziff Davis Media, Inc.'s Business Winstone® 2002 BatteryMark™ Version 1.0 Battery Run-down 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/www/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. (16) **Size claims:** are based on a comparison of chassis volume to the volume of IBM's standard desktop chassis. (17) **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. (18) **Certain IBM logo products:** are not manufactured, warranted or supported by IBM; IBM logos and trademarks used under license. Contact IBM for details. (19) **SuccessLease:** SuccessLease program, rates and terms are provided by third-party financiers approved by IBM Global Financing to credit-qualified business customers installing in the U.S. Featured monthly lease payments based on prespecified end-of-lease purchase option; documentation fee and first month's payment due at lease signing; taxes are additional. Options cannot be leased separately. IBM and IBM Global Financing reserve the right to alter product offerings, specifications or financing terms at any time, without notice. (20) **Print speed:** Exact speed varies depending on document complexity, system configuration, software application, driver and printer state. (21) **Battery Life:** Based on manufacturer's published figures or CNET.com results for the top 5 vendors in 2003 notebook sales based on IDC data as of 1/29/2004. **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.

mom & dad



Some folks are tech-savvy; others make Luddites look like IT pros. Wherever your parents fall on that spectrum, you'll find a great gift for them on these pages.

RadioShack RadioFlyer Battery Wagon

Kids and parents alike will love this wagon o' batteries. Not only is it a collectible, but it comes with 12 double-A and 12 triple-A batteries to power the new toys and gadgets of the whole family.

\$19.99 direct. RadioShack Corp., www.radioshack.com. ●●●●○



Kodak EasyShare LS743

The 4-megapixel LS743 takes extremely crisp, sharp pictures. And it's easy enough to use that the kids won't even need to help their folks get it up and running.

\$299.95 list. Eastman Kodak Co., www.kodak.com. ●●●●○



Compaq Presario V2000

At just under \$1000, this sexy, lightweight notebook is a great gift idea for Mom and Dad. Its 14-inch-wide screen is ideal for watching DVDs on family vacations, and the JBL speakers provide excellent sound.

\$999 direct. Hewlett-Packard Development Co., www.hp.com. ●●●●○

Logitech Harmony Remote 676

This remote is a no-brainer: If you plug it into your PC's USB port and specify which TV, DVD player, and AV receiver you're using, it programs all the keys. The Harmony Remote 676 even creates simple macros, such as Watch a Movie, which turns on and tunes in your devices automatically.

\$199.95 list. Logitech, www.logitech.com/harmony. ●●●●○



Nikon Laser 500G LaserCaddy

Parental (or any) golfers looking to shave a few strokes from their game will want this compact laser rangefinder. It accurately measures distances from 11 to over 500 yards and shuts off power automatically after displaying the reading for 8 seconds.

\$300 street. Nikon Inc., www.nikonusa.com. ●●●●○



MAIL IN AN INSTANT

E-mail from your own Domain Name

Are you ready to take your personal e-mail to a more professional level? Then 1&1 has your solution. Simply sign up for **1&1 Instant Mail** and then add on your domain. In just minutes you'll have the power to send and receive e-mail using your own personal domain name.

And now, 1&1 offers even more features and more space for improved e-mail communications! Mailbox space has been increased to a **massive 1 GB**. The IMAP mail protocol has been added, allowing you access to your mail no matter where you are. We know that you depend on the security of your e-mail. That's why 1&1 is proud to offer **Spam Filtering** and **Virus Protection** for all accounts! Get the protection you need from the company you can trust.

"With my previous free e-mail provider, I had a long address that no one could remember and a tiny amount of storage space. I signed up for 1&1 Instant Mail and now I have secure e-mail that I can access from anywhere and an e-mail address that uses my own domain name!"

Karen Anderson

Now with
1GB
MAILBOX
SPACE

1&1 INSTANT MAIL

- 5 e-mail accounts with 1GB space each – IMAP & POP supported
- **NEW!** Spam filtering for all 5 accounts
- **NEW!** Virus protection for all 5 accounts
- 10 e-mail aliases
- Includes 1&1 WebMail – access your mail anytime from anywhere
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mom & dad



M-Audio Transit

Is Mom or Dad a musician? The inexpensive, pocket-size Transit lets them do high-resolution audio recording and playback on any computer with a USB port. It also allows for audio transfers. Rock on!

\$99.95 list. M-Audio, www.m-audio.com.



Sony MV-900SDS

The full-featured MV-900SDS lets you retrofit your existing car or van with a roof-mount CD/MP3, CD/DVD, still-photo player. The 9-inch screen is big enough for everyone to see and wireless headphones keep the sounds of *Aladdin* from interrupting Mom and Dad's front-seat music.

\$1,000 street. Sony Electronics Inc., www.sonystyle.com.



HP Deskjet 6540

The HP Deskjet 6540 is faster than most ink jets, and it prints better-looking graphics and photos.

\$150 street. Hewlett-Packard Development Co., www.hp.com.



Dell Dimension 8400

This is an ideal multimedia PC for a not-too-technical parent who wants to get into digital video or 3D gaming. It's easy to upgrade, has a 20-inch LCD, and includes Dell Media Experience software.

\$2,999 direct (E-Value code 6V411-840RPW). Dell Inc., www.dell.com.



RadioShack ionKids Child Monitoring System

The Child Monitoring System uses RF technology to alert parents when their child has strayed too far. Decorative stickers and multicolor bezels are included to decorate the child's Wristag, so it won't be too much of a drag to wear.

\$199.99 list. RadioShack Corp., www.radioshack.com.



OUR CONTRIBUTORS: Bill Howard, Don Labriola, and Bill Machrone are contributing editors of *PC Magazine*. Cisco Cheng and Sascha Segan are lead analysts at PC Magazine Labs. Matthew D. Sarrel is a frequent contributor. Molly K. "Kwanzaa" McLaughlin is a freelance editor. Senior editor "Christmas" Carol A. Mangis and staff editor Daniel "Robbing the Dreidel" Evans were in charge of this story.

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Microsoft Exchange Hosting from 1&1 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, contacts and calendars at anytime, from anywhere via Microsoft Outlook® or any web browser.

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Thomas Wagner



Microsoft Outlook® 2003 included*!

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- 1 Exchange account for 1 user
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- Group functionality tools
- Outlook Web Access
- Synchronize your data with ActiveSync
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24/7 support • No setup fee



Microsoft Exchange and the 1&1 Data Center provide centralized storage of your calendar, contacts, documents and more so your files are secure and always up to date. Access your data from your computer or synchronize while on the go with ActiveSync.

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style maven



For some loved ones, design is the top priority. Luckily, we've come across plenty of potential gifts that look good and get the job done.

Sony Cyber-shot DSC-T1

The DSC-T1 is, quite simply, the sexiest highest-resolution subcompact camera around. And it's refreshingly simple to use, with a large LCD that makes sharing images a breeze.

\$500 list. Sony Electronics Inc., www.sonymstyle.com. ●●●●○



Acer Ferrari 3200

Coated in Ferrari red and sporting the prancing horse emblem, this exclusive-edition laptop has an 80GB hard drive and a built-in 4-in-1 card reader, and it promises data transfers at hot-rod speeds.

\$2,000 street. Acer Inc., www.acer.com. ●●●●○



Apple iMac G5

Another design coup for Apple, the iMac G5 looks like an iPod that grew into a full-size, self-contained PC. It's simple and stunning.

\$2,103 direct. Apple Computer Inc., www.apple.com. ●●●●●



Atlantic Rondo 20 CD Wallet

This flashy titanium and blue CD case goes with just about everything.

\$9.99 list. Atlantic Inc., www.atlantic-inc.com. ●●●●○





Motorola A630

Get your favorite text-messaging junkie this phone with its bright, 1.8-inch (176-by-220) landscape color screen and surprisingly roomy thumb-style QWERTY keyboard. AOL Instant Messenger comes preloaded. \$600 street. Motorola Inc., www.motorola.com. ●●●○○



Tumi T-Tech Vest

Anglers and photographers had gadget vests for years. Now Tumi takes it to a fashionably higher level for technology users, with its T-Tech vest featuring multiple pockets. Available in beige or black, the T-Tech has pockets for a CD player, cell phone, and other gear. It even has a headphone cord port and a key leash. \$150 street. Tumi, www.tumi.com. ●●●○○



Rio Carbon

The Rio Carbon makes the iPod mini seem almost 5 minutes ago, with a gigabyte more storage and extras such as voice recording and a built-in stop-watch—not to mention great sound.

\$240 street. Rio Audio, www.rioaudio.com. ●●●●●

Timbuk2 Quilted Laptop Sleeve

No laptop is complete without a stylish case. And Timbuk2's corduroy-lined sleeve comes in four colors with contrast stitching. It's available in five sizes sure to please the hippest on your list.

\$30 list. Timbuk2, www.timbuk2.com. ●●●●●



rabid gamer

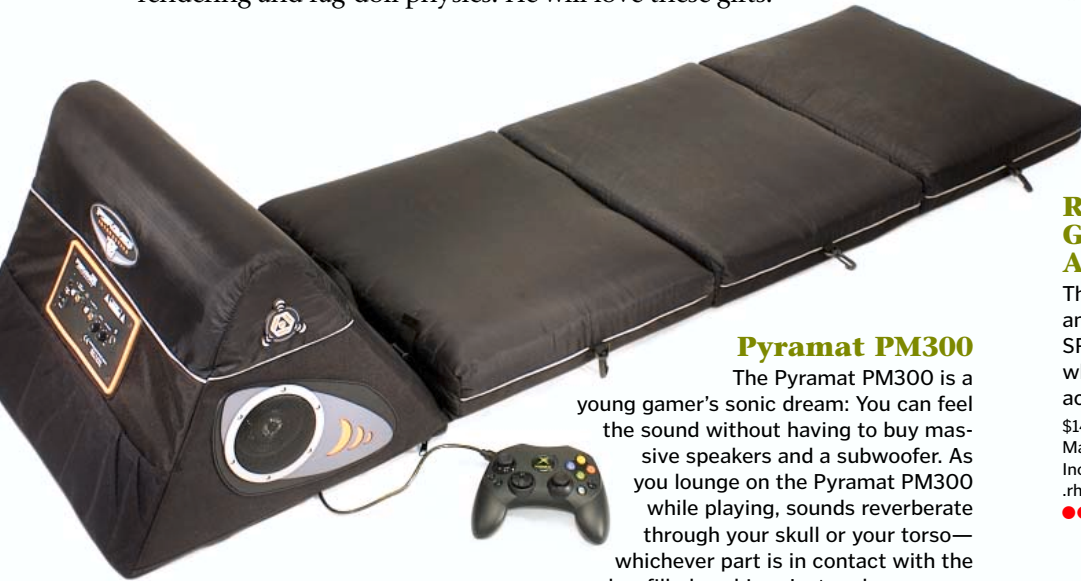
He plays the game of the moment for 36 hours straight and wins it, can't imagine anything more fun than a fragfest, and gets excited about things like real-time rendering and rag-doll physics. He will love these gifts.



Plantronics Gamecom Halo 2 Edition Xbox Headset

This cool-looking headset for the Microsoft Xbox will thrill Halo 2 fans who are into playing the game on Xbox Live; it features a noise-canceling mic for better speech accuracy. Of course, you can use it with other games too (though for some gamers, Halo is the only game).

\$49.99 list. Plantronics Inc., www.plantronics.com. ●●●●○



Pyramat PM300

The Pyramat PM300 is a young gamer's sonic dream: You can feel the sound without having to buy massive speakers and a subwoofer. As you lounge on the Pyramat PM300 while playing, sounds reverberate through your skull or your torso—whichever part is in contact with the speaker-filled cushion. Just make sure you have plenty of floor space!

\$149 list. Pyramat LLC, www.pyramat.com. ●●●●○

Rhino Skin Game Boy Advance SP Case

This case's anodized aluminum and EVA foam protects your GBA SP from impact and scratches, while keeping all buttons accessible.

\$14.95 list. Saunders Manufacturing Co. Inc., www.rhinoskin.com. ●●●●○



Logitech Rumblepad 2

Ready to rumble? This gamepad has no less than two vibration-feedback motors, weighted differently and spinning independently, so you can experience every turn, bump, explosion, and crash in your game.

\$29.99 list. Logitech, www.logitech.com. ●●●●○



Overdrive PC Torque.FX

The builders at Overdrive PC will interview you by phone to figure out your needs, then build a system that's as tailored to you as a Savile Row suit. The PC you get will be pricey, but it will perform.

Price varies according to configuration. Overdrive PC, www.overdrivepc.com. ●●●●○

**rabid
gamer**



**Falcon
Northwest
FragBox 2**

Designed for gamers who tote their machines to LAN parties, the Falcon Northwest FragBox 2 solves most of the problems faced by the original, shoebox-size FragBox. The company says there's no component the FragBox 2 can't handle, thanks to its 520W power supply and excellent cooling design.

Price varies according to configuration. Falcon Northwest, www.falcon-nw.com. ●●●●○



XaviXGames

XaviX Baseball lets you bat and pitch—virtually, on your TV screen. You use the included bat and a ball that throws nine different pitches; your movements are detected by the console's motion sensor and shown on screen. XaviX Bowling and XaviX Tennis are also available.

XaviXPort Console, \$79.99 list; each kit, \$49.99. SSD Company Ltd., www.xavix.com. ●●●●○



**Thrustmaster
Wireless Dual
Trigger 2-in-1
Gamepad**

This top-notch, high-tech game controller can be used with both the PC and Sony PS2. On its back face are programmable triggers to which you can map button and mini-stick functions. The Gamepad uses RF (2.4 GHz) and is rated for 60 hours of battery life with vibration, 100 hours without.

\$19.99 list. Thrustmaster, www.thrustmaster.com. ●●●●○



**Klipsch ProMedia
GMX D-5.1**

We were knocked out by this smartly designed 5.1-channel speaker system's space-age styling, gamer-friendly functionality, kid-resistant construction, and brilliant high-end, brawny bass. It also includes digital connections for every popular game console and sound board.

\$150 direct. Klipsch Audio Technologies, www.klipsch.com. ●●●●○

**more on
the web**

At www.pcmag.com, you'll find many more holiday gift ideas, along with our recommendations for the best in online shopping.

person who has everything



When your techie relative has pretty much all she wants, you've got to get original. Here are some ideas, ranging from the ridiculous to the sublime.



Hasbro Darth Vader Voice Changer

So your sister has every action figure from Empire to Jedi and can bake up a mean batch of Wookie cookies, but we'll bet she doesn't have this. Slap on this helmet, hit the button, and send a chill down the spine of all the local Jedi with a dead-on Vader voice.

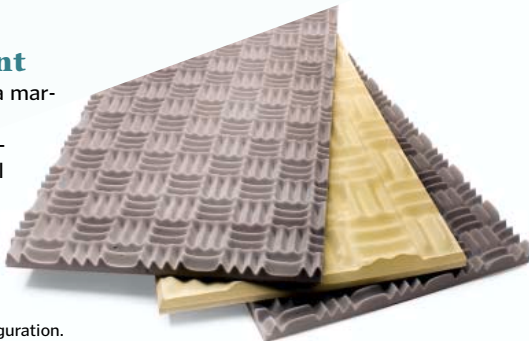
\$29.99 list. Hasbro, www.hasbro.com. ●●●●○

Sonex Acoustic Room Treatment

These foam panels do a marvelous job of absorbing sound-muddying reflections. Audio zealots will insist on lining an entire listening room, but often only a few strategically placed panels will do the trick.

