

# PC

## MAGAZINE

[www.pcmag.com](http://www.pcmag.com)

**KEEP YOUR KIDS SAFE ONLINE**



**THE NEW DESKTOPS:  
FASTER MEMORY  
AND BETTER GRAPHICS**

First Looks: Blue-Laser DVDs

**CONVERT YOUR HOME MOVIES**

THE INDEPENDENT GUIDE TO TECHNOLOGY

AUGUST 3, 2004

**126 WAYS TO STOP & PREVENT**

# SPYWARE

# WORMS • HACKS

# VIRUSES

# & MUCH MORE...

**YOUR ESSENTIAL HOW-TO GUIDE**

**PLUS: IS MICROSOFT TO BLAME  
FOR YOUR SECURITY WOES?**

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

SONY

## Performance Art

Power. Beauty. Attraction. Envy.



### The New Sony VAIO® X505

A notebook PC as thin as your finger? If it came from anyone else, it would be a surprise. But not from Sony.® The VAIO® X505 is only the latest in Sony's rich history of innovation. Part of a versatile range of Sony VAIO® notebooks and desktops, it has a nickel-reinforced body and is designed to work with Sony's other high-quality products and accessories. There are a lot of reasons you turn to Sony for quality, dependability and innovation. Now there's one more.

Sony VAIO® X505 Notebooks feature Intel® Pentium® M Processors.



CALL 866-797-SONY (7669)

CLICK [sonystyle.com/pcmag5](http://sonystyle.com/pcmag5)

VISIT a Sony Style Retail Store

# SONY

**Sony VAIO® Notebook PCs** with Intel® Processors not only strike the perfect balance between form and function, but their mobility lets you explore a world of possibilities wherever you are and wherever you're going. With build-to-order versatility, wireless capability and interactivity, now there's no excuse for not living life on your terms.

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



Performance Art  
**X505 Series**

Available exclusively at  
**Sony Style Retail Stores  
and Sony Style Online.**  
Limited supply!

#### VGN-X505ZP

- Ultra-low-voltage Intel® Pentium® M Processor 1.10GHz<sup>1</sup>
- Microsoft® Windows® XP Professional
- 20GB<sup>2</sup> Hard Drive
- 10.4" XGA (1024x768) LCD display
- 512MB (64MB shared with video RAM)
- Estimated battery life (standard battery): 2.5-4.0 hours<sup>3</sup>
- Amazingly thin and extremely light, weighing only 1.85 lbs!
- Nickel-carbon body for ultra-light portability
- Includes Microsoft® Office® 2003 Standard Edition
- 1-Year Limited Warranty<sup>4</sup>

**\$2,999<sup>99</sup>** As low as **\$75** per month for qualified customers.<sup>11</sup>

#### UPGRADES

- Sony VAIO® Standard Lithium Ion Battery<sup>5</sup> for \$299
- Add the External DVD±RW Drive for \$399



Compact Design  
**TR Series**



Beauty, Power and Performance  
**S Series**



Essential Computing  
**A Series**



Portable Multimedia Entertainment  
**A Series**

#### PCG-TR3A

- Featuring Intel® Centrino™ Mobile Technology
- Ultra-low-voltage Intel® Pentium® M Processor 1GHz<sup>1</sup>
- Intel® PRO/Wireless Network Connection 802.11b/g<sup>12</sup>
- Intel® 855 Chipset
- Microsoft® Windows® XP Home Edition
- 40GB<sup>2</sup> Hard Drive
- 10.6" widescreen XBRITE™ LCD display
- 512MB RAM
- Integrated CD-RW/DVD Combo Drive<sup>4</sup>
- Amazing battery life up to 5.5 hours<sup>3</sup>
- Integrated swivel camera
- Sleek design in a 3.11 lb. light<sup>6</sup> and 1.44" thin body
- 1-Year Limited Warranty<sup>4</sup>

**\$2,199<sup>99</sup>** As low as **\$55** per month for qualified customers.<sup>11</sup>

#### UPGRADES

- Privacy Screen for \$79.99
- Sony VAIO® Standard Lithium Ion Battery<sup>5</sup> for \$299.99

#### Build-to-Order VGN-S170

- Intel® Pentium® M Processor 735 (1.70GHz, 2MB L2 cache)
- Microsoft® Windows® XP Home Edition
- 40GB<sup>2</sup> Hard Drive
- 13.3" WXGA display
- 256MB RAM
- Integrated CD-RW/DVD Combo Drive<sup>4</sup>
- Only 4.2 lbs. with standard battery<sup>3</sup>
- 1-Year Limited Warranty<sup>4</sup>

**\$1,899<sup>99</sup>** As low as **\$48** per month for qualified customers.<sup>11</sup>

#### UPGRADES

- Upgrade to a 60GB<sup>2</sup> Hard Drive for \$50
- Integrated Wireless LAN 802.11b/g<sup>12</sup> for \$50

#### Build-to-Order VGN-A130

- Intel® Celeron® M Processor 1.40GHz<sup>1</sup> (1MB L2 cache)
- Microsoft® Windows® XP Home Edition
- 40GB<sup>2</sup> Hard Drive
- 15" XGA TFT display
- 256MB DDR SDRAM
- CD-RW/DVD Combo Drive<sup>4</sup>
- 1-Year Limited Warranty<sup>4</sup>

**\$1,199<sup>99</sup>** As low as **\$30** per month for qualified customers.<sup>11</sup>

#### UPGRADES

- Upgrade to a 60GB<sup>2</sup> Hard Drive for \$80
- Integrated Wireless LAN 802.11b/g<sup>12</sup> for \$50

#### Build-to-Order VGN-A170

- Intel® Pentium® M Processor 735 (1.70GHz, 2MB L2 cache)
- Microsoft® Windows® XP Home Edition
- 80GB<sup>2</sup> Hard Drive
- NEW! 17" widescreen WUXGA (1920x1200) display with XBRITE™ LCD technology
- NEW! ErgoBright™ technology with Smart Display sensor
- 512MB (256MBx2)
- Integrated Optical DVD±RW/CD-RW Drive<sup>4</sup>
- ATI® Mobility™ RADEON™ 9700 Graphics Card
- Integrated Wireless LAN 802.11b/g<sup>12</sup> with Bluetooth™ Wireless Technology<sup>7</sup>
- AV entertainment dock with speakers for TV viewing
- 1-Year Limited Warranty<sup>4</sup>

**\$2,849<sup>99</sup>** As low as **\$72** per month for qualified customers.<sup>11</sup>

#### UPGRADES

- Upgrade to an 80GB<sup>2</sup> Hard Drive (5400 rpm) for \$100

**Financing and Warranty Information** Take advantage of these added choices and benefits that make owning a Sony worth while. Sony Financing offers online application, low monthly payments and a quick credit decision. You can also apply for a revolving line of credit good for use at [www.sonystyle.com](http://www.sonystyle.com), [www.imagestation.com](http://www.imagestation.com) and any Sony Style retail store. For warranty and service information, plus FAQs, Sony Product Service and Support is the source.

**CALL 866-797-SONY (7669)**

**CLICK [sonystyle.com/pcmag5](http://sonystyle.com/pcmag5)**

**VISIT a Sony Style Retail Store**

©2004 Sony Electronics Inc. Reproduction in whole or in part without written permission is prohibited. All rights reserved. Sony, VAIO, icons and logos like the Cyber Resolution, Sony Color, Memory Stick, PictureLine Studio, Connectivity, Digital Play, G.L.C.E., SmartScreen, Advanced HiCD, HiColor, ClearVid, Super HiColor, Cyber Shot, Memory Stick PRO, HiStyle, Zig-zag, Pocket MusicShare and HiSense are trademarks of Sony. Intel, Intel Inside, the Intel Inside logo, Intel Centrino, the Intel Centrino logo, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are trademarks of Microsoft Corporation. The Bluetooth word mark and logos are owned by the Bluetooth SIG, Inc. and any use of such marks by Sony is under license. All other trademarks are trademarks of their respective owners. Features, prices, specifications, availability and promotions are valid only in the U.S. and are subject to change without notice. Prices and promotions apply to purchases from [www.sonystyle.com](http://www.sonystyle.com) and do not include applicable sales tax or shipping and handling. Retailer prices and offers may vary. Purchases from [www.sonystyle.com](http://www.sonystyle.com) are subject to the Terms and Conditions of [www.sonystyle.com](http://www.sonystyle.com) shipping options, return policies and other [www.sonystyle.com](http://www.sonystyle.com) policies. You can review these by clicking on the appropriate link in the Info Center section of the shopping cart section of [www.sonystyle.com](http://www.sonystyle.com). For product warranty information, click on the Product Warranty link contained on the applicable product page of [www.sonystyle.com](http://www.sonystyle.com). Sony is not responsible for typographical or other errors in this ad. Screen images simulated. 1. GHz denotes microprocessor nominal clock speed; other factors may affect application performance. 2. GB denotes one billion bytes when referring to hard drive capacity. Accessible capacity may vary. 3. A portion of hard disk space is reserved as a recovery partition. 4. Certain restrictions apply. See [www.sonystyle.com](http://www.sonystyle.com) for more information. 5. DVD compatibility is not universal. 6. With supplied battery. 7. Requires compatible 802.11b wireless access point, some of which require USB. 8. Use of the Bluetooth-enabled device may not be all Bluetooth devices are compatible. 9. Used with a Bluetooth-enabled mobile phone. 10. Service fees apply. 11. Memory Stick PRO and Memory Stick PRO Duo media features vary and are dependent on the host hardware. 12. Limited time offer, visit [www.imagestation.com](http://www.imagestation.com)

**Sony VAIO® Desktop PCs with Intel® Processors** couldn't be more entertaining. From burning your own DVDs to downloading music to recording TV content, your recommended daily dose of entertainment comes with the ease and convenience you expect from Sony.

**Sony recommends Microsoft® Windows® XP.**



Display sold separately.

**Affordability**  
**RS Series**

**PCV-RS610**

- Intel® Pentium® 4 Processor with HT Technology at 2.80GHz\* (with 1MB L2 cache)
- Microsoft® Windows® XP Home Edition
- 160GB\* Hard Drive (7200 rpm)
- 512MB DDR at 333MHz
- DVD±RW and CD-ROM Drives\* (AGP slot available)
- 64MB integrated graphics card
- Stereo speakers
- Sony VAIO® Creation Suite Standard software package
- 1-Year Limited Warranty†

**\$100**  
MAIL-IN REBATE\*\*

**\$999<sup>99</sup>** After \$100 mail-in rebate. Rebate offer expires September 30, 2004. See [www.sony.com](http://www.sony.com) for coupon/terms and conditions.

**\$899<sup>99</sup>** As low as **\$25** per month for qualified customers.††

**UPGRADES**

- Add the SDM-HS74/P 17" Flat Panel Display for \$549.99

**PCV-W700G**

- Intel® Pentium® 4 Processor 2.80GHz\*
- Microsoft® Windows® XP Home Edition
- 200GB\* Hard Drive (7200 rpm)
- 512MB DDR at 333MHz
- DVD±RW/CD-RW Drive\*
- Built-in 17.5" widescreen LCD display
- Memory Stick® Media Slot\*
- Built-in stereo speakers featuring SRS™ WOW™ technology
- Convert analog video to digital with Giga Pocket® Personal Video Recorder with remote
- 802.11 a/b/g\*-compatible wireless LAN PC card
- 1-Year Limited Warranty†



**All-in-One**  
**W Series**

**\$1,999<sup>99</sup>** As low as **\$50** per month for qualified customers.††

**Build-to-Order VGC-RA910G**

- Up to Intel® Pentium® 4 Processor 560 supporting Hyper-Threading Technology (up to 3.60GHz\*, 1MB L2 cache)
- Microsoft® Windows® XP Home Media Center Edition
- New industrial design with Advanced Liquid Cooling System
- Up to 1.6 Terabyte Serial ATA Hard Drive (7200 rpm)
- Up to 2GB DDR at 400MHz
- DVD±R double-layer, DVD±RW Drive\*
- Up to 128MB ATI® RADEON™ X800 (PCI Express™ x16)
- Multimedia Card Reader
- Up to Creative® Inspire™ GD580 5.1 speaker system
- Personal Video Recorder powered by Giga Pocket® Engine with remote
- Sony VAIO® Creation Suite Standard software package
- 3-Year Limited Warranty Available†

**Starting at \$1,558<sup>99</sup>** As low as **\$39** per month for qualified customers.††

**UPGRADES**

- Add the SDM-HS74/P 17" Flat Panel Display for \$549.99



Display sold separately.

**Performance**  
**R SERIES**

**Entertaining Combinations**

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



**SDM-HS73P/B 17" Flat Panel LCD Display**

- TFT Active Matrix with XBRITE™ technology
- 17" viewable image size

**\$609<sup>99</sup>** As low as **\$16** per month for qualified customers.††

Combines XBRITE™ technology—Sony's standard in picture quality—with brilliant images, sharp text and eye-dazzling colors. Innovative floating-frame design complements any room in your home.



**DCR-PC109 MiniDV Handycam® Camcorder**

- 1.0 Megapixel Advanced HAD™ CCD imager
- Professional-quality Carl Zeiss® Vario-Sonnar™ T\* lens
- 10X optical/120X precision digital zoom
- Handycam® Station included (pictured)

**\$899<sup>99</sup>** As low as **\$23** per month for qualified customers.††

Compact and feature-rich, it's the perfect camcorder for people who demand quality and convenience.



**NW-MS90D Network Walkman® Digital Music Player**

- 512MB embedded memory allows you to store up to 340 songs
- USB cradle for easy PC connection and recharging
- Up to 33 hours of continuous playback\*

**\$399<sup>95</sup>** As low as **\$10** per month for qualified customers.††

This tiny little device is packed with memory! Comes with MagicGate™ Memory Stick Duo™ expansion slot. Small enough to carry in your pocket or purse.