Pricing varies based on configuration. Sonex, www.sonex-online.com.

●●●●○



Tiffany Stylus

It was only a matter of time before Tiffany put its stamp on this digital age of ours. The sterling silver stylus, hallmarked with T&CO and the year of the company's founding, is truly a gift for someone who has it all.

\$70 direct. Tiffany and Co., www.tiffany.com. ●●●●○

Bose Lifestyle 38 DVD System

Digital entertainment doesn't get much simpler than the Lifestyle 38, an all-in-one CD/DVD player and hard drive MP3 player. If you're living large, the Lifestyle 38 can supply music to other Bose systems in 14 separate rooms.

\$3,000 direct. Bose Corp., www.bose.com. ●●●●○



Vertu Signature Cell Phone

Yowza! These Alpine high-end mobile phones are handmade by watchmakers. They're available in 18-carat gold, platinum, white gold, and stainless steel and includes a year of concierge service.

\$18,750 list. Vertu Americas Inc., www.vertu.com.

●●●●○



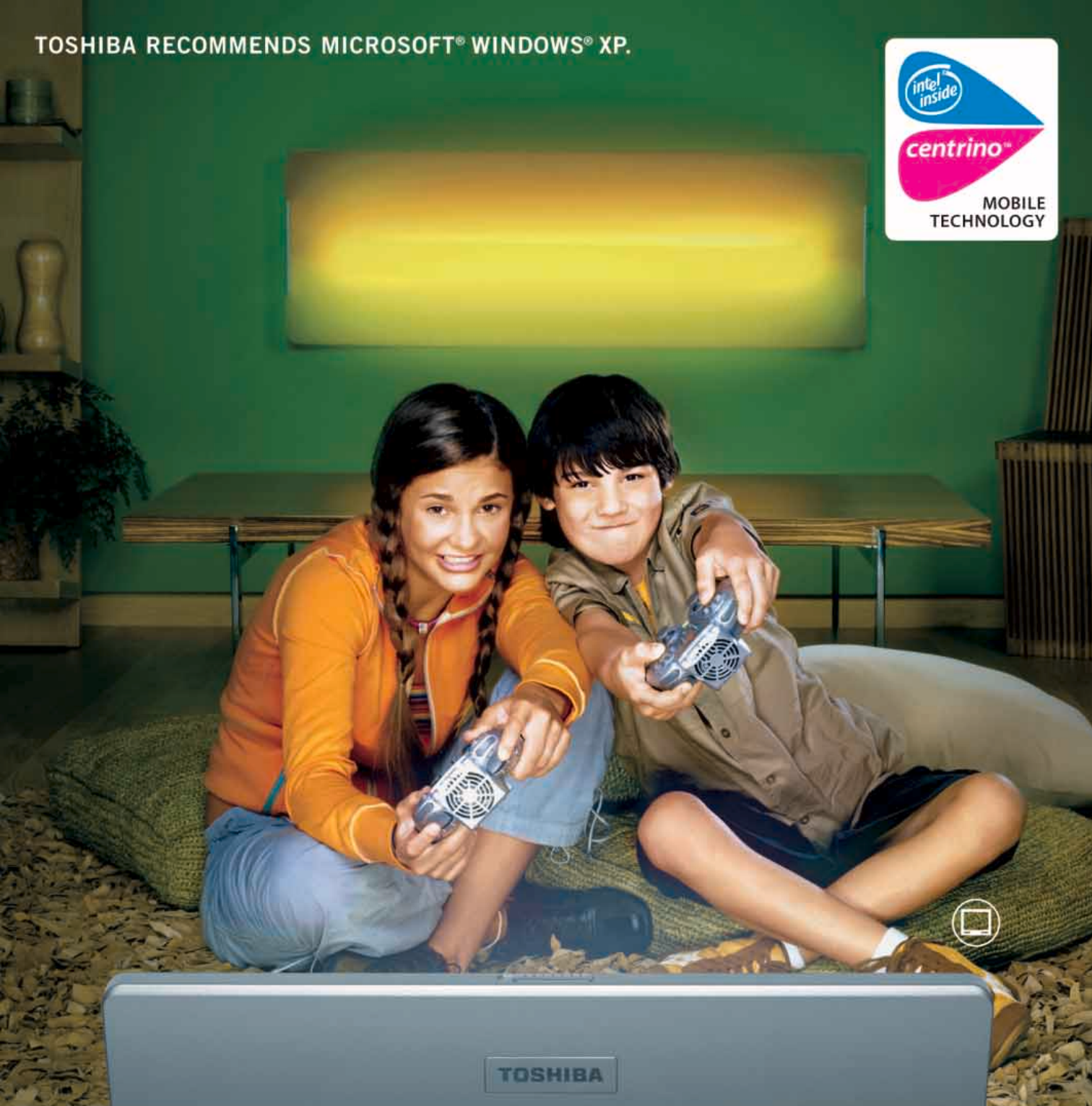
ILY SlimDVDup Duplicator

To turn that vast library of albums and cassettes into CDs or DVDs with minimal fuss, consider this portable disc duplicator. It crams two slim-line DVD rewriters and an LCD display into a 58-ounce box.

\$550 street. ILY Enterprise Inc., www.ily.com. ●●●●○



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\$149 list. Waves Audio Ltd., www.maxxbass.com. ●●●●○

**Tivoli
Satellite
Radio**

The simplest, best-looking, best-sounding tabletop radios come from Tivoli Audio, an association of industry pioneers Tom DeVesto and the late Henry Kloss. The newest adds an auto-setting clock and Sirius satellite radio to its AM and FM tuning capabilities.

\$300 direct. Tivoli Audio, www.tivoliaudio.com. ●●●●●



OQO model 01

We'll bet not many people have a laptop the size of a paperback novel. This scaled-down ultraportable is a working Windows XP computer with a FireWire port, built-in 802.11b wireless, and Bluetooth. It's a gorgeous, innovative design.

\$1,999 direct. OQO Inc., www.oqo.com. ●●●●○



Falcon Northwest Mach V

This is the ultimate multimedia machine for the geeks who cashed in their options before the crash. This bad boy overclocks up to 3.8 GHz, and with six USB and two FireWire ports you can attach a new gadget for every principle of Kwanzaa or day of Hanukkah.

\$6,140 direct. Falcon Northwest, www.falcon-nw.com. ●●●●●



Leica Digilux 2

For years we've been waiting for a digital camera from Leica that is of the same quality as its film cameras. It's finally here, and you have to pay for the privilege. Image quality is superb, focus and zoom are fast, selecting settings on the fly is a breeze, and the built-in bounce flash is a wonderful bonus.

\$1,850 list. Leica Camera AG, www.leica-camera.com. ●●●●○



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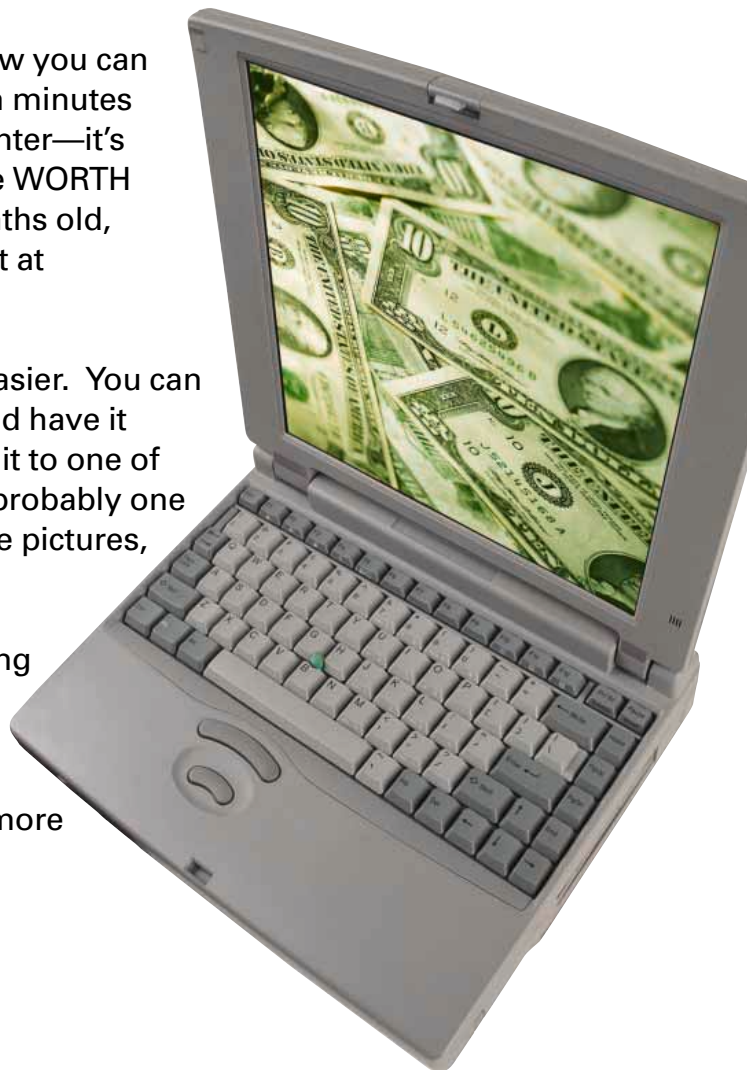
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Business Desk

By John Delaney

Illustrations by Derek Lea

READ ON TO LEARN:

- How to decide when it's time for your workplace to consider managed PCs
- How to get the right setup and best deal when purchasing business desktops for your company
- The software, hardware, and staffing considerations involved in moving to a managed-PC environment
- Whether a thin-client appliance is a better choice for you than a managed business-desktop PC

Any IT manager will tell you that the initial purchase price for a fleet of desktops pales in comparison with the cost of supporting those systems throughout their lifespan. That includes the time and labor associated with user support and diagnostics, hardware and software updates, driver changes, component failures, and data-recovery efforts. Such costs can spiral out of control if your infrastructure consists of a mixed bag of desktop platforms and configurations and there is no central way of managing all those assets.

In an effort to minimize the ongoing costs associated with administering hundreds or thousands of desktop systems, many businesses have moved to a managed-PC environment. Managed desktops share common components and drive images, have easy access to internal parts, and can be managed remotely. They can greatly reduce and in some cases completely eliminate the need for costly on-site support visits and help-desk service calls.

Managed PCs are typically found in midsize and large companies where desktops are spread across a large building, multiple buildings, or even various geographical locations. Examples of such businesses are financial and retail companies, educational institutions, and government agencies. All of these or-



Managed business PCs are a mainstay of many corporations. We help you determine if your business needs to move to a managed desktop environment.

tops

TOP 10 Managed PCs Buying TIPS

ganizations share a common goal—lowering the total cost of ownership (TCO) while increasing the return on investment (ROI) of their desktop systems.

Cost is only part of the equation, however. A well-managed desktop solution can bring a higher level of security, reducing user vulnerability to such threats as malicious content introduced via the Web or e-mail. And a managed solution can control access to music-ripping and gaming applications, which in the corporate world are unwelcome productivity killers, unless they are being used as business tools.

In a managed environment, IT staff can remotely lock down all or some desktop clients by disabling any or all I/O ports and controlling the use of unapproved software. Managed PCs can also have physical security attributes, such as chassis-intrusion alarms, cable-lock mechanisms, embedded security chips for protecting against unauthorized access, and asset-identification tags for keeping track of installed hardware and software.

Successfully managing a fleet of desktops requires a move to a standardized hardware platform, which reduces the complexity of the desktop infrastructure and makes for a more stable client base. There are several advantages to this move. It allows IT staff to reduce the number of software images needed to deploy systems during the roll-out phase and makes restoration of failed desktops much easier. If a system becomes infected with a worm or other malicious virus, for instance, it is much less time-consuming to reformat the drive and reinstall a common drive image than to deal with multiple hardware configurations and drive images.

A standardized desktop configuration also reduces spare-parts costs. Instead of stocking multiple drives, memory types, and other serviceable parts for a large number of PCs, support personnel can streamline the parts inventory by keeping an adequate number of common components on hand. It's also much easier to maintain a current driver database when systems are using identical components. A standardized hardware platform is not the norm, however. Most environments are heterogeneous, with a mix of different desktop types and brands, not to mention notebooks, PDAs, and the like. If you keep the mix to a minimum, managing them will be a lot easier.

Managed or Not?

Clearly, managed desktops are not for everyone. They require a certain amount of planning and

technical expertise to deploy and maintain. Companies with fewer than 50 users and limited technical resources may want to consider a vendor-based service program, in which a representative will assess your business, identify your hardware requirements, and install and support your desktop systems.

Likewise, emerging businesses may be more concerned with initial costs than with the total cost of ownership and expected life cycle of their desktops. (For more on buying desktops for small businesses, see "The Essential Buying Guide: Small-Business Desktops," September 7: <http://go.pcmag.com>

1. Assess your infrastructure and IT policies, including the age and performance of your existing desktops and network and how you currently support and manage them.
2. For multiple configurations within a specific workgroup, choose a hardware configuration that uses common components across the group. Build a *gold image* to minimize on-site software installations.
3. Look for vendors that guarantee a stable platform for your chosen desktop models for a set period of time. This will let you deploy an existing image on new machines purchased within that period without problems.
4. Take a mixed environment into consideration. Most companies don't deploy all the same brand of PCs. Third-party management solutions from Altiris, Computer Associates, HP, or IBM offer more powerful management solutions for heterogeneous environments.
5. Put policies in place for connecting wireless devices, such as notebooks and PDAs, to your wired network, or for doing new installations and updates via VPN.
6. Test anything new before deploying it to your employees, to save you from unexpected incompatibilities.
7. Before deciding on a new management solution, attend the manufacturer's training sessions. If your company is planning to buy a lot of systems, see if you can get the training classes for you and your staff comped.
8. Check the vendors' stated tech-support and warranty policies. Many offer more robust policies, such as company-specific phone support, for quantity purchases.
9. Consider what tasks you're buying the system for. Many people may need only low-end to midrange PCs.
10. Check the entire list of features to make sure you're getting what you need. Most vendors won't have identical configurations.—JD and RF



/buyingguide_smallbizpcs.)

Perhaps the biggest factor in deciding whether to deploy a managed-desktop solution is the financial one. The entire process requires a substantial investment of capital and time. Businesses must decide whether the cost of acquiring a new fleet of managed PCs will be less than the cost of supporting their current installed systems. They must also be willing to put in the time to plan and deploy the new infrastructure.

Training is also an issue. IT staff must be brought up to speed on the workings of management software and must be coached to change the way they support their clients; both these processes cost time and money. Users will also have to adjust to the cultural impact of a managed environment; in all likelihood, they will lose certain freedoms they had and took for granted with their unmanaged computers, such as being able to download or install their own software.

▲ SLIMLINE

This is a popular size for business use. Also known as small-form-factor desktops, these are typically horizontal units that measure 3 to 5 inches high. The components are integrated and packed in with little, if any, expansion room to spare. Most have a MicroATX, MicroBTX, PicoBTX, or NLX motherboard, since these have a small footprint and use a riser card for slot expansion. They are usually limited to a single hard drive and single optical drive.

CHOOSE THIS IF:

- You most likely do not want to upgrade or expand your system.
- You have limited desktop space.

OUR CONTRIBUTORS: John Delaney is a frequent contributor to *PC Magazine*. Richard Fisco is a technical director of PC Magazine Labs. Associate editor Laarni Almendrala Ragaza and PC Magazine Labs lead analyst Joel Santo Domingo were in charge of this story.