**MSX-M256A Memory Stick PRO Duo™ Media\***

- 256MB of storage (220MB usable)
- Compatible with standard-size Memory Stick® media using included adapter

**\$104<sup>99</sup>** **New lower price**

Sony's Memory Stick PRO Duo™ media is designed to easily store, transfer and share photos, music, presentations and more. Ideal for use in small digital devices.



**FREE SHIPPING**  
**ON SELECT MODELS<sup>13</sup>**

WHEN YOU BUY AN ELIGIBLE PC DIRECT FROM SONY BY 8/31/04

\*For details, charges apply for certain products and services. PC and CD/DVD required. Installation may be required. Shipping charges for international service required to order gifts using these models. ††Shipping and handling may apply. Offer expires 8/31/04. †††On your Sony Finance Services Card, subject to credit approval. A minimum purchase of \$299.99 is required. This is a name-in-only promotion. If balance on these is not paid in full before the expiration of the promotional period indicated on your billing statement and your Account is not current, Account Finance Charges will not be imposed on these purchases. If balance on these purchases is not paid in full, Finance Charges will be assessed from the purchase date at the Standard Rate APR of 21.99%. For Accounts not kept current, the Default Rate of 24.99% APR will be applied to all balances on your Account. Minimum monthly payments are required. The minimum monthly payment presented is based on the product and purchase price shown. The minimum monthly payment is 2.5% of the "New Balance" or \$10, whichever is greater. The number of months you will pay and the amount of your total minimum monthly payment will depend on additional purchases and your Account balances. Minimum Finance Charge \$2.00. Certain rules apply to the allocation of payments and Finance Charges on your promotional purchase. If you make more than one purchase on your Sony Card, Call 1-888-367-4310 or review your cardholder agreement for information. ††† Purchase must be made by 8/31/04. For rebate mail-in coupon, list of eligible VAIO models, and Terms and Conditions, please visit [www.sony.com](http://www.sony.com). ††† Requires compatible wireless access point. Some features may require internet services, which may require a fee. Sony cannot guarantee the security of wireless communications. This product has been tested and certified to be interoperable by the Wireless Internet Compatibility Alliance and is authorized to carry the Wi-Fi logo. ††† Standard ground shipping with purchase of eligible PC direct from Sony Office expires 8/31/04. ††† Purchase must be made by 8/30/04. For rebate mail-in coupon, list of eligible VAIO models, and Terms and Conditions, please visit [www.sony.com](http://www.sony.com). ††† List of Sony DVD-R and DVD-RW media recommended. Confirm compatibility of third party media with third party media manufacturer.



**Sony VAIO® R Series Desktop PC** with an Intel® Pentium® 4 Processor with HT Technology. Video editing and music-mastering performance doesn't get more professional than this. With expandability up to 1.6 terabytes of storage, and innovative design to keep your system running cool and quiet, you'll have the professional-quality muscle you need for the results you want. Together with VAIO® Creation Suite PLUS, it's the optimum combination of innovative Sony technologies.

**Get exactly what you want. Exactly how you want it.**

**Sony VAIO®** PC products and services offer you a world of creative inspiration that is like no other. Explore the possibilities with information, insights and imagination, plus special savings and exclusive offers on special memberships, accessory items and more. For the latest products and innovations, expert advice from either our solution database or a Sony Style Online buying assistant, and secure purchasing, go to Sony Style Online, or call us today.

|                                                                                                                                                                                                                                                                                                                                                                                            |                                                                                                                                                                                                                                                                          |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Unsurpassed Selection</b></p> <ul style="list-style-type: none"> <li>• Thousands of customized PC options</li> <li>• Genuine Sony accessories</li> <li>• The best place to find your favorite Sony products</li> </ul>                                                                                                                                                               | <p><b>Expert Help</b></p> <ul style="list-style-type: none"> <li>• Friendly sales associates to help you find the right products</li> <li>• Chat live with a Sony Style Online buying assistant</li> <li>• Expert tips and demos on products and technologies</li> </ul> |
| <p><b>Easy Financing</b></p> <ul style="list-style-type: none"> <li>• Same-as-cash financing®</li> <li>• Quick credit decisions</li> <li>• Low monthly payments</li> </ul>                                                                                                                                                                                                                 | <p><b>Exclusive Offers</b></p> <ul style="list-style-type: none"> <li>• Preorder the newest Sony products</li> <li>• Save on genuine Sony accessories</li> <li>• Much more!</li> </ul>                                                                                   |
| <p><b>ImageStation.com.</b></p> <ul style="list-style-type: none"> <li>• Share your photos via online albums and e-cards.</li> <li>• FREE to join. Start today and receive 10 FREE prints.*</li> <li>• Get beautiful, high-quality photo prints.</li> <li>• Make unique, fun photo gifts.</li> </ul>  |                                                                                                                                                                                                                                                                          |

LIKE NO OTHER™

Sony Style Retail Stores: Beverly Hills, Boston, Houston, New York, Orange County, Palo Alto and San Francisco  
Opening soon: Dallas



**CALL** 866-797-SONY (7669)

**CLICK** [sonystyle.com/pcmag5](http://sonystyle.com/pcmag5)

**VISIT** a Sony Style Retail Store



# 1200 top technology brands. 1 place. 0 minutes of your time wasted.

With a wide variety of leading brands, fast shipping and knowledgeable account managers, at CDW you'll find people who are dedicated to getting you the right technology for your needs – when you need it.



## NEC VT47

- Extremely affordable 1300 Lumen Projector, SVGA Resolution projector
- Ease of use – auto keystone, AutoSense, direct access buttons, color coded inputs
- Lamp life – up to 3,000 hours



**\$995**

CDW 649321

## Fujifilm DLTtape™ IV ColorTag™ Series

- Fujifilm's ATOMM Technology for rapid data transfers
- Use the ColorTag™ Series to identify cartridge content, specify a particular server or identify a storage system or application
- Available in five different colors



**\$4064**

CDW 355742



SimpleTech

Call

CDW 625226



### SimpleTech Memory for hp ProLiant DL145

- SimpleTech memory undergoes compatibility testing to ensure compatibility with the system
- SimpleTech tests every module, every chip and every component to insure operability and functionality
- Limited lifetime warranty

### Targus Slimline USB External Floppy Drive

- Plug-and-play; the first time you insert the floppy drive, it is automatically recognized by the server
- Easy hot plug installation allows you to connect and disconnect without restarting
- Bootable with most servers



TARGUS

\$5244

CDW 505598



WatchGuard

\$1899

CDW 577856

### WatchGuard Firebox X700

- Designed to be the world's first fully upgradeable, integrated security appliance that adapts and expands with your changing security needs
- Deploy multiple security technologies and services on a single appliance
- Intuitive user experience ensures that your network is protected and your security monitoring trouble-free

### hp ProLiant DL145

- Dual processor capable for leading performance of 32-bit application solutions
- Support for both 32-bit and 64-bit applications on the same system
- Rack-optimized, 1U form-factor for fast deployment and efficient maintenance of large-scale cluster solutions
- Global server support network to assist you with set-up and installation



Additional hard drives sold separately

\$1599<sup>95</sup>

CDW 592663

hp  
invent

AMD  
Opteron

THE RIGHT TECHNOLOGY. RIGHT AWAY.™



CDW.com • 800.399.4CDW

In Canada, call 800.387.2173 • CDW.ca

# small & medium business SOLUTIONS



## 3COM

### 3Com Builds a Better Network, So You Can Build a Better Business

In today's competitive environment, successful businesses usually require high speed Internet connectivity with a robust IT network. 3Com® provides a complete suite of products for you to build your company's cost effective, powerful, professional network.

Your network is a business tool and you should rely upon an industry leader. Our wired and wireless solutions are easy to deploy, easy to secure, easy to use and they deliver the first class quality and performance you expect from 3Com.

With over 25 years of networking know-how incorporated into each and every product, 3Com lets you spend less time worrying about your network, and more time growing your business.

For more information, go to: [www.3com.com/smallbusiness](http://www.3com.com/smallbusiness)

### EXERCISE CHOICE



3Com OfficeConnect® Wireless  
11 a/b/g PC Card, 11g Gateway



3Com SuperStack® 3 Baseline Switches  
(Gigabit and Ethernet Switches)

#### Featuring



3Com NBX® 100 Chassis with  
3Com 3102 Phone and  
3Com 1105 Attendant Console

**IP Telephony:** The 3Com SuperStack® 3 NBX and NBX 100 are solutions where simplicity and reliability meet to deliver one of the most cost effective IP telephony offerings available today. Built for small and medium sized businesses, the 3Com NBX has been installed in more than 15,000 customer sites. Easy to deploy, easy to manage and priced attractively, the 3Com NBX reliably delivers on the value of a converged data and telephony network.

*"3Com has given us a practical voice and data system with extraordinary features and cost savings."*

Bradley Mayer  
Information Services Manager  
City of Chaska, US

\* For more information on how to enter and complete terms and conditions see [www.3com.com/smallbusiness](http://www.3com.com/smallbusiness)

Copyright © 2004 3Com Corporation. All rights reserved. 3Com, the 3Com logo, OfficeConnect, and SuperStack are registered trademarks of 3Com Corporation. All other product names may be trademarks or registered trademarks of their respective companies





# Forward Thinking

## Computer Security: Who Is Responsible?

Wherever I go, the first technology question that I get usually deals with security. It may be about a machine slowed by spyware or inundated with spam, or more generally about the “security problem.” People often ask me whether the security mess is Microsoft’s fault or whether our government should step in.

In response, we have devoted this issue to looking at steps you can take to be more secure. In “Is Microsoft to Blame?”, we consider the company’s responsibility in the whole mess. No matter what Microsoft does, though, Windows is a huge target. The bad guys will continue to come up with clever ways of attacking it, just as they would for any operating system that lets you add software.

Still, Microsoft can and should do more to combat the problem. Service Pack 2 for Windows XP has many good security features, but I wish Microsoft had made them available earlier. More important, we need a fundamental change in the way Windows deals with security threats. I’d like to see the system require users to make a more active confirmation before installing new software.

Our government could also do

more to enforce existing laws against virus writing, against phishing frauds, and even against many types of spam. But laws go only so far.

Security vendors also need to do more. Too often they emphasize point solutions, such as a standalone antivirus product, when what consumers need is a more comprehensive solution that includes protection against viruses, worms, spyware, and other threats.

Who is ultimately responsible for fixing these problems? Realistically, we all need to look in the mirror. Today’s worst threats don’t come from a single computer. They spread from machine to machine, taking advantage of millions of computers with security holes. That’s why it’s important for all of us to take more steps to protect our own computers and networks.

In this issue, we show you ways to protect your computer (page 86) and your office (page 97), as well as ways of shielding your kids from online dangers (page 107). No solution is perfect, but you’ll be more secure if you follow the basics: Keep Windows and your antivirus software up to date, run a basic firewall, and check for spyware periodically. These simple steps will improve everyone’s security.

**No matter what Microsoft does, Windows is a huge target—and that’s not likely to change.**

## Does Innovation Matter?

I attended a number of conferences last month that considered the future of computing. *The Wall Street Journal’s* D: All Things Digital conference, featuring many of the big names in technology, stood out for the barbs that company leaders made about their competitors.

The most interesting debate was on the nature of innovation. Hewlett-Packard CEO Carly Fiorina talked about HP’s history of innovation, noting that the company is awarded an average of 11 patents a day. She said that the company is focused on “reliable innovation” and delivering “low cost, high tech.” In contrast, she called Dell “low-cost, low-tech” and IBM “high-cost, high-tech.” But Fiorina’s sharpest barbs were

aimed at Dell, which she dismissed as a “distributor” of technology from other companies.

By contrast, incoming Dell CEO Kevin Rollins said that plenty of technology exists, but it’s the distribu-



Carly Fiorina



Steve Jobs



Bill Gates

# Forward Thinking

MICHAEL J. MILLER

**One thing is clear:  
We're thirsty for  
more innovation  
from many different  
companies.**

tion of that technology that is key. He talked about all the companies other than HP that had intellectual property in printing but had small market shares, and how Dell was bringing that technology to the market. Rollins also noted how many companies invest in innovation that doesn't pay off because of the distribution problem.

Apple CEO Steve Jobs discussed his company's innovations in areas such as iTunes, which he says now owns 70 percent of the market for music downloads. He resisted calls for making the iPod play WMA files, saying that this is a small market. And he explained how Apple's control over its entire product line—from hardware to software—makes innovation easier.

Microsoft's Bill Gates emphasized that software is where the innovation is happening. He talked about Windows Longhorn, which is expected in a few years, and about Microsoft's decisions on how far to push the operating system. Among its features will

be the ability to store all kinds of data in a structured format for easy retrieval. He also talked about the need for innovation in search engines, and how his strategy of working with multiple hardware partners for music players allows for more innovation.

Of course, each of these views is self-serving. After all, these executives do want to attract customers and boost their stock prices. But one thing is clear: We're thirsty for more innovation from many different companies. Apple deserves a lot of credit for making iTunes and the iPod much easier to use than earlier systems. But I still would like to see a broader range of players, more songs to choose from, and more ways to search for music.

Google deserves a lot of credit for making search engines more useful, but I still want better results that are more targeted at me. HP has done a great job driving the printer market, but I still want higher-speed, lower-cost printing. In each of these cases, competition pushes innovation.

## When IT Spending Matters

I recently attended Ziff Davis's own Business 4Site conference, which focused on the nearer-term IT issues for an audience of technical and business customers from midsize companies. While the "does IT matter" debate rages on in business journals, the issue didn't confuse the IT professionals I spoke with. All of them agreed that they need IT to run their businesses and to give them a competitive edge.

In one session, I asked the question of Joe Diodati, senior director of market development for Cisco, and I thought his answer was very good. He said there are several situations where IT can really make a difference, as when it leads to measurable productivity gains, sustainable competitive advantage, top-line growth, and improved risk management.