Total Cost of Ownership

According to a 2003 Gartner report, the TCO of

a well-managed desktop solution can be 37 percent less than that of an unmanaged one. That includes the original price of each system and the costs of deployment, internal upgrades, maintenance, and technical support throughout the life of the systems. A typical desk-side support visit can cost from \$150 to \$300, depending on the time needed to resolve the call. For businesses with a thousand or more desktops, deployment and support costs can easily run into the millions if left unmanaged.

Through the use of preinstalled management agents and remote diagnostic and monitoring software, IT administrators can take steps to resolve potential system failures before they occur—without ever having to leave their desks. In cases where an entire department requires an operating system or BIOS update, IT can make the changes to the original image for that specific group, known as the *gold image*, and update the entire department remotely at a time when the systems are inactive.

Productivity goes hand in hand with the cost of ownership, but is difficult to measure in terms of dollars. Simply put, lost user productivity due to system downtime will raise the TCO of that system. A managed-desktop solution provides the tools necessary for IT staff to minimize downtime, through constant monitoring and predictive failure alerts, remote data-recovery capabilities, and the ability to take control of a system without user intervention.

Another major factor in calculating TCO is the desktop life cycle, or the amount of time before the system can no longer handle the workload. Generally, managed desktops have a three- to four-year life cycle, depending largely on the system's upgradability and the introduction of more power-hungry applications.

It might be tempting to choose desktops based solely on price, but this can cost you more money over the long haul. If a system requires constant upgrades to meet the workload, the cost of ownership will continue to rise, especially in older systems where upgrade options are limited. It's important to consider investing in the most current technology in order to meet future demands. Look for systems that have the latest processors and chipsets, with support for emerging technologies that have wide industry acceptance, such as DDR2 memory and PCI Express. But beware of buying more than your employees need. An entry-level data clerk does not need a multi-CPU system.

The Thin-Client Alternative

As an alternative to managed desktops, you may want to consider a server-based computing solution using thin-client appliances. A thin client is basically a terminal with a dedicated processor that uses various networking protocols to access and run apps that reside on a server instead of a local drive. The CPU directs the flow of data between the appliance and the server.

Thin clients typically don't include hard drives, optical drives, or expansion slots. This makes them easy to deploy in large numbers, as there are no drive images or data-migration issues to deal with—and they take up little space on desktops.

Thin clients also remove the potential for problems caused by end users, such as the introduction of malware and unauthorized apps. Users could still download apps from the Web, but the

IT staff controls the server and can blacklist certain sites or block the browser from downloading any file.

Thin clients are useful for companies where more than one employee uses the same system or that have roaming staff who need fast access to business apps and data. The user interface and programs a worker sees after logging in can be tailored to any criteria IT customizes into the system.

A typical thin client includes a low-voltage processor such as a Transmeta Crusoe (though it can be as high-performing as a Pentium 4), an embedded Microsoft Windows or Linux OS, and a mix of SDRAM and flash memory. Network hardware includes Fast or Gigabit

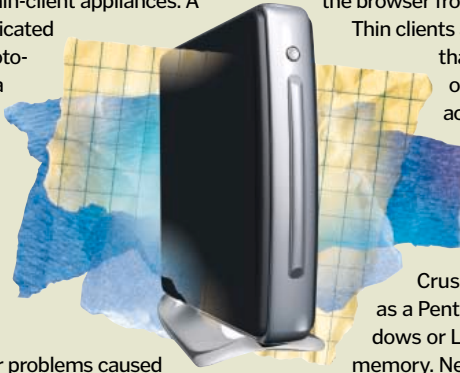
Ethernet and even an 802.11 wireless controller. Some thin clients are standalone systems; others are all-in-one systems

integrated into the display. Thin-client notebooks and tablet PCs enable wireless access to server-based apps.

Thin clients use specialized software and protocols to communicate with host servers. Products such as Citrix MetaFrame use ICA (Independent Computing Architecture); Tarantella's Secure Global Desktop uses Microsoft's RDP (Remote Desktop Protocol) to manage the client-server architecture. Wyse Technology offers a variety of configurations, including small-footprint, solid-state terminals and integrated all-in-one clients. Dell, HP, Maxspeed, and Sun also offer desktop and portable thin-client systems.

Moving to a centralized computing solution using thin clients has many advantages, including lower maintenance and upgrade costs and a more secure, controlled environment. IT staff can better define how data moves through your network and where it is stored. And software upgrades and installations are performed at the server level.

Businesses contemplating a thin-client solution must have the infrastructure in place to handle the load of server-based computing, including dedicated app servers, backup servers, and enough network bandwidth to support hundreds of users. Since it takes fewer resources to support a large number of thin clients, IT staff can concentrate on the infrastructure instead of responding to numerous end-user service calls.—JD



Hardware

Using the software tools that allow IT staff to monitor and diagnose hardware behavior can help avoid component failure before it happens,

but there will always be times when hands-on service is necessary. For this reason, managed desktops should be easy to service if a hardware problem should arise. Although tools-free chassis have become standard on most desktop PCs, the removal of a few thumbscrews does not by itself qualify a system as highly serviceable. Storage and optical drives, as well as expansion cards, should be easily removable without a screwdriver. On some models, the motherboard and power supply can also be removed and replaced by depressing a few tabs. The idea is to make it easy for IT staff to make the necessary repairs as quickly as possible, to minimize downtime.

A standardized desktop solution that uses common components simplifies the drive-imaging process and enables technical support to react to hardware problems faster. A failed hard drive can be easily replaced with an identical drive (with a preloaded image), with minimal impact on the end user. The same is true for expansion cards; the use of common video and network components takes the guesswork out of determining which drivers are needed to replace failed parts or when a platform-wide driver update should be planned.

Another cost-saving feature to look for is the modular media drive. This is not too common in desktop configurations, but some models feature hot-swappable optical drives that can be removed and used in other compatible desktop and notebook systems.

Managed desktops are available in several sizes. Small-form-factor or slim desktops work well in areas where desktop workspace is limited (as do all-in-one PCs) and do not sacrifice power for size. But since such systems are more difficult to upgrade, because of limited expansion options and the use of integrated components, it's important to choose wisely, with an eye toward future requirements. Ultrasmall desktops are best paired with LCDs, which are slightly more expensive than CRTs but much more workspace-friendly.

Small-form-factor desktops are a good choice for businesses that require moderate flexibility in terms of future upgrades. Generally, these systems provide at least two available PCI slots and two free drive bays for additional media or storage drives. They can be easily upgraded with more memory, and they use integrated graphics and audio controllers.

Mid-tower and full-tower computers are designed to provide maximum



◀ MINI-TOWER

A common shape for business desktops, the mini-tower usually stands 15 to 19 inches tall or wide. It uses a standard ATX or BTX motherboard. It typically fits two 5.25-inch and up to four 3.5-inch drive bays. Some mini-tower systems can be installed horizontally, old-school desktop style.

BUY THIS IF:

- You may expand your desktops in the future.
- You still want a system that fits comfortably under an office desk.

scalability and can be configured with high-end components, such as graphics cards, as needed. Multiple drive bays and expansion slots enable IT administrators to use RAID configurations for reliability and to connect to various external devices.

It's important to choose a line of desktops that uses a stable drive image and common components across the product line, regardless of the size. If a specific workgroup requires a desktop with high-end 3D performance, decide on an adequate graphics solution, make the necessary changes to the gold image, and deploy it across the entire group to avoid multiple configuration and driver issues. Tools such as IBM's Image Ultra Builder let you manage image creation internally by adding group-specific applications and drivers to the original image without starting from scratch. Dell's Deployment Services, IBM's Image Ultra Services, and HP's Software Image Management Services all provide custom imaging solutions for IT administrators who don't have the resources to build and validate new or existing images.

Reasons To Move TO a Managed Environment

>> Your desktop infrastructure consists of multiple hardware configurations. Such setups require multiple software images and extensive stocking of service parts.

>> IT support costs continue to rise while IT operating budgets are shrinking. In today's economic climate, many companies are looking to cut operating costs, which usually means doing more with less.

>> System-failure events are on the rise. By taking control of the desktop environment and monitoring it, your IT staff can take measures to reduce incidents of failure that are due to unauthorized software installations and storage of data not related to your business.

>> Technical staff responds to repeated help-desk calls about viruses and malicious content. Even if your infrastructure utilizes the latest antivirus technology, an end user can still unwittingly introduce a virus or other malicious code via external media.

>> Aging desktops result in lost productivity. If a company's current crop of PCs lacks the power to run today's apps efficiently, productivity suffers.

>> Upgrading or repairing systems is proving time-consuming and expensive. Software and BIOS upgrades, asset inventory, and diagnostics must be done locally in unmanaged systems, one workstation at a time. Dispatching a service technician to do these tasks can be costly, especially if it involves travel to several locations.—JD

Software

Most major vendors bundle management software—either free or fee-based—with their corporate desktops. They are designed to give IT staff a way of automating certain tasks that in the past required a desk-side visit. Apps such as Dell OpenManage IT Assistant, HP Client Manager, and IBM Director let you monitor the health and activity of each desktop client. For example, an administrator can set certain thresholds for hard drive and memory usage that trigger an alert when the drive is nearing its storage capacity or when memory resources are too low—either of which can lead to lost work.

You can also use these tools to capture hardware-inventory data—such as processor type, hard drive type and amount, memory type and amount, installed drivers, and BIOS versions—remotely. This is helpful when you are scheduling planned software and hardware upgrades. Working in unison with certified hardware components, management software allows remote shutdown and reboot of any number of desktops, as well as remote BIOS flashing. It can be used to generate machine-specific reports, such as chassis-intrusion events, component failures, installed software and versions, and new-hardware detection. IT administrators can take control of each desktop from a central console to enable or disable integrated components, including AGP and PCI slots; IDE controllers; USB, FireWire, and legacy ports; and audio resources.

Some managed PCs also come bundled with local backup and recovery software, usually at no charge. Packages such as Altiris's Local Recovery (Dell and HP systems) and IBM Rapid Restore come preloaded on select desktops or may be downloaded from the Web. Such software uses a hidden partition on a system's hard drive to store backup images, or *snapshots*, at scheduled intervals. Users can then quickly resolve problems such as accidental file deletion, corrupt files, and virus infection by reverting back to a saved image, with little or no intervention by IT staff.

Not all vendors offer free backup and recovery utilities, but there are many third-party solutions available, including Rembo Technology's Rembo Auto-





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depth desktop reviews and Editors' Choice analyses.



Backup (RAB), which adds password protection to the hidden partition, and Norton Ghost 9.0, which also creates password-protected backups.

Perhaps the biggest benefit of management software is the ability to deploy drive images and software apps to desktop systems via the network. These features are usually fee-based or require a per-seat license but are well worth the money when you are deploying or updating a large number of desktops. For example, if a sales workgroup that uses the same applications is scattered throughout various geographical locations, IT can push the desired image—preconfigured with the OS and application packages—to the managed desktops from a remote console. Once the desktops are deployed, users can then follow a series of user-friendly menu items that will install the appropriate software on their systems, or an administrator can perform a remote power-up sequence for unattended installation.

Before you settle on a specific brand of managed desktops and software, it's important to verify that the desktop-management software that comes with your systems will work with your current infrastructure-management apps. Enterprise-management products such as Computer Associates' UniCenter, IBM's Tivoli, and HP's OpenView can manage a wide array of devices and applications, but if your desktop tools cannot be integrated into the larger framework, you're adding another layer of complexity to the management process.

Staff Infrastructure

IT managers know that the quality of user support will decrease if resources are

stretched to the limit. A managed desktop can help free up valuable IT resources, but it's important that technical staff be properly trained to take full advantage of the tools that will enable them to automate specific tasks and to support clients in a cost-effective manner. That all comes at a price.

Implementing a managed-desktop solution may also require a significant change to existing IT policies. You may need to create and enforce new standards and response procedures across the managed environment. To execute a managed plan successfully, acceptance and compliance by the IT staff are essential. That can be the most difficult hurdle to overcome. Changing the way people do their jobs requires patience, management technique, and a training plan that both delivers the necessary skills and accentuates the long-term benefits of change. Don't wait until the last minute to prepare your staff. Ideally, all training and assignment of IT duties should be completed before you attempt to deploy new strategies.

Educating users is equally important, as they will most likely feel the immediate impact of a managed environment. Suddenly having to request support via a help-desk ticket, as opposed to walking two cubes over to grab an available support tech, will take some getting used to and may seem unnecessary from the user's point of view. IT managers need to provide written or online instructions, or a client user guide, outlining new procedures. The idea is to make it as easy as possible for users to obtain support when needed.

For companies that lack the technical resources to manage their desktop infrastructure, help is available. Many vendors provide a variety of management services on a pay-per-seat basis. Depending on the level of service, IT administrators can offload some or all of their desktop management responsibilities, including planning and integration of the managed platform, desk-side support and maintenance, training, and asset tracking. ☰

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HDTVs:



READY FOR PRIME TIME

They're not just for Super Bowl parties anymore. Now HDTVs are good for season premieres, reality TV, and nearly everything else. So go ahead and get one—we'll bring the chips.

By Dave Salvator
Photography by Lara Hata

UNTIL NOW, most HDTVs were too expensive for mainstream viewers, and some still are. But the growing number of competitors in this hot market is driving prices down, and satellite and cable providers have ramped up their HDTV programming. The major networks are now showing many of their prime-time hits, like *Law and Order* and *Survivor*, in high definition, making HDTVs that much more worth the investment.

These TVs aren't just for TV, though. You can also hook most of them up to your PC, and all of them work with gaming systems. This essential combination of more affordable hardware, more available content, and more than one function is bringing many would-be spectators onto the HDTV playing field to make their first purchase.

Several technologies are available, including plasma, LCD flat-panel, rear-projection TV (RPTV), and CRT. Each has its unique set of trade-offs. The choice comes down to what looks best to your eyes, and no two viewers see exactly the same thing. But beware: Most HDTVs in stores are dialed up to showroom settings, so be sure to check the color and brightness before you buy.

First, consider your budget. HDTVs have come down significantly in price, but they are still a substantial investment of several thousand dollars or more. You should set a hard price ceiling for yourself and resolve to stay under it.

Next, consider how much room you have and whether you want to wall-mount

IN THIS STORY

PLASMA TVs

142 Fujitsu Plasmavision SlimScreen P55XHA30WS ●●●●○

144 Panasonic Viera TH-50PX25U/P ●●●○○

144 Pioneer Elite Pro-1110HD ●●●●○

LCD TVs

146 Samsung LT-P468W ●●●●○

147 Sharp Aquos LC-37G4U ●●●●○

147 Syntax Olevia LT30HV ●●●●○

REAR-PROJECTION TVs

150 JVC HD-61Z575 HD-ILA ●●●○○

152 Samsung HL-P5063W ●●●●○

152 Sony Grand Wega KDF-60XBR950 ●●●○○

144 Editors' Choice

146 Summary of Features

148 How We Tested

150 Front Projectors: Size Does Matter

your HDTV. Think about whether the room gets a lot of sun during the day and whether you can easily control the ambient light. These answers will determine what kind of technology you should buy.

Once you figure that out, you need to learn about the different types of HDTVs. CRTs deliver the best bang for the buck today. Some 26-inch widescreen units cost under \$700. You can even find 42-inch CRT rear-projection TVs for under \$1,000. But the CRT rear-projection TVs are bulky and fast becoming obsolete. For this roundup, we evaluate the more current technologies.

Plasma panels look gorgeous and offer the best image detail of non-CRT technologies in darkly lit scenes, but they aren't especially bright. Previous generations have had problems with image burn-in and relatively short life spans, though current panels have improved in both of these areas. Larger panels can get very expensive, with prices topping \$10,000. The least expensive plasmas that offer true high-definition resolution are still \$5,000 or more.

LCDs are the brightest displays, and that brightness, coupled with vivid colors and svelte shapes, makes them very attractive. But LCDs have trouble rendering details in dark scenes, and black levels typically aren't as dark as those seen on plasma-based panels, which can be sub-

stantially larger. LCD panels vary widely in terms of overall image quality, so you'll need to spend some good eyeball time with any LCD you're considering before deciding on one.

Of the purely digital HDTVs (excluding such options as CRTs), digital RPTVs represent the best bang for the buck. A micro-projection RPTV gives you the biggest screen size for the least amount of money. These models use reflective microdisplay devices such as Texas Instruments' DLP technology, high-temperature polysilicon

(HTPS) LCD projectors, and even liquid crystal on silicon (LCoS). But they also vary widely in overall quality, and many don't get especially bright. Depending on the microdisplay technology they use, other image quality issues can creep up as well.

We haven't found the perfect display yet, but HDTVs have definitely arrived and are finally ready for mainstream consumers. We review three from each category (plasma, LCD, and rear-projection) and help you decide which one to put on your wish list.

PLASMA TVs

Fujitsu Plasmavision SlimScreen P55XHA30WS

\$11,999 list. Fujitsu, www.fujitsu.com.
●●●●○

All HDTVs are expensive, but when you enter the realm of plasma TVs, you're hit with sticker shock. The 55-inch Fujitsu Plasmavision SlimScreen P55XHA30WS lists for \$11,999, and even shoppers who think they've found a deal could easily buy a decent used car instead. Needless to say, expectations are high.

In some respects, Fujitsu delivers. Color reproduction is excellent, details are sharp, and the scaler does a great job of making everything look good on the 1,366-by-768 screen. Plasma displays typically have very good black levels, and this one is no exception. Image uniformity is fantastic, with no discernible hot spots or clouds, where some parts of the image would be slightly brighter than others. In fact, this unit may have the most uniform image we've seen.

One glaring flaw with Fujitsu's TV, however, is that it's simply not very bright. When displaying a full white field, we measured an average white level of 109 candelas per square meter (cd/m²), which is very low. This is more of a voltage drive issue, since most plasmas can't drive a purely white screen to high brightness levels. Still, you'll lose some detail in dark scenes if you're in a well-lit room.

Fujitsu's industrial design is quite good, with a simple, slim silver bezel and matching stand. But the stand contains a piece of tempered glass that, while attractive, is a



• FUJITSU PLASMAVISION SLIMSCREEN P55XHA30WS

little worrisome: You wouldn't want your 120-pound television falling on a quarter-inch-thick piece of glass.

Although parts of this display look good for the home, other details make it seem like an industrial display crammed into a consumer frame. The remote is woefully basic, almost stark compared with its competitors. Inputs are limited and located on the back of the screen with no separate media connection box. So if you hang the unit on a wall, plugging in a new source is a nuisance. Even the on-screen display looks industrial: Its simple text-and-numbers layout in a gray-on-dark-gray color scheme is an eyesore.

The picture quality, while not quite as bright as we would like, is very good. If this TV cost much less, it would be easy to overlook its shortcomings and recommend it more strongly. But a TV with a five-digit price shouldn't have simple problems like an ugly on-screen display, limited inputs, and an absurdly simple remote. While we can forgive a little bit of the brightness problem as a limitation of plasma technology, we think you should expect more from a TV this expensive.—Jason Cross

OUR CONTRIBUTORS: Loyd Case is technical director, Dave Salvator is senior technology analyst, and Jason Cross is technology analyst at *PC Magazine's* sister site ExtremeTech.com. Associate editor Sarah E. Anderson was in charge of this story.



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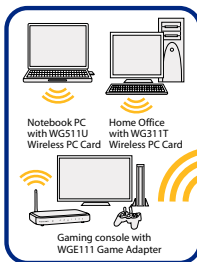


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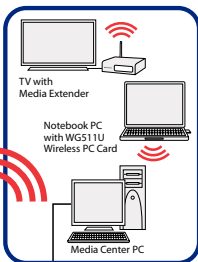
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Panasonic Viera TH-50PX25U/P

\$6,999.95. Matsushita Electric Corp. of America,
www.panasonic.com. ●●○○○

At only \$6,999.95, the 50-inch Panasonic Viera TH-50PX25U/P seems like a great deal. The average measured contrast ratio approaches 600:1, which is phenomenal; the average for this roundup is just 327:1. Image uniformity is also excellent. And the dark levels average only 0.15 cd/m², compared with an average of 0.33 cd/m² for the plasmas in this group (low scores are best).

A closer look at the numbers, however, reveals a glaring flaw. This is one of the dimmest TVs of this size we've ever seen. The average white level is less than 90 cd/m²; we'd like to see values two to three times that high. Plasma displays scale volt-



● PANASONIC VIERA TH-50PX25U/P

age so that displaying a full field of white is a worst-case scenario; the unit is brighter when only part of the display shows bright colors. Even so, the number is pitiful, and it's obvious in casual viewing.

If you view the TV in a dark room, it looks good. The exceptional dark levels are responsible for maintaining a good contrast ratio, and you can still make out detail in dark areas. Color saturation is good, the picture is sharp, and visual artifacts in the video signal aren't too apparent. We've seen richer colors and a sharper picture on other TVs, but not at this size or price. Turn on all the lights, however, and everything washes out considerably. Panasonic's display simply isn't bright enough to keep up.

As for consumer-friendly features, on the other hand, this set shines. It offers plenty of inputs, including analog RGB for hooking up a PC, a PC Card reader, and an SD card slot. It has dual tuners, which are always helpful, and even includes an ATSC/QAM receiver, so you can watch terrestrial HDTV broadcasts without an extra decoder box. Though we didn't see the Digital Cable Ready logo on the TV, a CableCard slot is in the back.

High-End HDTV: Pioneer Elite Pro-1110HD Mainstream HDTV: Sharp Aquos LC-37G4U



The best-looking display in this roundup is easily the Pioneer Elite Pro-1110HD, and at over \$15,000, it should be. Even though it earned first place on only one test, the overall image quality stole the show, no matter what we were watching. In addition, the Pro-1110HD has a 72-Hz refresh rate, thanks to its video processor, and it displays content recorded at 24 frames per second with its 3:3 pull-down for converting video content.

All that really matters, though, is that in a room with nine beautiful screens, this is the one we wanted to watch most.

The Sharp Aquos LC-37G4U had some tough competition. Its superb image quality had to rise above the Syntax Olevia LT30HV's stellar performance and price. The Aquos is the best-looking LCD here, and it offers extensive control. We especially like that if the lights are turned off, the Aquos will dial down the brightness and adjust the color. As with the Pioneer unit, however, the best part about this display is its impressive quality. The lower price—albeit higher than the Olevia's—doesn't hurt either.

None of the rear-projection TVs rose to our Editors' Choice standards. But the Samsung HL-P5063W was the best of the bunch. Microdisplay rear-projection TVs have come a long way, but they're not quite there. Nevertheless, it's a key technology to watch, as it continues to drive the price/performance curve.

You had better hope they never broadcast anything in 720p, though. Amazingly, this set does not support it. Never mind that this is the preferred mode for many HD enthusiasts, the default mode for many HD satellite services, and that most current and upcoming video games have HD modes run in 720p.

The only modes it supports are 480i, 480p, and 1080i. A few other modes, including 720p, are supported only when connected to a PC via the analog VGA input. This is simply inexcusable for a modern hi-def TV, and we can't in good conscience recommend it.—JC

Pioneer Elite Pro-1110HD

\$15,500 list. Pioneer North America Inc.,
www.pioneerelectronics.com. ●●●○○

When you first notice the price of the Pioneer Elite Pro-1110HD plasma display, you may have to sit down. The \$15,500 you'll pay for this 49-inch display makes it the most expensive HDTV we tested. But on our subjective tests, it demonstrated the best image quality in the group. The other plasmas—especially the Fujitsu unit—came close, but our eyes kept straying back to the Pioneer.

The Pro-1110HD uses an outboard control box, which is the brain of the unit. The external box houses the ATSC tuner, video processor, and all the connections to video sources. The video processor drives the Pro-1110HD at a 72-Hz refresh rate, allowing the unit to use 3:3 pull-down for convert-

ing movie content, which is recorded at 24 frames per second. This makes for a cleaner and smoother conversion than the more typical inverse 3:2 pull-down. The processor also supports full 10-bit-per-pixel processing, for a full 1,024 gradations per color.

The Pro-1110HD connects a wide array of sources through its two HDMI ports (High-Definition Multimedia Interface), analog RGB (VGA), twin FireWire connections, two component video inputs, and three composite and S-Video inputs. The external box also supports audio, but you'd be better off with high-end 6.1 AV gear, so your audio quality matches the video quality.

The Pro-1110HD's glossy black frame almost looks as though it should be framing a work of art, although the high-gloss finish is a bit too reflective and can pick up external light and shine it back at the viewer. The remote is sparse but functional, although the labels aren't particularly intuitive. The



● PIONEER ELITE PRO-1110HD

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SUMMARY OF FEATURES

HDTVs

	PLASMA TVs			LCD TVs		
	Fujitsu Plasmavision SlimScreen P55XHA30WS	Panasonic Viera TH-50PX25U/P	Pioneer Elite Pro-1110HD	Samsung LT-P468W	Sharp Aquos LC-37G4U	Syntax Olevia LT30HV
■ YES □ NO						
List price	\$11,999	\$6,999.95	\$15,500	\$9,999	\$5,499.99	\$1,599
Weight (in pounds)	121	125	83	99	53	50
Dimensions (HWD, in inches)	31.9 x 54.3 x 4.8	34.3 x 52.3 x 5.5	29.0 x 50.0 x 3.9	27.1 x 54.1 x 5.7	25.0 x 43.4 x 12.1	19.5 x 35.0 x 4.3
Visible screen (diagonal, in inches)	55	50	49	46	37	30
Native resolution/Aspect ratio	1,366 x 768 / 16:9	1,366 x 768 / 16:9	1,280 x 768 / 16:9	1,920 x 1,080 / 16:9	1,366 x 768 / 16:9	1,280 x 768 / 15:9
Contrast ratio (rated)	900:1	3,000:1	Info not available	800:1	800:1	750:1
Luminance (rated)	Info not available	Info not available	1,000 cd/m ²	500 cd/m ²	450 cd/m ²	700 cd/m ²
Composite inputs	RCA (1 rear), S-Video (2 rear)	RCA (2 rear, 1 front), S-Video (2 rear, 1 front)	RCA (3 rear, 1 front), S-Video (3 rear, 1 front)	RCA (1 rear, 1 side), S-Video (1 rear, 1 side)	RCA (2 rear, 1 front), S-Video (1 front)	RCA (1 rear), S-Video (1 rear)
Component inputs	RCA (2 rear)	RCA (2 rear)	RCA (1 rear, 1 front)	RCA (2 rear)	RCA (2 rear)	RCA: Y-Pb-Pr (1 rear), Y-Cb-Cr (1 rear)
Other video and data inputs	Analog RGB* (1 rear), DVI (1 rear)	Analog RGB (1 front), HDMI (1 rear)	Analog RGB (1 rear), HDMI (2 rear), FireWire (2 rear)	Analog RGB (1 rear), DVI (1 rear), HDMI (1 rear)	DVI (1 rear), HDMI (1 rear)	Analog RGB (1 rear), DVI (1 rear)
Audio inputs	Stereo RCA (3 rear)	Stereo RCA (4 rear, 1 front)	Stereo RCA (4 rear, 1 front), stereo minijack (1 rear)	Stereo RCA (3 rear, 1 side), stereo minijack (1 rear)	Stereo RCA (2 rear, 1 front), stereo minijack (1 rear)	Stereo RCA (4 rear), stereo minijack (1 rear)
Audio outputs	Bare wires (left and right)	Optical, stereo RCA	Bare wires (left and right), optical	Optical, stereo minijack, stereo RCA, subwoofer RCA	Stereo minijack, stereo RCA	Bare wires (left and right), stereo minijack, stereo RCA, subwoofer RCA
Separate media connection box	□	□	■	□	■	□
SD, ED, and HD modes supported	480i, 480p, 576p, 720p, 1080i	480i, 480p, 1080i	480i, 480p, 720p, 1080i	480i, 480p, 720p, 1080i, 1080p	480i, 480p, 720p, 1080i	480i, 480p, 720p, 1080i
Film mode (inverse 3:2 pull-down)	■	■	■**	■	■	■
Dual-tuner split screen	□	■	■	■	□	■
Discrete input-selection buttons on remote	□	□	■	□	□	□
User can assign names to input sources	■	■	□	■	■	□
User can assign separate picture settings to input sources	■	■	■	□	■	□
Power consumption	708W	545W	363W	350W	216W	145W
Speakers	Optional	13W (2, built-in)	13W (2, detachable)	15W (2, built-in)	10W (2, detachable)	10W (2, detachable)

RED denotes Editors' Choice. * Often described as a VGA connector or a 15-pin D-sub connector. ** 3:3 pull-down.

external box also has an RS-232 port for custom home control systems, as well as external access to the service settings.

What really sets the Pro-1110HD apart is the image quality. While the test results were near the top, the Pioneer placed first on only one of our lab tests. In subjective testing, the video picture quality from standard-definition and high-definition sources looked outstanding.

If we had to pick one HDTV for a long movie, this would be it. It may not have the brightest picture or win the specs race, but when it comes to realistic picture quality, the Pro-1110HD can't be beat.—Lloyd Case

LCD TVs

Samsung LT-P468W

\$9,999 list. Samsung Electronics America Inc., www.samsung.com. ●●●●○

At 46 inches, the Samsung LT-P468W LCD panel has bragging rights as the biggest LCD currently shipping, and it's the only display in this roundup that supports 1080p. Without it, you have to go to the very rare and expensive 70-inch plasma to hit 1080p.

This Samsung panel is very PC-friendly, offering both DVI and VGA connectors to display your PC's GUI in all its 1,920-by-1,080 glory. With a native HDMI port, it's ready for the current and next generation of set-top boxes, DVD players, and other high-definition sources. The finishing touch is an optical S/PDIF output to forward a digital audio bitstream that accompanies an HDTV transmission



● SAMSUNG LT-P468W

to your home theater receiver.

The LT-P468W offers versatile I/O connectivity, though most of the connectors stick out of the back panel—inconvenient if you're thinking of hanging it on the wall (though its 99-pound weight renders that unlikely). Side connectors for composite and S-Video, as well as stereo audio, allow

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REAR-PROJECTION TVs

JVC HD-61Z575 HD-ILA	Samsung HL-P5063W	Sony Grand Wega KDF-60XBR950
\$5,499.95	\$3,499	\$5,499.99
98	77	173
41.1 x 57.4 x 18.6	46.5 x 34.3 x 14.1	39.7 x 63.0 x 23.0
61	50	60
1,280 x 720 / 16:9	1,280 x 720 / 16:9	1,386 x 788 / 16:9
1,000:1	1,500:1	Info not available
Info not available	Info not available	Info not available
RCA (2 rear, 1 side), S-Video (2 rear, 1 side)	RCA (2 rear, 1 side), S-Video (2 rear, 1 side)	RCA (3 rear, 1 front), S-Video (3 rear, 1 front)
RCA (2 rear)	RCA (2 rear)	RCA (2 rear)
HDMI (1 rear)	Analog RGB (1 rear), DVI (1 rear), HDMI (1 rear)	DVI (1 rear), i.LINK (2 rear, 1 front)
Stereo RCA (4 rear, 1 side)	Stereo RCA (6 rear, 1 side)	RCA (5 rear, 1 front)
Stereo RCA, subwoofer RCA	Stereo RCA	Optical, stereo RCA
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
480i, 480p, 720p, 1080i	480i, 480p, 720p, 1080i	480i, 480p, 720p, 1080i
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
195W	200W	250W
10W (2, built-in)	15W (2, built-in)	5W (2, built-in); 20W (1, built-in)

fast hookups of your camcorder.