This seems like a good framework in which to

consider IT spending. But when I look around, I see all sorts of areas where IT could improve the things we do every day. For instance, most of my medical records (and probably yours as well) consist of handwritten notes on sheets of paper. It works fine when my doctor is in the office, but when someone else has to cover, or when I visit another doctor, those records are inaccessible. Computer systems provide an obvious answer.

Similarly, when I do my taxes, I rely largely on forms I get in the mail, showing how much money my employer paid me this year and how much interest I earned in various accounts. The same forms are also sent to the government. So why do I have to enter them again manually? It's clear that we've just started applying the technology we've created.

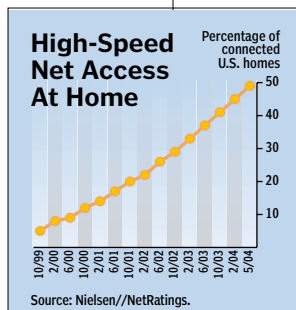
## Fast Net Access on the Rise

For a long time I've been complaining about how slow the U.S. has been to adopt fast Internet connections, and I still think we have a lot of work to do on this front. But I've been pleased with recent trends. According to Nielsen//NetRatings, the percentage of U.S. users who connect via broadband at home has been growing at a faster rate lately. Around the time you read this, over half of the home connections in America will be via broadband. And over three-quarters of the business connections will be high-speed connections.

The trend in schools is even more op-

timistic. According to the National Center for Educational Statistics, we've basically solved the problem of getting Internet access to students; already, 99 percent of all schools nationwide are connected. More important, 92 percent of all classrooms have access.

I would like to see speeds continue to increase and prices go down to boost adoption rates even further. But it's good at least to see things finally moving in the right direction.



**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](http://www.pcmag.com/miller).



circuit  
**city**

circuitcity.com

Looking for the right computer and more at just the right price?

Shop at Circuit City for great prices on the latest technology  
to make the transition to your new school easier.

Shop online or in one of our 600+ stores to find all your essentials  
for work and fun—computers, printers, software, cordless and  
wireless phones, clock radios, digital cameras and more.

**nu**  
**school**  
everything you need for  
back-to-school, work & fun

shop 24/7 & get free shipping on all your back-to-school essentials @ circuitcity.com

**\$30 gift card\***



great for last minute  
items after you  
get to campus!



with combined purchase of a notebook computer  
and any notebook computer accessory

Valid on any qualifying combined purchase made 6/1/04 through 9/5/04. Not valid on previous purchases. If either qualifying item is returned, return amount will be reduced by gift card value unless gift card is also returned. Notebook computer accessories include notebook power adapters, carrying cases, batteries, travel accessories & notebook mice. Not combinable with select Circuit City offers. Barcode valid for one use, in-store only. Reproductions or copies will not be honored. See store for details.



70Y15B757807896489

It's your image.  
Do more with it.



- High performance color printing with lowest cost per page among printers in its class\*
- Network-ready, wired and wireless options and solutions
- Built-in auto-duplexing for two-sided printing; 850-sheet capacity with optional cassette
- Free 1-year on-site service program included\*\*

### Samsung's new CLP-500 Series Color Laser Printers.

It's your image. And our reputation. So at Samsung Electronics, we engineer our color printers around the productivity needs of business. We have hundreds of engineers whose entire focus is exploring new color technologies. And with ownership of the entire manufacturing, technology, design and development process, we can offer new solutions faster and more affordably than other printer providers. The results can be seen in our new CLP-550 color laser, which delivers photo-quality on plain paper, handles two-sided tasks with ease, and comes with print performance and paper capacities never before seen in its class. It's one of many solutions to come from Samsung Electronics, a company taking color and what it can do for you, to a whole new level. **Think. Print. Lead.**



..... Visit [www.samsungusa.com/printer](http://www.samsungusa.com/printer) or call 1-800-SAMSUNG

Available at:    



### 23 Editors' Choices

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

### 26 First Looks

- 28 Dell Dimension 8400
- 28 Falcon Northwest Mach V
- 29 HP Compaq dc 7100
- 29 Velocity Micro ProMagix
- 30 Sony BW-RU101 Professional Disc for Data
- 31 Toshiba Satellite P25-S670 ▶
- 31 Nokia 6600 Video Phone ▼
- 34 Brother HL-5140
- 34 Samsung ML-1740
- 35 Philips Brilliance 190P5
- 35 Sony VPL-CX85 ▼
- 36 Casper XP 2.0
- 36 DocInfo Pro 1.0, DocSlides 1.0, Destinations 1.1
- 37 MindManager X5 5.1
- 37 PersonalBrain 3.0
- 38 Projected Financials 3.5
- 38 ColorPlus by Pantone ColorVision
- 39 SJ Namu WebEditor 6 Suite
- 39 Apropos Interaction Management Suite v. 6.0
- 40 HBX
- 40 Axentra OfficeSeries S-200



### ALSO IN THIS ISSUE

- 43 Feedback
- 138 Backspace



### 72 IS MICROSOFT TO BLAME?

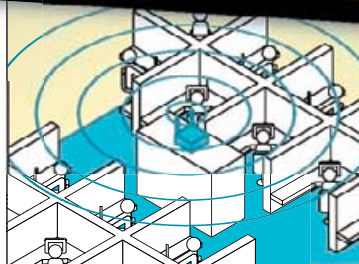
Windows is the operating system for 95 percent of the world's PCs. So should Microsoft take more responsibility in keeping your PC safe?



### 82 KEEP YOUR PC SAFE

For now, at least, securing your PC is your problem. We show you how to take charge.

# SECURITY SPECIAL



### 93 KEEP YOUR OFFICE SAFE

Think your office's e-mail system, Internet connection, and internal resources are secure? We help you make sure.



### 101 KEEP YOUR KIDS SAFE

The Internet is an essential part of life, even for kids, but it's replete with dangers. Here's how to protect them online.

### ON THE COVER

Stop and Prevent Spyware, Worms, Hacks, Viruses... pages 82 and 93



Keep Your Kids Safe Online pages 58 and 101

The New Desktops page 26

Blue-Laser DVDs page 30

Convert Your Home Movies page 54

Is Microsoft to Blame? page 72



## PRINTERS

### 112 The Essential Buying Guide: Network Printers

Put to work in a home office, or a small or midsize business, a network printer can save you a significant amount of money and space. But before you go shopping for products, learn the ins and outs of network printing so you make the right choices.