The menu systems are straightforward, and we were able to give each input a custom name. The inputs could remember custom settings—a key feature for an HDTV that's acting as AV hub in a home theater system. The remote does lack discrete input selector buttons, however, and you must cycle through the inputs to get to the one you want.

The LT-P468W is very bright and displays vivid colors, sometimes too vivid. Reds in particular are vibrant and full of life, but the panel appeared to be overdriving its red levels at times. Flesh tones suffer from a “too much rouge” effect. As it turns out, the Color control lets you dial back some of the excessive redness, though flesh tones then became somewhat greenish. In darker scenes from several DVD movies, much detail was lost, and dark colors rolled off to black too soon to render details truly.

A big, bright LCD panel, the Samsung LT-P468W has the only true 1080p display in

this roundup. It delivers very good image quality in bright scenes, but its dark-scene performance doesn't fare as well. That, plus the availability of similar-size HD plasma panels for less money, keeps this Samsung out of the winner's circle.—DS

Sharp Aquos LC-37G4U

\$5,499.99 list. Sharp Electronics Corp., www.aquos.com. ●●●●●



Sharp has quietly gone about the business of having one of the best LCD-based HDTVs in the business, and its latest 37-inch set stays true to that pedigree. The Sharp Aquos LC-37G4U offers an external video-processing box that houses all of the Aquos's video and audio connections, as well as a cable with three connectors that goes into the panel. The unit also requires a power connection, but these two cables are all it needs to accommodate a large number of inputs.

The panel offers some of the most granular image-quality controls around, but even with all those knobs and levers, these controls are very easy to use. A Reset to Defaults option takes you back to factory defaults in case you need to start over. The longish remote can control four other devices, and it makes navigating Sharp's very detailed menu system easy. It doesn't have individual buttons for each of the inputs, but you're given a list of selectable inputs to choose from easily.

A light sensor dynamically adjusts picture settings depending on the amount of ambient light present in the room. If the lights are turned off, the Aquos will dial down the brightness a bit and even make some color adjustments. A PC Card slot lets you plug in a card reader and present slide shows of your digital photos.

Out of the box, the Aquos delivered vivid colors and bright images, both on HDTV and DVD content. Requiring very little color, brightness, and contrast adjustment,

● SHARP AQUOS LC-37G4U



it fared well against all other LCD panels. It even stacked up well against the big plasma panels in all areas except one.

Its dark levels and dark-scene detail were the best of the LCDs, but like all LCD-based panels, the Aquos doesn't do as well as the plasma-based displays in this area. The panel's native pixel resolution is Wide XGA (1,366-by-768), meaning it scales 720p or 1080i HDTV content to the right size. We found that the Aquos's video processor did a very good job of keeping images sharp without exaggerating edge details.

The Sharp Aquos LC-37G4U does LCD about as well as it can be done, and its image quality coupled with its slender form makes it one of the better panels available today.—DS

Syntax Olevia LT30HV

\$1,599 list. Syntax Groups Corp., www.syntaxgroups.com. ●●●●●

HDTVs' high price tags can leave many would-be buyers out in the cold. But a relative newcomer to the scene, Syntax Group, has brought its Olevia line of LCD HDTVs to market this year. The 30-inch Syntax Olevia LT30HV checks in at just \$1,599, the lowest price in the group.

I/O options are plentiful, but this panel doesn't include an I/O box that would send an I/O cable to the panel. The Olevia doesn't have an HDMI port, either. But it does support HDCP (High Dependability Computing Project) via its DVI connection, so with a converter cable, it will accept HDMI-encoded content.

Only one of its two component video inputs accepts a progressive-scan signal; the other accepts only an interlaced Y-Cb-Cr signal. This limitation means that you'd probably want to use only the progressive-scan input and do video switching (to and from your HD cable or satellite box, progressive-scan DVD player, and so on) using your home theater receiver.

The Olevia remote has most of the usual features, though it lacks individual input buttons for fast input selection. It also lacks dedicated OK and Cancel buttons; instead, the right and left arrow keys fulfill these functions. Another drawback: The keys are neither illuminated nor glow in the dark.

This panel has a native aspect ratio of 15:9 (1,280-by-768), not 16:9 (1,280-by-720). Rather than do a slight vertical stretch to fill in the remaining 48 lines, Syntax runs 16:9 content at the top of the screen, leaving a small black stripe at the bottom of the display. The Olevia was the brightest of

PERFORMANCE TESTS

HDTVs: How We Tested



Just in case you don't trust your eyes, here are the nitty-gritty tests we used to see which HDTVs performed best. We divided our test methodology into two broad areas: objective and subjective. For the measured, objective portions, we test four major areas of performance: contrast ratio, RGB color response, gray-scale and color temperature linearity, and black and white uniformity.

We tested via the component video input (Y-Pb-Pr), using Milori's ColorFacts measurement software with a Minolta CA-210 colorimeter. The CA-210 is aligned so it's perpendicular to the display and positioned at point-blank range. For **contrast ratio**, we used an ANSI-9 nine-point measurement pattern, in a three-by-three grid. For the **RGB color response** and **linearity** measurements, we took one measurement at dead center.

We used a PC equipped with an ATI Radeon 9800 Pro graphics card and an ATI DVI-to-component video adapter to generate Milori's test patterns, as well as a wide variety of test patterns from DisplayMate.

Contrast ratio is the difference between the lightest and darkest values in two test images, one pure black and the other pure white. For this test, we use a black-and-white checkerboard pattern. A high contrast ratio indicates that the display is capable of color subtleties and a very high degree of detail. Contrast ratio can be thought of as the dynamic range of a display.

For **white** and **black uniformity** measurements, we used the VESA 2.0 DFPM uniformity method, which takes the minimum white value from the nine measurements and divides it by the maximum. We did the same for black values. The ideal panel will have a uniformity value as close to 100 percent as possible.

We used Radiant Imaging's ProMetric 8.1 image analysis software and a Radiant temperature-regulated CCD camera to measure luminance. With it we can take a full-screen image that consists of tens of thousands of measurement points. We measure both full-field white (IRE 100) and full-field black (IRE 0) test images and then take the standard deviation of the luminance values from a test image and divide it by the average for that

same set of values. What this tells us is how dispersed (or nonuniform) the data points are compared with the average; the lower the value, the better the uniformity.

For our subjective testing, we used Microsoft Windows Media high-definition clips from our PC test system, high-definition video clips and test patterns from a Sencore VOP-920 HD video player, and VOOM satellite HDTV content. Finally, we used a Yamaha DVD-S2300MK2 DVD player to watch selected scenes from *Gladiator*, *Shakespeare in Love*, and *Lord of the Rings: The Two Towers*. Here we looked for visual defects and other issues.

WHAT THE NUMBERS MEAN

Not one HDTV here rises head and shoulders above the rest. The Pioneer and Fujitsu plasma panels fared well, as did the Sharp Aquos LCD panel. But the Syntax Olevia LCD also turned in some impressive numbers, especially considering its low price. Here's a breakdown of results from each of the tests.

Contrast ratio. The Panasonic had some of the worst brightness values of any unit tested. But its dark values were the best of any unit tested, and as a result, it does well on contrast ratio. Next in line were the LCD panels, thanks in large part to their bright white values. RPTV-based sets fared the worst here because of a combination of internal light scatter, which caused blacks to become lighter, and lackluster bright levels.

Dark/white levels. LCD- and plasma-based panels trade wins here, with LCDs exhibiting the best brightness and plasmas achieving the best black levels. Rear-projection TVs wind up in the middle, unable to match the black levels of the plasmas or the brightness levels of the LCDs.

Uniformity. Plasmas fared the best here, particularly on black uniformity, although the Sharp Aquos LCD actually showed the best black uniformity of the panels tested. The other LCDs were next in line, followed by the RPTVs.

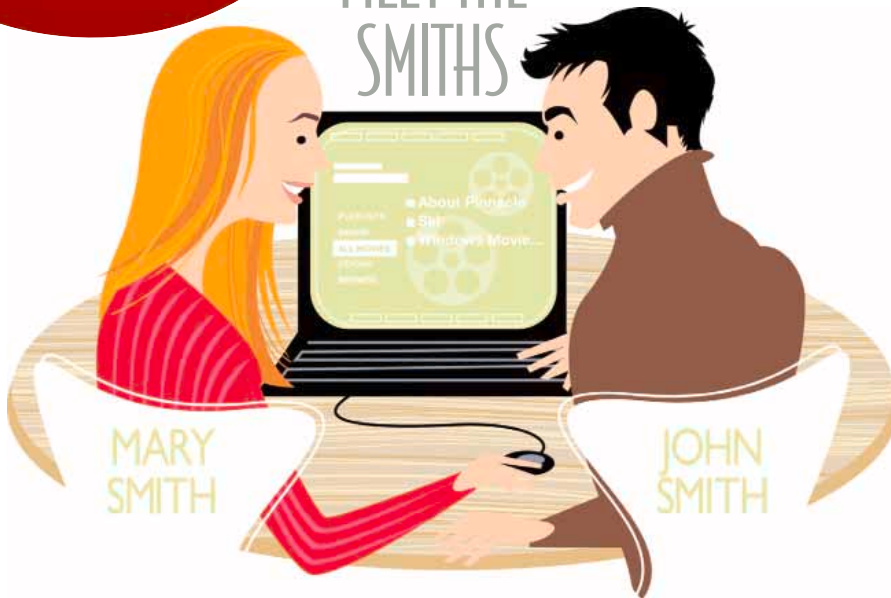
It's important to remember that what a colorimeter sees and what our eyes see aren't necessarily the same thing. While the RPTVs generally didn't fare as well as other technologies, the Sony and Samsung RPTVs actually did fairly well on our subjective tests of image quality.—DS

▲ High scores are best.
▼ Low scores are best.
Bold type denotes first place.

	Average contrast ratio* ▲	Average dark levels* (cd/m ²) ▼	Average white levels* (cd/m ²) ▲	White uniformity* (VESA standard) ▲	Black uniformity* (VESA standard) ▲	White nonuniformity** ▼	Black nonuniformity** ▼
PLASMA TVS							
Fujitsu Plasmavision P55XHA30WS	278:1	0.39	109	97.8%	90.5%	2.3%	4.7%
Panasonic Viera TH-50PX25U/P	583:1	0.15	87	93.9%	87.5%	2.6%	7.9%
Pioneer Elite Pro-1110HD	269:1	0.45	122	89.3%	87.5%	5.6%	4.6%
LCD TVS							
Samsung LT-P468W	422:1	0.57	237	93.4%	69.6%	7.8%	9.0%
Sharp Aquos LC-37G4U	437:1	0.74	322	92.6%	85.4%	8.5%	8.5%
Syntax Olevia LT30HV	541:1	0.77	415	79.2%	83.1%	7.7%	10.3%
REAR-PROJECTION TVS							
JVC HD-61Z575 HD-ILA	104:1	2.20	225	67.0%	53.5%	27.9%	31.9%
Samsung HL-P5063W	174:1	1.03	174	68.5%	49.3%	26.2%	27.6%
Sony Grand Wega KDF-60XBR950	137:1	1.24	165	73.3%	51.0%	29.1%	30.8%

RED denotes Editors' Choice. * Measurements taken using a Minolta CA-210 colorimeter. ** Measurements taken using a Radiant Imaging colorimeter.

MEET THE SMITHS



Can the Pinnacle MediaCenter™ Put the FUN back in this Relationship?

The Smiths have a problem. They've got a PC and they use it for all of their work—the bills, the emails, the take home work. But all work and no play make the Smiths and their PC pretty dull. Isn't it about time they had a little fun with their PC?

Mary wants to be able to record her favorite reality shows so she doesn't have to worry about missing them while she puts the kids to bed.

John wants to watch Monday Night Football just once without interruption. He doesn't mind skipping the commercial breaks because he says they're adding a few too many "snack" pounds around his middle.

Mary wants to use the computer to keep her photos of the kids, the vacations and the birthday parties organized. She loves to kick back and watch a photo slideshow.

John has over 200 hours of digital music he'd like to be able to store in one place and access whenever he wants. He also likes to create his own playlists.

Mary likes to watch movies. She's a fanatic. Give her a few hours and she'll curl up with a good chick flick.

What do John and Mary agree on? They hate keyboards and wish there was one place to bring all their media dreams together.

Is it Hopeless? Are John and Mary doomed to a life of all PC work and no PC play?

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Without expensive subscription services and without having to buy a new PC, Mary and John can enjoy the rich media entertainment of the digital world using **Pinnacle's MediaCenter**.

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The hardware includes either an internal or external TV tuner that captures your analog TV signal on your PC. You can also plug-in video or digital cameras to transfer your images to your computer.

And a remote control let's John and Mary relax in front of the screen instead sitting in office posture. The MediaCenter provides one button access to everything.

Isn't it about time your PC started having a little fun?



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Record your favorite TV shows. Pause and resume whenever you need to, even run your own replays and slow-mos.

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Electronics and Micro Center.



the LCD TVs we tested, and it showed on our viewing tests. Images were bright and colors vivid; scene detail was well rendered.

The Olevia's only weakness is its handling of dark-tone detail. And even here, it did a pretty good job as LCD panels go, though it did exhibit some of the washed-out black levels we've come to associate with LCDs. In those dark scenes, some details were lost. We also observed color and brightness shifts when we changed the vertical viewing angle.

Still, for its very low price, the Syntax Olevia LT30HV delivers a lot of HDTV for the money. If you're looking for an entry into the HDTV world, the Olevia is a fine place to start.—DS

● SYNTAX OLEVIA LT30HV



REAR-PROJECTION TVs

JVC HD-61Z575 HD-ILA

\$5,499.95 list. Japan Victor Corp., www.jvc.com.
●●○○○

At first blush, the JVC HD-61Z575 has a lot going for it. It uses three D-ILA chips (JVC's term for LCOS), so there's no need for a bulky color wheel. The 61-inch screen is certainly big enough to yield a near-cinematic experience in most family rooms. A built-in CableCard tuner allows connection to cable networks that support high definition. Aside from that, it can be connected to an antenna to receive terrestrial broadcasts.

The subdued design and relatively thin shape let you put it almost anywhere. HDMI support is a big plus for the upcoming generation of digital set-top boxes. The set also boasts a host of other inputs, including two component video inputs, two S-Video inputs, and a pair of composite video connections. The HD-61Z575 integrates a pair of stereo speakers for those who absolutely need built-in speakers, but for a TV this large, you'd be better off with a full 6.1 home theater speaker setup.



● JVC HD-61Z575 HD-ILA

All this seems fine, but actual TV viewing proved to be less than exhilarating. The first clues were in the objective testing. The measured contrast ratio of 104:1 was nowhere near the company's 1,000:1 rating. This was likely due to the very high white levels in pure black mode, at 2.2 cd/m².

The unit handled high-definition content well, but we did notice some edge noisiness that wasn't present in the original source material. Aliasing was also visible. And we witnessed enough noise in dark or foggy

Front Projectors: Size Does Matter

What do you do when you want a *really* big TV? You go with a front projector, of course. The consumer electronics moniker for a projector that shines light onto the front of a screen, *front projectors* are similar to the ones most of us use when we have to show PowerPoint slides to a crowd. But manufacturers of home theater projectors add video processing electronics to their projectors in order to maximize video image quality. That's a pretty serious challenge if you're projecting onto a 100-inch screen or bigger.

Front projectors have typically been viewed as high-end products. The higher-resolution units can cost in excess of \$12,000, and those with three DLP chips can run over \$30,000. But an emerging generation of lower-cost, lower-resolution projectors makes front projection an option for a wider audience.

Imagine you don't want to spend a lot of money but simply want to watch movies. You don't have a lot of space, either. You can opt for a lower-cost projector, like the Epson PowerLite Home 10+, which retails for \$1,299. Add an old white sheet and you have an instant portable movie theater.

If you want to step up a bit, consider the InFocus ScreenPlay 5700. Available for around \$3,500, the ScreenPlay 5700 uses TI's Matterhorn chip, with a native resolution of 1,024-by-576. The unit does a great job of scaling HD content down and scaling movies up

to its native 16:9 aspect ratio. Toss in excellent Faroudja deinterlacing circuitry, add a Da-Lite InstaTheater portable screen, and you have a home theater setup you can store in a closet.

In the past, if you wanted high-definition front projection, you would have had to take out a second mortgage. Now, however, a number of LCD projectors, such as the Panasonic PT-AE700, offer true 720p resolution at under \$3,000. If you prefer DLP, the Sharp DT-400 offers TI's HD2+ chip at 1,280-by-720 resolution and is priced at \$4,495. With these projectors, you might want a more serious screen, like one of Stewart Filmscreen's GrayHawk models.

Also note that not all movies from a front projector need to be viewed in the dark. Sony recently introduced its dark-screen technology, which is a black screen that lets you view projected video in a room with ambient light. Sony has no current plans to bring this to market any time soon, however.

The trickiest part of front projection, though, is the installation, particularly if you want it to be a permanent fixture in your home theater. You'll need to spend some serious time running cable and mounting screens. Screen manufacturers offer a variety of options, including powered screens that fully retract into the ceiling. These will likely require professional installation. Once done, however, you'll have a truly large TV that makes a 63-inch plasma look tiny.—LC



INFOCUS SCREENPLAY 5700

SAMSUNG

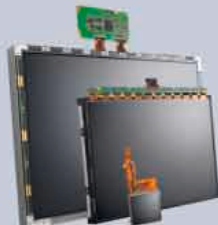
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SAMSUNG TFT-LCD



● SAMSUNG HL-P5063W

scenes in real DVD content for it to be distracting. The video processor was likely at fault, not the D-ILA technology.

The remote had relatively small buttons and text but good tactile feedback. Connections were easy to get to, but if you have a DVI source, you'll need a DVD-to-HDMI adapter, which is not provided. The unit also has no way to connect to a PC. One noticeable glitch occurred every time we cold-started the unit: A menu selection to choose the language popped up, every single time. It disappeared when we pressed the Enter key on the remote; nevertheless, this glitch just adds to the overall feel that the unit isn't fully baked.

In the end, the HD-61Z575 feels more like an unfinished experiment than a fully realized product. On some high-definition material, it looked fine by itself but appeared washed out and with too much edginess next to other HDTVs in the roundup. Further, the noisy image when playing standard-definition content is simply not acceptable to today's audience.—LC

Samsung HL-P5063W

\$3,499 list. Samsung Electronics America Inc., www.samsung.com. ●●●●●

The 50-inch Samsung HL-P5063W is one of the first HDTVs to use Samsung's new HD3 light engine. In combination with Texas Instruments' new 0.55-inch microdisplay, the new technology is aimed at reducing the costs of rear-projection HDTVs by driving two pixels with each microscopic mirror on the TI chip. This reduces the chip size and cost substantially. Other improvements in switching speed, reflectivity, signal and image processing, and color wheel control promise to make the picture even better than before.

From what we've seen, Samsung has succeeded. The picture is noticeably better than that of most DLPs using the older HD2 technology. The image is smoother

and less grainy, and color is more even across the screen. Scores of menu options let you tweak and tune the picture, and a little playing around paid off big: We were able to improve the appearance of contrast and brightness substantially without blowing out the color. In fact, Samsung's menu system is one of the best we've seen.

But DLP rear-projection TVs have some drawbacks that this unit simply can't escape. Average white levels, while far from the worst we've seen, are still well below 200 cd/m². The white uniformity (68.5 percent) isn't so hot, either; rear-projection TVs struggle with this because the center of the screen is a shorter distance from the light source than the corners. When simply viewing regular TV content or video games, you don't really see the problem, but more static screens, such as those you'd see when viewing pictures or a PC desktop, make it easier to spot.

Samsung uses an image-processing technology called DNE (Digital Natural Image engine), which should help correct these errors by making the image seem brighter, with better contrast and more natural colors. It worked well for us, and we left the feature enabled nearly all of the time.

We wish the HD3 light engine and smaller TI microdisplay chip would bring the price down another \$500 to \$1,000, but at \$3,499, this is still a good value. A CableCard



● SONY GRAND WEGA KDF-60XBR950

slot and built-in ATSC/QAM tuner would top our wish list, but these features aren't deal-breakers just yet. The HL-P5063Wt has one of the better pictures we've seen on a DLP TV, plenty of inputs, a good remote and menu system, and a reasonable price, making it easy to recommend.—JC

Sony Grand Wega KDF-60XBR950

\$5,499.99 list. Sony Electronics e-Solutions Co., LLC., www.sonystyle.com. ●●●●●

The Sony Grand Wega KDF-60XBR950 uses

the old reliable high-temperature polysilicon LCD panels in this rear-projection HDTV. It has three 16:9 panels, one for each color, at 1,386-by-788 resolution. And even though the Wega uses an older technology, it's a proven one, and Sony has applied many years of video engineering wizardry to make it shine.

This is also the beefiest microdisplay RPTV we've seen, weighing in at a hefty 173 pounds. The 60-inch screen, however, should please sports buffs and movie aficionados alike. It's also a touch deeper than competing DLP or LCoS sets, at 23 inches, so you'll need to be careful about placement. Accessory stands are available.

The Wega offers a wide array of inputs, including an HDCP-enabled DVI port for direct digital connections to set-top boxes. The usual array of component, S-Video, and composite inputs also graces the rear panel. One S-Video and one composite port are built into the front, as are i.LINK (FireWire) and Memory Stick slots. The DVI port, however, is ill-suited for connecting a PC, and we weren't able to sync it to a DVI-equipped PC graphics card.

The remote control is cleanly designed, with a functional layout. But its text and icons are small and hard to read. The on-screen displays are well organized, with lots of tweaks for color and other video settings. The built-in ATSC tuner lets you pull in HDTV signals from terrestrial broadcasts if an antenna is attached.

Our performance measurements revealed some weaknesses in Sony's approach to digital RPTV. The Wega had the second-lowest contrast ratio of any TV here. Black and white levels were consistently poor on the projection screen. Light output for pure black was 1.24 cd/m², the second worst in the roundup. Overall, the measurements were a letdown.

Also, image quality tended to be soft. Although this is not a plus, it did make for fewer artifacts in standard-definition signals. While the color rendition looked accurate, non-HD content was slightly washed out. High-definition content looked better, but the Wega's light output wasn't very bright. The screen also lacked black and white uniformity. In moderate light, the image is pleasing, but you lose substantial dark-level detail in night or dark scenes.

The Wega's amenities are compelling, but the overall image quality lacked punch, and the lack of dark-level detail makes this a poor choice for film buffs.—LC

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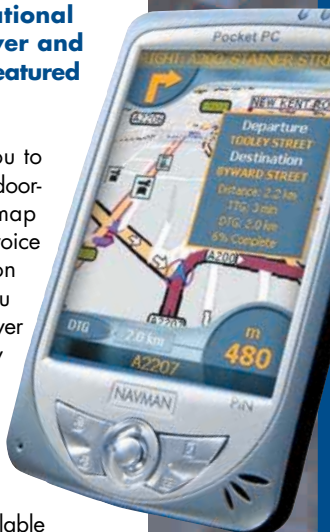
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This handsome timepiece has been updated with a kinetic automatic movement that is powered by the motion of the wearer's arm, so the watch never needs winding or batteries.

Hand-crafted Elite Movement

The Steinhausen movement consists of 185 parts, that are assembled entirely by hand. To prevent wear on gears, fine watches use tiny gemstones to reduce friction. The Steinhausen features up to 35 jewels, 15 more than most of the worlds elite watches. The movement is then rigorously tested for flaws and accuracy. Only 6% of the movements made ever meet the stringent requirements to be placed in this noble timepiece, making the Steinhausen one of the most accurate in the world.

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	Patek Philippe makes first wrist watch		Lips produced the first battery powered watch				

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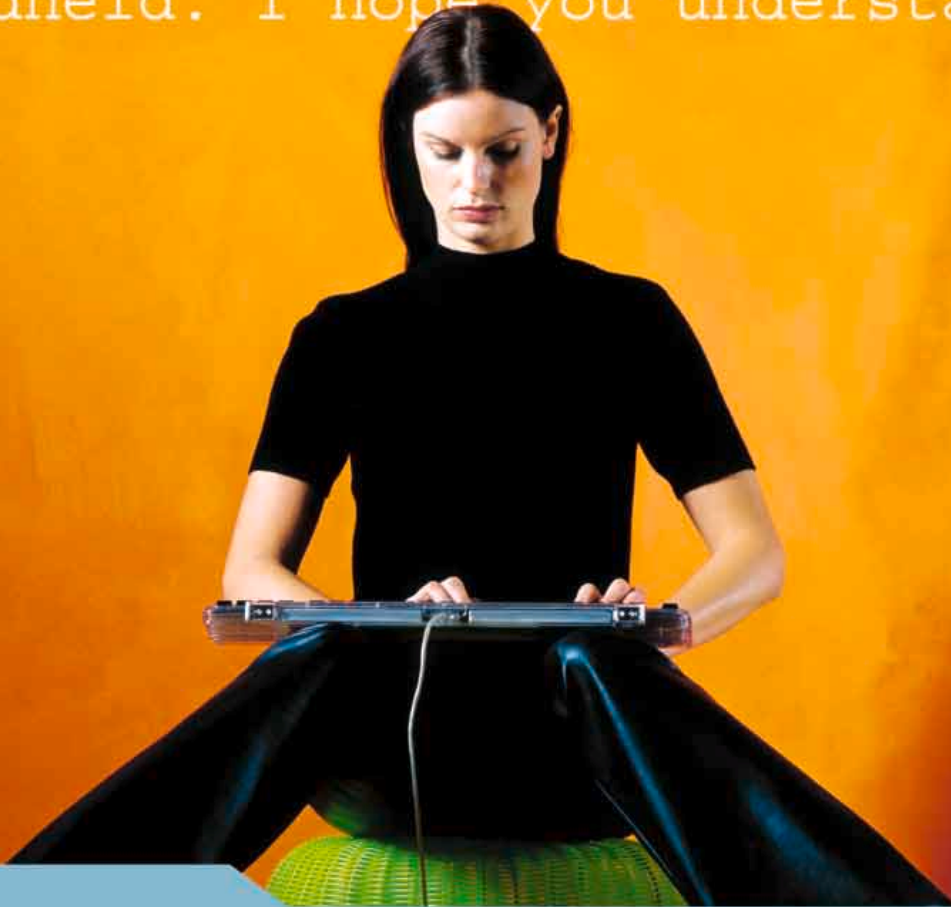
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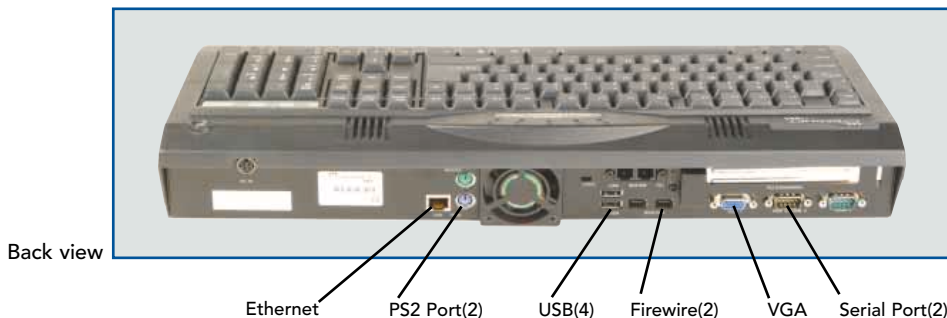
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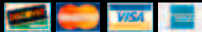
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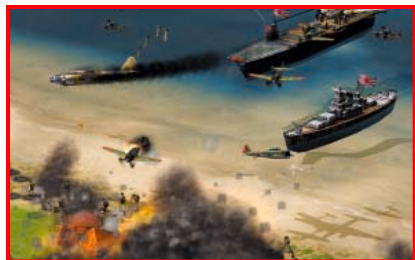
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GAMES

Axis & Allies

The classic board game that depicted the epic struggle of World War II has been re-envisioned as a fast-paced real-time strategy simulation game. You command tanks and infantry in the North African deserts, subs in the South Pacific, and bombers over Europe.—*Peter Suci*

ESRB rating: T (for Teen). For PC. \$49.99 list. Atari, www.atari.com.



Backyard Skateboarding

The Backyard Kids, familiar from the other games in this series, join pro skateboarder Andy Macdonald in a quest to win the Backyard Ultimate Skatepark. Lots of tricks, unlockable extras, and great environments give the title extensive playability—and it's fun for grown-ups, too. You can even create your own customized character.

—*Carol A. Mangis*

ESRB rating: E (for Everyone). For PC. \$19.95 list. Atari, www.atari.com.

Barbie Fashion Show

Help Barbie strut her stuff in style. This game holds kids' attention by offering increasing options for elements like hair, outfits, and stage props as players complete fashion shows. The vibrant visuals and animation are great. We



especially enjoyed choreographing Barbie's runway routines.—*Natalie Goel*

ESRB rating: E. For PC. \$29.99 list. Vivendi Universal Games Inc., www.vugames.com.

Barbie Princess and the Pauper

Complete fun, frivolous tasks, such as finding and grooming a kitten, to prove Barbie (as Erika) has the caring and beautifying qualities it takes to be queen. Decorate the castle to prepare for her coronation. The appeal of this title lies in the design-it-yourself aspects and fairy-tale scenery.—*NG*

ESRB rating: E. For PC. \$29.99 list. Vivendi Universal Games Inc., www.vugames.com.

BloodRayne 2

Everyone's favorite dhampir returns with an unquenchable thirst for blood and the distinction of being the only creature on earth that can save humanity. Acrobatic action and a deep melee system lead to feverish combat and frenzied feeding.

—*Matthew D. Sarrel*

ESRB rating: M (for Mature). For PC, Sony PlayStation 2, Microsoft Xbox. \$49.99 list. Majesco, www.majesco.com.