[www.pcmag.com](http://www.pcmag.com)

#### NEWSLETTER

**First Looks Update:** Get product reviews and news information delivered to your desktop every day! (<http://eletters.pcmag.com/>)

#### ONLINE EXTRAS

**Keep PCs Safe:** Don't miss this cool download: Free programs and information to bring along when helping a security-challenged friend in need.  
**Is Microsoft to Blame?** Check out our entire interview with Mike Nash, Microsoft's Corporate VP of the Security Business and Technology Unit. ([www.pcmag.com/onlineextras](http://www.pcmag.com/onlineextras))

#### FIRST LOOKS

**New reviews every week!**  
**Coming soon:**  
 • HP Compaq nx5000  
 • Sprint PCS Vision Picture Phone PM-8200 by Sanyo  
 ([www.pcmag.com/firstlooks](http://www.pcmag.com/firstlooks))

#### TOOLS YOU CAN USE

**Discussions:** Log on and participate! (<http://discuss.pcmag.com/pcmag>)  
**Downloads:** Check out our indexed list of utilities from A to Z. ([www.pcmag.com/utilities](http://www.pcmag.com/utilities))

#### EXCLUSIVE COLUMNS



#### DVORAK ONLINE

► Each Monday, John C. Dvorak gives you his take on what's happening in high tech today. Visit [www.pcmag.com/dvorak](http://www.pcmag.com/dvorak).

#### ULANOFF ONLINE

► And each Wednesday, Lance Ulanoff puts his own unique spin on technology. Visit [www.pcmag.com/ulanoff](http://www.pcmag.com/ulanoff).



## 17 Pipeline

- 17 Hard drives: Coming soon to a cell phone near you.
- 17 Sony halts production on the Clié PDA.
- 17 Servers fly off the shelves.
- 18 Apple's mobile Wi-Fi moves.
- 18 XM Satellite's real-time traffic data.
- 18 The Net's future: far more encryption.
- 20 **COMING ATTRACTIONS:** Creative Zen Touch, HP m1000 Series, TomTom Go, Belkin PureAV Wireless Digital Audio Receiver, SanDisk Cruzer Titanium, Steelcase Think Chair.



## 54 Solutions

- 54 **Digitize Your Home Movies.** Transferring 8-mm or Super 8 home videos to digital format can produce surprisingly good results.
- 56 **Office:** When working with others on a Word document, make sure that no one can undo your formatting.
- 58 **Security Watch:** You can help protect your children and other students from school predators online.
- 60 **Internet Business:** How the Internet Movie Database evolved from a newsgroup to a thriving Web business.
- 61 **Internet Professional:** Developers can bring their knowledge of Flash to Macromedia's new Central platform, with potentially impressive—and profitable—results.
- 65 **User to User:** How to bypass the Windows XP Welcome screen, divide an Outlook Express contact list into smaller lists, and more.

## Opinions

- 5 Michael J. Miller: Forward Thinking
- 45 Bill Machrone
- 47 John C. Dvorak
- 51 John C. Dvorak's Inside Track
- 53 Bill Howard

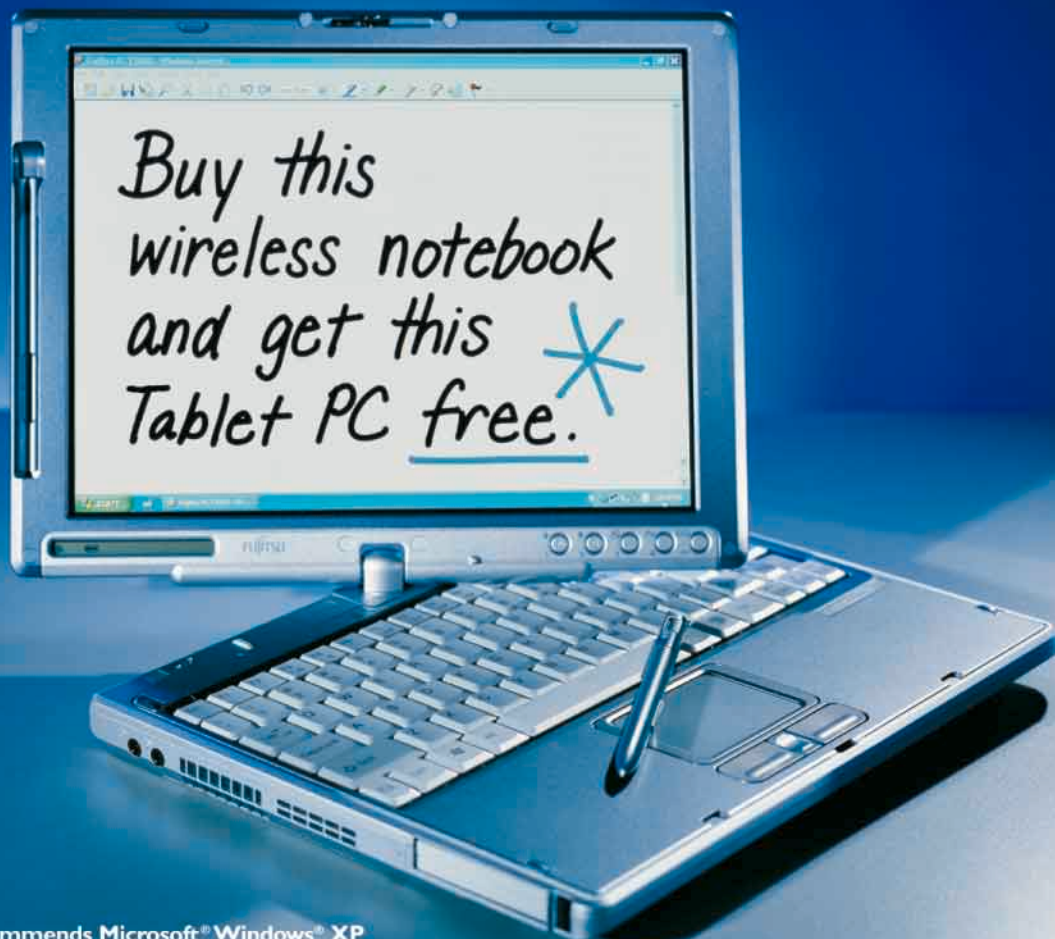
## 134 After Hours

- 134 **Music 101:** If you've ever dreamed of becoming the next Segovia, Horowitz, Hendrix, or Beethoven, these six programs can help you get started.
- 136 **Gear & Games:** Schlep in style with new laptop cases and backpacks from APC, Belkin, Kensington, and Timbuk2; accessorize your iPod with the Belkin Digital Camera Link, Groove Purse Triplet, Griffin iTalk, and TEN naviPod.

## EXTREME TECH™

Coming up:

- Build an all-around PC for \$1,500
- Build your own LAN party room
- Motherboard chipset head-to-head ([www.extremetech.com](http://www.extremetech.com))



Fujitsu recommends Microsoft® Windows® XP  
Tablet PC Edition for Mobile Computing.

**\* Now get Tablet PC and notebook functionality in one system—for one low price.**

Presenting the Fujitsu LifeBook® T3000 Tablet PC. A unique combination tablet and notebook that gives you the best of both worlds, all for the same price as a standard notebook. The LifeBook T3000 Tablet PC sets a new standard for mobile versatility and convenience. When you need a sleek, high-powered notebook, simply open it up and use its full-size keyboard. Or, when you want to sketch, write, or take notes, pivot and secure the screen and it instantly turns into a Tablet PC. Either way, it offers you built-in wireless access to information anywhere with the latest Intel® Centrino® mobile technology. 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.computers.us.fujitsu.com/2in1](http://www.computers.us.fujitsu.com/2in1) or call **1.877.372.3473** today for details.