Brothers In Arms

Based on a true story of the airdrop of the 101st Airborne Division paratroopers during the Normandy invasion, this game draws from many historical documents to create a realistic WWII gaming experience. First-person shooter and squad-based combat combine to create varied game play that will keep you on your toes.—*MDS*

ESRB rating: M. For PC, PS2, Xbox. \$49.99 list. Ubisoft Entertainment, www.ubisoft.com.

Burnout 3

Do battle in over 70 cars on 40 different tracks—solo, online, and head-to-head. One hundred unique collision junctions provide the op-



portunity to create spectacular crashes; use Aftertouch to maneuver your car after initial contact.—*MDS*

ESRB rating: T. For PS2, Xbox. \$49.99 list. Electronic Arts Inc., www.ea.com.

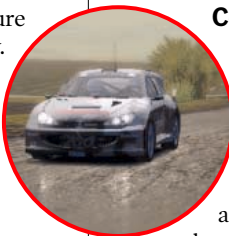
Call of Cthulhu: Dark Corners of the Earth

Enter the disturbing and terrifying mythical world of H.P. Lovecraft in this first-person horror game. Plunged into a dreadful cult, you'll have to explore, investigate, and fight for your life.—*MDS*

ESRB rating: pending (probably M). For PC, Xbox. \$49.99 list. Bethesda Softworks LLC, www.bethsoft.com.

Colin McRae Rally 2005

The new Career Challenge mode takes players through a full 23-event professional rally career, which includes more than 300 stages. Enhanced damage and scenery visuals make this the most realistic road-rally simulation available.—*MDS*



ESRB rating: E. For PC, Xbox. \$29.99 list. Codemasters, www.codemasters.com.

CSI: Miami

Based on the hit television series, CSI: Miami follows the South Florida team of forensic investigators. You'll use cutting-edge scientific methods along with your wits to solve crimes and get the bad guy. A seemingly small and insignificant detail could be the clue you need to break a case wide open.—*PS*

ESRB rating: T. For PC. \$29.99 list. Ubisoft Entertainment, www.ubisoft.com.

Didi & Ditto

From Kutoka Interactive, the company that offers the wonderful Mia line of edu-



cational software, comes a new and charming group of characters. Kids 4 to 6 play as Didi or Ditto, a brother/sister pair of purple beavers. As each pursues a quest to rescue the other one, players develop and hone their spelling and math skills. Three levels of difficulty keep the game challenging. It's evident that lots of care and creativity went into this title; your kids will notice, too.—CAM

ESRB rating: E. For PC. \$29.95 list. Kutoka Interactive Inc., www.kutoka.com.

DreamWorks Shark Tale

In this game based on the movie of the same name, you play as Oscar, the unlikely hero. Original game play is expertly blended with film footage to create the underwater world of Reef City.—MDS

ESRB rating: E. For Nintendo Game-Boy Advance, Nintendo GameCube, PC, PS2, Xbox. \$49.99 street. Activision, www.activision.com.



EyeToy: AntiGrav

Move your body, not a controller, to steer your 3D character and perform tricks as you speed through the environment and avoid obstacles. Advanced motion tracking and body recognition make this game active and fun.—MDS

ESRB rating: E. For PS2. \$49.99 list (including EyeToy camera). Sony Computer Entertainment America Inc., www.us.playstation.com.

FIFA Soccer 2005

The world's most popular sport returns for its 11th season as an interactive game from EA Sports. This year adds the entire 18-team Mexican League, along with more than 300 official teams from around the world. You can even try to bend it like Beckham.—PS

ESRB rating: E. For GameCube, PC, PS2, Xbox. \$39.99 list (PC version). EA Sports, www.easports.com.

GoldenEye: Rogue Agent

A James Bond game with a twist: You cross over to the dark side and use your

deadly skills to become a supervillain. Fight legendary Bond baddies like Odd-job as you carry out your global missions of vengeance.—MDS

ESRB rating: M. For GameCube, PS2, Xbox. \$49.99 list. Electronic Arts Inc., www.ea.com.

Gran Turismo 4

The best-selling car-racing game returns with more than 650 cars and 100 new courses. Highly detailed car customization and new racing modes like GT Photo Mode just might make this the most complete game of its kind.—MDS

ESRB rating: E. For PS2. \$49.99 list. Sony Computer Entertainment America Inc., www.us.playstation.com.

Grand Theft Auto: San Andreas

Get ready for mayhem on a grand scale: This is the biggest GTA environment in the series.

There must be a lifetime of missions and side missions to complete—or you could just drive around, explore, and wreak havoc for many, many hours.—MDS

ESRB rating: M. For PS2. \$49.99 list. Rockstar Games, www.rockstargames.com.

Halo 2

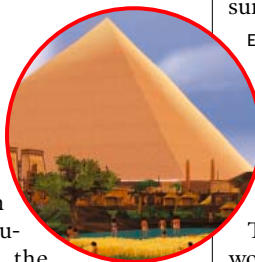
Master Chief returns to save Earth as relentless alien Covenant hordes descend from the skies. With improved vehicle control and the ability to wield multiple weapons, this sequel will not disappoint fans of the original game.—MDS

ESRB rating: M. For Xbox. \$49.99 list. Microsoft Game Studios, www.microsoft.com/games.

Immortal Cities: Children of the Nile

The Nile has been called the cradle of civilization; now you can rock the cradle in this city-building simulation. Playing as the Pharaoh, your word is divine law. Design and build spectacular cities, dispatch your armies to distant lands, and have them erect monuments to your achievements. And don't forget to construct a magnificent tomb so you can enjoy the digital afterlife.—PS

ESRB rating: E. For PC. \$39.99 list. Myelin Media, www.myelinmedia.com.



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Jak 3

Join Jak and Daxter in this sequel game, a year after they've saved Haven City. This action-filled platformer takes place in an almost limitless environment that's jam-packed with more guns and vehicles than you can imagine.—MDS

ESRB rating: T. For PS2. \$39.99 list. Sony Computer Entertainment America Inc., www.us.playstation.com.

Katamari Damacy

Help replace the stars in the sky by rolling around a clump that collects everything that sticks to it. This inventive and charming game is fun for all ages.—MDS

ESRB rating: E. For PS2. \$19.99 list. Namco Hometek Inc., www.namco.com.

Law & Order: Justice is Served

In this game, based on the TV drama, you help discover and prosecute the person responsible for the death of a young tennis star. First you're part of the investigation, gathering and analyzing evidence and even interrogating witnesses. Then you move to the courtroom as an assistant district attorney to build the case and win a guilty verdict.—PS

ESRB rating: T. For PC. \$29.99 list. Vivendi Universal Games Inc., www.vugames.com.

Leisure Suit Larry: Magna Cum Laude

Play as the original Larry's nephew, Larry Lovage, competing on a TV dating show that has come to campus. With 25 locations and 12 types of minigames, you're sure to be amused.—MDS

ESRB rating: M. For PC, PS2, Xbox. \$49.99 list. Vivendi Universal Games Inc., www.vugames.com.

Metroid Prime 2: Echoes

This first-person adventure brings Samus Aran to a doomed planet to harness the power of light and darkness. The all-new multiplayer mode alone is worth the price of the game.—MDS

ESRB rating: T. For GameCube. \$49.99 list. Nintendo, www.nintendo.com.

Mortal Kombat: Deception

The enhanced free-roaming Konquest mode and the Chess mode complement an improved one-on-one fighting system that incorporates multiple styles, weapons, and fatalities. You can play on-

line with PS2 and Xbox, too.—MDS

ESRB rating: M. For PS2, Xbox. \$49.99 list. Midway Home Entertainment Inc., www.midway.com.

My Horse Farm

As in other "tycoon" games, your goal is to manage your finances and create a successful business. This time, you're training horses so you can make money and win the championship. You'll also need to flex your steed's equestrian muscles, leaping over bales of hay on the course.—NG

ESRB rating: E. For PC. \$29.99 list. Viva Media LLC, www.viva-media.com.

Nancy Drew: Curse of Blackmoor Manor

Nancy visits Blackmoor Manor, a 14th-century mansion in England that's rich with history and fraught with menace. She must discover what ails her neighbor's daughter, without falling victim to the scary goings-on herself. Nancy Drew fans of all ages will enjoy solving this mystery.—CAM

ESRB rating: E. For PC. \$19.99 list. Her Interactive Inc., www.herinteractive.com.

Otogi 2

Journey through a world of Japanese folklore and mysticism as Raikoh, an undead warrior. A new game engine gives this sequel improved graphics and more realistic physics, so get ready to nail some combo attacks.—MDS

ESRB Rating: T. For Xbox. \$39.95 list. Sega of America Inc., www.sega.com.



Port Royale 2

Life as a merchant trader in the Age of Discovery wasn't easy, but in this game it can be challenging and loads of fun, as you command 16 different ship types and head to more than 60 towns. You'll have to watch for pirates and rival powers' military fleets, which will try to disrupt your trade routes.—PS

ESRB rating: T. For PC. \$29.99 list. Tri Synergy Inc., www.trisynergy.com.

Ratchet & Clank: Up Your Arsenal

The two heroes return to expand the action platform genre by including elements of exploration, adventure, puzzle solving, strate-

gy, role playing, and fierce gunfire in single-player and new multiplayer off-line and on-line game play.—MDS

ESRB rating: T. For PS2. \$39.99 list. Sony Computer Entertainment America Inc., www.us.playstation.com.



RollerCoaster Tycoon 2

This is the next best thing to riding that wicked coaster. You can design the ultimate roller coaster and then experience it via a new Coaster Cam, which provides a 3D view of the entire park. You also get to customize the park by adding rides and attractions to keep your guests happy.—PS

ESRB rating: E. For PC. \$39.99 list. Atari, www.atari.com.

Rome: Total War

Running an empire can be tough; you have to contend with barbarian invasions, overly ambitious rival generals, and that whole conquering thing. In Turn-Based Mode, devise your grand strategy and plot how to spread the glory of Rome, then jump into epic real-time battles that evoke the era of the legions. Grand in scale and extensive in detail, this may be the best battlefield so far.—PS

ESRB rating: T. For PC. \$49.99 list. Activision, www.activision.com.

SEGA SuperStars

Get in the action with this compilation of 12 minigames based on classic Sega characters, redesigned for play with the Sony EyeToy camera (not included). Throw down against Akira or Rau of Virtua Fighter, or feel the addictive beat of Samba de Amigo once again.—MDS

ESRB rating: E. For PS2. \$29.95 list. Sega of America Inc., www.sega.com.

Sid Meier's Pirates!

Set sail for the Caribbean, and take part in a swashbuckling adventure on the detailed, 3D high seas. Take on assignments as a privateer for king and country, or prey on rival merchants and plunder enemy towns as a ruthless pirate. If you're lucky and charming, you might marry the governor's daughter and retire to an island paradise.—PS

ESRB rating: T. For PC. \$49.99 list. Atari, www.atari.com.

Star Wars Battlefront

While you wait for the next installment in the *Star Wars* odyssey to hit the big screen, join the titanic struggle between the forces of good and evil, with four playable factions from both cinematic trilogies. This massive game will let up to 64 players compete online and command a range of vehicles including X-Wings, TIE Fighters, and speeder bikes.—PS

ESRB rating: T. For PC, PS2, Xbox. \$49.99 (PC version). LucasArts, www.lucasarts.com.

SuperPower 2

Control the politics, economy, and armed forces of a powerful nation. It is up to you to build your country while increasing your international influence through sanctions, alliances, and even military actions. The world awaits.—PS

ESRB rating: T. For PC. \$29.99 list. Dreamcatcher Interactive Inc., www.dreamcatchergames.com.

Teenage Mutant Ninja Turtles 2

With four-player simultaneous play and the ability to unlock the original arcade version, this is one action-packed game that guarantees nonstop battling.—MDS

ESRB rating: T. For GBA, GameCube, PC, PS2, Xbox. \$49.99 list. Konami Digital Entertainment, www.konami.com/usa.

The Sims 2

Make your Sims all the more lifelike as you guide them through the biggest moments in their digital lives, where key choices lead to successes or failures. The new body shop lets you customize individual Sims with unique clothes, hair color and style, as well as tattoos and more than 50 other individual modifiers.—PS

ESRB rating: T. For PC. \$49.99 list. Electronic Arts Inc., www.electronicarts.com.

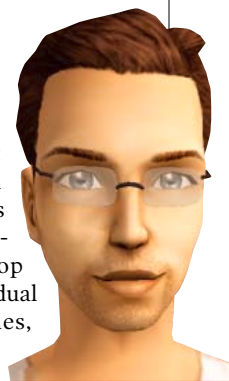
Tiger Woods PGA Tour 2005

You'll need the eye of the Tiger if you want to hit the links with the pros on the 52-week PGA tour. As you improve, you can obtain in-game sponsorships and head to the virtual greens of some of the best courses in the nation. Even if you lose, you'll go down swinging.—PS

ESRB rating: E. For GameCube, PC, PS2, Xbox. \$39.99 (PC version). EA Sports, www.easports.com.

Tony Hawk's Underground 2

In this new iteration of the popular skating game, the Hawkman recruits you onto his team for a no-holds-barred com-





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petition. This time, the action focuses on a grudge match that turns into a full-blown adventure with 20 unique and colorful characters.—*PS*

ESRB Rating: E. For GBA, GameCube, PC, PS2, Xbox. \$39.99 list. Activision, www.activision.com.

TRON 2.0: Killer App

Tron comes to the Xbox with a thrilling first-person shooter, Xbox Live support, and ten multiplayer modes. Enhanced light cycle action rounds out this killer offering.—*MDS*

ESRB rating: T. For Xbox. \$39.99 list. Buena Vista Games Inc., www.tronkillerapp.com.

Viewtiful Joe 2

The highly stylized brawler returns with 40 new enemies, new levels, and a special replay power. You can choose to play as Joe or as his girlfriend, Silvia.—*MDS*

ESRB rating: T. For GameCube, PS2. \$39.99 list. Capcom USA Inc., www.capcom.com/vj2.



X-Men Legends

Choose from 15 of Marvel's X-Men characters to build and develop your own team of superheroes in this action role-playing game. Save humanity alone or in four-player cooperative mode.—*MDS*

ESRB rating: T. For GameCube, PS2, Xbox. \$49.99 list. Activision, www.activision.com.

Yourself!Fitness

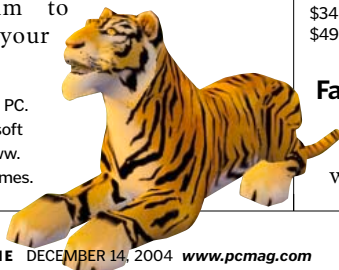
Bring the expertise of a personal trainer into your home with the first health and fitness game for Xbox. Yourself!Fitness is a personalized, interactive, and goal-oriented workout that's also fun.—*MDS*

ESRB rating: E. For PC, Xbox. \$34.99 list. responDesign Inc., www.respondesign.com.

Zoo Tycoon 2

Though you can't talk with the animals, in this sequel you can walk with them, care for them, feed them, and make them happy. You can even take pictures of them in action and create an online photo album to share with your friends.—*PS*

ESRB rating: E. For PC. \$39.99 list. Microsoft Game Studios, www.microsoft.com/games.



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\$84.95 list. Carlisle Development Corp., www.carlisledevelopment.com.

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Family Tree Maker 2005

The venerable, easily accessible genealogy software bulks up this year with new features: Automatic Web

Search, which searches while you work and notifies you when it hits pay dirt; Web Merge Wizard, which helps you import new information into your existing databases; and Pedigree View, which lets you navigate your family tree.—*CAM*

\$49.95 list. MyFamily.com Inc., www.myfamily.com.

Microsoft Encarta Reference Library 2005

New this year in our favorite encyclopedia software is content for a younger crowd, ages 7 to 12. Encarta Kids offers narrated slide shows, word and category search, and fun elements like games and yucky pictures. Another new feature is Math Help Online for high schoolers; you can search by textbook to find the very problems you're trying to solve and get help working through them.—*CAM*

\$74.95 list. Microsoft Corp., www.microsoft.com.



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\$49.99 list. Ahead Software, www.nerophotoshow.com.

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\$49.95 list. Imaginova Corp., www.imaginova.com.

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Edited by Don Willmott



◀◀ File this one under Hardy Har Har. (Yahoo! Shopping)

▶▶ Hypocrite! (Google.com)

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▶▶ It's never too early to give the kiddies a taste of a life of crime. (KBToys.com)



Puppy shoots Florida man, deputies say
Dog put paw on gun's trigger as owner tried to kill him

The Associated Press
Updated: 3:52 p.m. ET Sept. 9, 2004

PENSACOLA, Fla. - A man who tried to shoot seven puppies was shot himself when one of the dogs put its paw on the revolver's trigger.

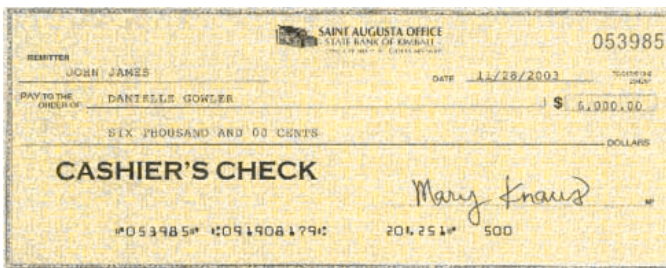
Jerry Allen Bradford, 37, was charged with felony animal cruelty, the Escambia County Sheriff's Office said Wednesday. He was being treated at a hospital for a gunshot wound to his wrist.

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◀◀ Beware malicious mutts. (MSNBC.com)



◀◀ Illinois horse farm owner Kristin has been the target of countless Nigerian e-mail scammers. Her response: revenge! She strings them along for as long as she can, even getting some of them to send the bogus checks that get the scam going. Her e-mails back-and-forth with these creeps are hilarious. Have fun reading them at www.bustedupcowgirl.com/scampage.html.

▶▶ So there's "serious" death and "not-so-serious" death? (www.nixieclocks.de)

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DELL

Home & Small Business



They're easy to buy.
They're easy to use.

Making this a very easy decision.



Dell recommends Microsoft® Windows® XP Professional



Home Desktops & Notebooks

NEW DIMENSION™ 3000 DESKTOP

Essential Technology on a Budget

- Intel® Celeron® D Processor 320 (2.40GHz, 256KB L2 Cache, 533MHz FSB)
- Microsoft® Windows® XP Home Edition
- 256MB Shared* DDR SDRAM
- 40GB* Hard Drive (7200 RPM)
- 17" (16.0" v.i.s., 27dp) E773 Monitor
- Integrated Intel® Extreme Graphics 2
- 48x CD Burner
- Integrated Audio; Dell A215 Stereo Speakers
- 6 Months of America Online® Membership Included*
- 90-Day Limited Warranty*, 90-Day At-Home Service* and 1-Yr Tech Support

\$599 or as low as **\$18/mo.***
E-VALUE Code: 01942-D51105m

NEW DIMENSION™ 4700 DESKTOP

Enhanced Performance

- Intel® Pentium® 4 Processor 520 with HT Technology (2.80GHz, 1MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- 256MB Shared* DDR2 SDRAM
- 40GB* SATA Hard Drive (7200 RPM)
- 17" (16.0" v.i.s., 27dp) E773 Monitor
- Integrated Intel® Graphics Media Accelerator 900
- 16x DVD-ROM Drive
- Integrated 5.1 Channel Audio
- 6 Months of America Online® Membership Included*
- 1-Yr Limited Warranty*, At-Home Service* and Tech Support

\$799 or as low as **\$24/mo.***
E-VALUE Code: 01942-D51107

DIMENSION™ 8400 DESKTOP

Cutting-Edge Technology

- Intel® Pentium® 4 Processor 530 with HT Technology (3GHz, 1MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- 512MB Dual Channel DDR2 SDRAM
- 80GB* SATA Hard Drive
- 17" Flat Panel Display (E173FP)
- 128MB PCI Express™ x16 ATIs Radeon™ X300 SE Graphics Card
- 16x DVD-ROM; 16x DVD-RW/+R* Drive (2nd Bay)
- Integrated 5.1 Channel Audio
- Dell A425 Speakers with Subwoofer
- 6 Months of America Online® Membership Included*
- 1-Yr Limited Warranty*, At-Home Service* and Tech Support

\$1499 or as low as **\$45/mo.***
E-VALUE Code: 01942-D51114m

INSPIRON™ 1000 NOTEBOOK

Value Solution

- Mobile Intel® Celeron® Processor (2.20GHz, 256KB Cache, 400MHz FSB)
- Microsoft® Windows® XP Home Edition
- 14.1" XGA TFT Display
- 256MB Shared* DDR SDRAM
- 30GB* Hard Drive
- 24x CD Burner/DVD Combo Drive
- Integrated Graphics
- 90-Day Limited Warranty*, 90-Day Mail-In Service & 1-Yr Tech Support

\$799 or as low as **\$24/mo.***
E-VALUE Code: 01942-D81107

Recommended Upgrades:

- Dell™ 1300 Wireless PC Card (802.11b/g), add \$39
- 3-Yr Limited Warranty*, Mail-In Service and Tech Support, add \$119

INSPIRON™ 600m NOTEBOOK

Uncompromising Performance, Compact Design

- Featuring Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 725 (1.60GHz, 2MB Cache, 400MHz FSB)
 - Intel® PRO Wireless 2200 Internal Wireless (802.11b/g)
- Microsoft® Windows® XP Home Edition
- 14.1" XGA TFT Display
- 512MB DDR SDRAM
- 30GB* Hard Drive
- 24x CD Burner/DVD Combo Drive
- 32MB DDR ATIs MOBILITY™ RADEON™ 9000 AGP 4X Graphics
- 1-Yr Ltd. Warranty*, Mail-In Service and Tech Support

\$1449 or as low as **\$44/mo.***
E-VALUE Code: 01942-D81114m

Make this your perfect PC:

- Microsoft® Windows® XP Professional, add \$79
- 3-Yr Limited Warranty*, At-Home Service* and Tech Support, add \$269

INSPIRON™ 8600 NOTEBOOK

Versatile, Affordable Wide Screen

- Featuring Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 725 (1.60GHz)
 - Intel® PRO Wireless 2200 Internal Wireless (802.11b/g)
- Microsoft® Windows® XP Home Edition
- 15.4" UltraSharp™ Wide Screen XGA TFT Display
- 512MB DDR SDRAM
- 80GB* Hard Drive
- 24x CD Burner/DVD Combo Drive
- 32MB DDR NVIDIA™ GeForce™ FX Go5200 AGP 4X Graphics
- 1-Yr Ltd. Warranty*, Mail-In Service and Tech Support

\$1649 or as low as **\$50/mo.***
E-VALUE Code: 01942-D81116m

Make this your perfect PC:

- 8x CD/DVD Burner (DVD-RW/+R*), add \$160
- 3-Yr Limited Warranty*, At-Home Service* and Tech Support, add \$269

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Small Business Desktops

DIMENSION™ 2400 DESKTOP

Economical, Essential Technology Desktop

- Intel® Celeron® Processor (2.40GHz, 128KB L2 Cache, 400MHz FSB)
- Microsoft® Windows® XP Home Edition
- WordPerfect® Word Processing
- 256MB Shared* DDR SDRAM
- 40GB* Hard Drive (7200 RPM)
- Integrated Intel® Extreme Graphics
- 48x CD-ROM; Integrated Audio
- 90-Day Basic Service Plan (Ltd. Warranty*, On-Site Service*, 1-Yr Tech Support)
- Monitor Not Included

\$349 E-VALUE Code: 01942-S51103m

Recommended Upgrades:

- Dell™ All-In-One Printer A960, add \$179
- 17" (16.0" v.i.s.) E773 Monitor, add \$100

OPTIPLEX™ 170L DESKTOP

Network-Optimized, Value Business Desktop

- Intel® Pentium® 4 Processor (2.80GHz, 1MB L2 Cache, 533MHz FSB)
- Microsoft® Windows® XP Professional
- 256MB Shared* DDR SDRAM
- 40GB* Hard Drive (7200 RPM)
- Integrated Intel® Extreme Graphics 2
- 48x CD Burner
- 1-Yr Basic Service Plan (Ltd. Warranty*, On-Site Service*, Tech Support)
- Monitor Not Included

\$699 Lease as low as \$19/mo., (48 pmts*)
E-VALUE Code: 01942-S31106m

Recommended Upgrades:

- 512MB Shared* DDR SDRAM, add \$44
- Microsoft® Office Basic Edition 2003, add \$130
- 17" Dell™ E173FP Flat Panel Display, add \$379

NEW DIMENSION™ 4700 DESKTOP

Exceptional Performance Desktop

- Intel® Pentium® 4 Processor 520 with HT Technology (2.80GHz, 1MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- WordPerfect® Word Processing
- 512MB Dual-Channel Shared* DDR2 SDRAM
- 40GB* SATA Hard Drive (7200 RPM)
- Integrated Intel® Graphics Media Accelerator 900
- 48x CD Burner/DVD Combo Drive; Integrated Audio
- Integrated Intel® PRO 10/100 Ethernet
- 1-Yr Basic Service Plan (Ltd. Warranty*, On-Site Service*, Tech Support)
- Monitor Not Included

\$799 Lease as low as \$22/mo., (48 pmts*)
E-VALUE Code: 01942-S51107m

Recommended Upgrade:

- 17" Dell™ UltraSharp™ 1704FP Digital Flat Panel, add \$429

Small Business Notebooks

LATITUDE™ D505 NOTEBOOK

Business Essentials, Compact Design—Starting at 5.1 lbs*

- Intel® Celeron® M Processor 340 (1.50GHz, 512KB L2 Cache, 400MHz FSB)
- Microsoft® Windows® XP Home Edition
- 14.1" XGA TFT Display
- 128MB Shared* DDR SDRAM; 30GB* Hard Drive
- Modular 24x CD-ROM Drive
- Intel® PRO Wireless 2100 802.11b Mbps* Mini-PCI Wireless Card
- Integrated Intel® Extreme Graphics
- 1-Yr Basic Service Plan (Ltd. Warranty*, Mail-In Service, Tech Support)
- Serial and Parallel Ports Included

\$1029 Lease as low as \$28/mo., (48 pmts*)
E-VALUE Code: 01942-S71110m

Recommended Upgrade:

- Additional Primary Battery (6-Cell), add \$99

INSPIRON™ 5160 NOTEBOOK

Balance of Price and Performance—Starting at 8.32 lbs*

- Mobile Intel® Pentium® 4 Processor 518 with HT Technology (2.80GHz*, 1MB Cache, 533MHz FSB)
- Microsoft® Windows® XP Home Edition
- WordPerfect® Word Processing
- 15" XGA TFT Display
- 256MB DDR SDRAM; 30GB* Hard Drive
- Fixed Internal 8x DVD-ROM Drive
- 32MB DDR NVIDIA® GeForce™ FX Go5200 AGP 4X Graphics
- 1-Yr Basic Service Plan (Ltd. Warranty*, Mail-In Service and Tech Support)
- Does Not Include Serial and Parallel Ports

\$1149 Lease as low as \$31/mo., (48 pmts*)
E-VALUE Code: 01942-S81111m

Recommended Upgrade:

- 512MB DDR SDRAM, add \$100

NEW INSPIRON™ 700M NOTEBOOK

Lightweight Traveler—Starting at 4.1 lbs*

- Featuring Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor 725 (1.60GHz)
 - Intel® PRO Wireless 2100 802.11b Mini-PCI Wireless Card
- Microsoft® Windows® XP Home Edition
- WordPerfect® Word Processing
- 12.1" Wide Screen Crystal Clear XGA TFT Display
- 256MB Shared* DDR SDRAM; 30GB* Hard Drive
- 8x DVD-ROM Drive; Integrated Intel® Extreme Graphics
- 1-Yr Basic Service Plan (Ltd. Warranty*, Mail-In Service and Tech Support)
- Does Not Include Serial and Parallel Ports

\$1399 Lease as low as \$38/mo., (48 pmts*)
E-VALUE Code: 01942-S81113m

Recommended Upgrades:

- Microsoft® Windows® XP Professional, add \$79
- 65 Whr Lithium Ion High Capacity Battery (8-Cell), add \$129
- 2-Yr Standard Service Plan (Includes On-Site Service*, CompleteCare™ Accidental Damage Protection*), add \$259

Small Business Servers & Workstations

NEW POWEREDGE™ SC420 SERVER

Small Business Value Server

- Intel® Celeron® D Processor 325 (2.53GHz with 256KB Cache/533MHz FSB)
- Upgradable to Intel® Pentium® 4 Processor at 3.60GHz with 800MHz Front Side Bus
- NEW 256MB ECC DDR2 SDRAM (Up to 4GB)
- 40GB* (7200 RPM) SATA Hard Drive (Up to 500GB*)
- Embedded Broadcom® 5751 Gigabit* Ethernet Controller
- 1-Yr Next Business Day On-Site Service*

\$499 Lease as low as \$14/mo., (48 pmts*)
E-VALUE Code: 01942-S21104m
Small Business Pricing

Recommended Upgrades:

- PowerConnect™ 2216 16-Port Fast Ethernet Switch*, add \$69
- System Including Microsoft® Windows® Small Business Server™ 2003, now \$998

NEW POWEREDGE™ SC1420 SERVER

High-Speed Small Business Server

- Intel® Xeon™ Processor at 2.80GHz
- Dual Intel® Xeon™ Processor Capable (Up to 3.40GHz)
- New 256MB DDR2 SDRAM (Up to 8GB)
- 40GB* (7200 RPM) SATA Hard Drive (Up to 1TB*)
- Embedded Intel® PRO Gigabit* NIC
- Six PCI Slots: 2 New PCIe (1x8, 1x4), 3-64/100MHz, 1-32/33MHz
- 1-Yr Next Business Day On-Site Service*

\$799 Lease as low as \$22/mo., (48 pmts*)
E-VALUE Code: 01942-S21107m
Small Business Pricing

Recommended Upgrades:

- PowerConnect™ 2608 8-Port All-Gigabit Ethernet Switch*, add \$129
- System Including Microsoft® Windows® Small Business Server™ 2003, now \$1298

DELL PRECISION™ 370 WORKSTATION

Maximum Performance, Single Processor Workstation

- Intel® Pentium® 4 Processor (3GHz, 1MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Professional
- Dell™ OpenManage™ Client Software Optional
- 512MB Dual-Channel DDR2 SDRAM
- 40GB* (7200 RPM) SATA Hard Drive; 48x CD Burner
- 64MB PCI Express™ x16 NVIDIA® Quadro NVS 280 Graphics
- 3-Yr Basic Service Plan (Ltd. Warranty*, On-Site Service*, Tech Support)
- Monitor Not Included

\$1299 Lease as low as \$35/mo., (48 pmts*)
E-VALUE Code: 01942-S41112m

Recommended Upgrade:

- 19" Dell™ UltraSharp™ 1901FP Digital Flat Panel, add \$699

Get more out of your budget. Get more out of now.