**FUJITSU**

THE POSSIBILITIES ARE INFINITE



MOBILE  
TECHNOLOGY

# see

the power of  
technology



## Introducing DigitalLife 2004:

A strategically timed technology  
event where consumers  
see it, believe it & act

### DigitalLife 2004 will:

- generate media interest around the world
- kick your holiday sales into overdrive
- develop customers who are excited about your products and loyal to your brand

See what DigitalLife  
can do for you at  
[www.digitallife.com](http://www.digitallife.com)  
or call 1-866-761-7303.

# digitallife™

October 13-16, 2004  
New York City  
Jacob K. Javits Convention Center

Designed in conjunction with:

ZIFF DAVIS MEDIA



SYNC



[www.pcmag.com](http://www.pcmag.com)

**EDITOR-IN-CHIEF** Michael J. Miller

**EXECUTIVE EDITORS** Stephanie Chang, Ben Z. Gottesman, Carol Levin

**ART DIRECTOR** Richard J. Demler

**DIRECTOR, PC MAGAZINE LABS** Nick Stam

**SENIOR EDITORS** Jamie M. Bsales (First Looks), Konstantinos Karagiannis (First Looks), Carol A. Mangis (After Hours, Special Projects), Sebastian Rupley (West Coast, Pipeline), Sharon Terdeman (Solutions)

**MANAGING EDITOR** Paul B. Ross

**ASSOCIATE EDITORS** Sarah E. Anderson, Sean Carroll, Jenn DeFeo, Matthew P. Graven, Davis D. Janowski, Jeremy A. Kaplan, Michael W. Muchmore, Sarah Pike, Laarni Almendrala Ragaza, Michael J. Steinhart

**ASSOCIATE MANAGING EDITOR** Michal Dluginski **COPY CHIEF** Glen Boisseau Becker

**STAFF EDITORS** Daniel S. Evans, Tony Hoffman, Michael Kobrin, Erik Rhey **ASSISTANT EDITOR** Kyle Monson

**SENIOR WRITER** Cade Metz **COPY EDITORS** Erin Hollaway, Ann Ovodow, Steven Wishnia **ASSISTANT COPY EDITOR** Jessica Levine

**PRODUCTION MANAGER** Nicholas Cosmo **PRODUCTION EDITOR** Walter J. Konefal

**OFFICE ADMINISTRATOR** Rita Arahamian **COMMUNICATIONS MANAGER** Anita Anthony

**INTERNS** Shasta Jean-Mary, Lawrence Judd, Rahul Kadam, Molly K. McLaughlin, Radmila Nizberg

**CONTRIBUTING EDITORS** Greg Alwang, Helen Bradley, Bruce Brown, Marge Brown, Sheryl Canter, John Clyman, Richard V. Dragan, John C. Dvorak, Les Freed, Sally Wiener Grotta, Bill Howard, Don Labriola, David Linthicum, Bill Machrone, Edward Mendelson, Jan Ozer, Charles Petzold, Alfred Poor, Neil Randall, Sarah L. Roberts-Witt, Winn L. Rosch, Barry Simon, Luisa Simone, Craig Stinson, M. David Stone, Don Willmott

**SENIOR ASSOCIATE ART DIRECTOR** Cynthia Rhett **ASSOCIATE ART DIRECTORS** Sarah Crumb, Liana Zamora  
**GRAPHICS DIRECTOR** David Foster **GRAPHIC ARTIST** Aaron Able **CONTRIBUTING PHOTOGRAPHER** Thom O'Connor

#### PC MAGAZINE LABS

**DIRECTOR, OPERATIONS** Craig Ellison **TECHNICAL DIRECTOR** Richard Fisco

**LEAD ANALYSTS** Cisco Cheng, Laura Delaney, Sahil Gambhir, Oliver Kaven, Glenn Menin, Neil J. Rubenking, Joel Santo Domingo

**PRODUCT TESTING MANAGER** Charles Rodriguez **TECHNICAL ANALYSTS** Omar Cintron, Roy Goodwin, Joseph A. Guilbeau IV, William Pagan

**INVENTORY CONTROL COORDINATOR** Nicole Graham **INVENTORY CLERK** Alphonse Ragusa

#### PC MAGAZINE ONLINE

**EXECUTIVE EDITOR** Lance Ulanoff

**SENIOR ONLINE EDITOR** Vicki B. Jacobson **STAFF EDITOR** Gary Berline

**SENIOR PRODUCER** Yun-San Tsai **PRODUCER** Mark Lamorgese **ASSISTANT PRODUCER** Whitney A. Reynolds

**SENIOR DESIGNER** Donatella Pereira **COMMUNITY MANAGER** Jim Lynch **PRODUCT DATABASE MANAGER** Gina Suk

#### EXTREMETECH

**EDITOR-IN-CHIEF, INTERNET** Jim Louderback **TECHNICAL DIRECTOR** Loyd Case

**SENIOR TECHNOLOGY ANALYST** Dave Salvator **TECHNOLOGY ANALYST** Jason Cross **SENIOR NEWS EDITOR** Mark Hachman

**SENIOR WEB PRODUCER** Robyn Peterson **ASSISTANT WEB PRODUCER** Dan Avery

**COMMUNITY MANAGER** Jim Lynch **TECHNICAL ADVISOR** Nick Stam

#### CORPORATE PRODUCTION

**SENIOR ADVERTISING PRODUCTION MANAGERS** Milena Emery, Ivis Fundichely

#### THE INDEPENDENT GUIDE

*PC Magazine* is the Independent Guide to Technology. Our mission is to test and review computer- and Internet-related products and services and report fairly and objectively on the results. Our editors do not invest in firms whose products or services we review, nor do we accept travel tickets or other gifts of value from such firms. Except where noted, *PC Magazine* reviews are of products and services that are currently available. Our reviews are written without regard to advertising or business relationships with any vendor.

#### HOW TO CONTACT THE EDITORS

We welcome comments from readers. Send your comments to Internet address [pcmag@ziffdavis.com](mailto:pcmag@ziffdavis.com) or to *PC Magazine*, 28 E. 28th St., New York, NY 10016-7940. Please include a daytime telephone number. *PC Magazine's* general number is 212-503-5100. The West Coast Operations number is 415-547-8000. We cannot look up stories from past issues, recommend products, or diagnose problems with your PC by phone. An index of past issues is at [www.pcmag.com/previous\\_issues](http://www.pcmag.com/previous_issues). For a list of upcoming stories, browse [www.pcmag.com](http://www.pcmag.com). For a full description of who on staff covers what, go to [www.pcmag.com/whocoverswhat](http://www.pcmag.com/whocoverswhat).

If you are dissatisfied with a product advertised in *PC Magazine* and cannot resolve the problem with the vendor, write (do not call) Anne King, Advertising Department, at the above address. Please include copies of your correspondence with the vendor.

#### SUBSCRIPTION INFORMATION

For subscription service questions, for address changes, or to order, please contact us: **Internet**, <http://service.pcmag.com> (for customer service) or <http://subscribe.pcmag.com> (to order); **telephone**, 800-289-0429 or 850-682-7624 in the U.S. and Canada, 303-604-7445 elsewhere; **mail**, *PC Magazine*, P.O. Box 54070, Boulder, CO 80322-4070 (please include your mailing label with any correspondence, as it contains information that will expedite processing); **fax**, 850-683-4094 in the U.S. and Canada, 303-604-0518 elsewhere; **e-mail**, [subhelp@pcmag.com](mailto:subhelp@pcmag.com) (please type your full name and the address at which you subscribe. **Subscriptions:** The one-year subscription rate is \$39.97. *PC Magazine* is published semimonthly, with occasional exceptions: A special issue may count as a subscription issue, a combined or expanded issue may count as two subscription issues, and there may sometimes be an extra issue. Outside the U.S., add \$36 per year for surface mail; U.S. funds only. Please allow four to six weeks for your first issue to arrive or for any changes in your subscription to take place. **Back issues:** Back issues are \$8 each in the U.S., \$10 each elsewhere. Prepayment is required; please make checks payable to *PC Magazine*. Contact customer service (above) for availability. **Mailing lists:** We sometimes make lists of our customers available to mailers of goods and services that may interest you. If you do not wish to receive their mailings, please write to us at *PC Magazine*, P.O. Box 54070, Boulder, CO 80322-4070.



**One small step for ViewSonic®. One giant leap for TVs.**



Step up  
Steps



Remarkable picture quality, life-like sound and elegant design make ViewSonic LCD TV the perfect choice for any room. Let ViewSonic be your window to the world of total entertainment.

**WHERE STUNNING TV DISPLAYS ARE CONCERNED, WE DIDN'T HAVE FAR TO GO FOR GREATNESS.**

ViewSonic display technology has always been ahead of its time. That's why our TVs carry the NextVision® name. Twenty five million displays and more than a thousand awards for innovation helped ViewSonic become the #1 display brand in the US.\* Our recent advances in HDTV image quality, digital connectivity, and entertainment value come to life in a complete line of LCD TVs – from the thin profile 15" NextVision N1500TV to the stunning 30" N3020w. Put visual excitement in every room of the house. Whether you're watching your favorite HDTV show, DVD movie, or surfing the Internet, you'll love your new View.

Find out **Where to Buy** at [ViewSonic.com](http://ViewSonic.com) or call **800-888-8583**

**ViewSonic®**  
*See the difference.®* 

\*Leading stand-alone, branded monitor by sales (CRT and LCDs combined); (Supply/Stanford Resources Monittrak® and Flat Panel Monittrak®, 4Q03 report). Specifications and pricing subject to change without notice. Copyright ©2004 ViewSonic Corporation. All rights reserved. [11678-00E 02/04]

# FOR SUBSCRIBERS ONLY



**SENIOR VICE PRESIDENT AND PUBLISHER** Timothy J. Castelli

**NATIONAL ASSOCIATE PUBLISHER** C. Wesley Walton

**EAST COAST AD DIRECTOR** Jason Webby

**BUSINESS DIRECTOR** John C. Hutchins

**MARKETING DIRECTOR** Mark Pope

**RESEARCH DIRECTOR** Stephen Riddle

**RESEARCH MANAGER** John Tsao

**ADVERTISING OFFICE**

28 E. 28th St., New York, NY 10016-7940

Phone, 800-336-2423, 212-503-5100; fax, 212-503-5000

For advertising information go to [www.pcmagmedia.com](http://www.pcmagmedia.com).

For information on advertisers appearing in this issue, go to [www.pcmag.com/adindex](http://www.pcmag.com/adindex).

**SOUTHERN CALIFORNIA, AZ, NV, TX**

Deborah Dembo 310-312-5035

**NORTHERN CALIFORNIA, NORTHWEST, UT, CO**

Christi E. Brown 415-547-8056

Andrew Donehower 415-547-8815

David Kaye 415-547-8810

**NEW YORK**

Ian Owen-Ward 212-503-5110

Julie Zuckerman Kittredge 212-503-5029

**NEW ENGLAND, CANADA**

Ian Owen-Ward 212-503-5110

**MIDWEST**

Julie Lulu 773-739-9139

**DETROIT**

Julie Zuckerman Kittredge 212-503-5029

**SOUTHEAST, MID-ATLANTIC STATES**

Amy Jarratt 404-249-6646

**EAST COAST ACCOUNT EXECUTIVES**

Andrew Guendjoian 212-503-5114,

Melissa Price 212-503-5422

**WEST COAST ACCOUNT EXECUTIVE**

Andrew Wesley 415-547-8047

**DIRECTOR, SALES OPERATIONS**

Tara Culleney

**ADVERTISING SERVICES MANAGER**

Laura Quirk

**MARKETING COORDINATOR**

Michele Itzkowitz

**SALES DEVELOPMENT COORDINATOR**

Matt Pfeffer

**EAST COAST SALES ASSISTANTS**

Anne King, Nicole Krammer, Andrew Weissman

**WEST COAST SALES ASSISTANTS**

Jennifer Meyer, Rebecca Reining

**PERMISSIONS, REPRINTS**

For permission to reuse material in this publication or to use our logo, contact Ziff Davis Media's rights and permissions manager, Olga Gonopolsky, at [permissions@ziffdavis.com](mailto:permissions@ziffdavis.com), or by phone at 212-503-5438 or by fax at 212-503-5420. Material in this publication may not be reproduced in any form without written permission. For reprints, please contact Stella Valdez at FosterReprints: telephone, 866-879-9144; fax, 916-983-6762; e-mail, [svaldez@fostereprints.com](mailto:svaldez@fostereprints.com).

The following are registered trademarks of Ziff Davis Publishing Holdings Inc.: i-Bench, NetBench, PC DIRECT, PC Labs, PC MAGAZINE, PC MAGAZINE AWARD FOR TECHNICAL EXCELLENCE, PC MAGAZINE EDITORS' CHOICE, PC MagNet, ServerBench, WinBench, Winstone, and Ziff Davis Media's corporate logo. The following are trademarks of Ziff Davis Publishing Holdings Inc.: After Hours, Backspace, CPUmark, EasyComputing, ExtremeTech, First Looks, First Looks Plus, i-Bench, Lab Notes, Lab Tales, PC Bench, PC Labs Scorecard, PC Magazine At Home, PC Magazine CD, PC Magazine Extra, PC Magazine MarketLink, PC Solutions, PC Tech, Pipeline, Power Programming, Quick Clips, ScreenDemos, Tech Notes, and WinDrain. Other trademarks and trade names used throughout the publication are the property of their respective owners. Copyright © 2004 Ziff Davis Media Inc. All rights reserved. Reproduction in whole or in part without permission is prohibited.

**ZIFF DAVIS MEDIA INC.**

**CHAIRMAN & CEO** Robert F. Callahan

**PRESIDENT & COO** Bart W. Catalane

**CHIEF FINANCIAL OFFICER** Derek Irwin

**SENIOR EXECUTIVE VICE PRESIDENT, PUBLISHING OPERATIONS** Tom McGrade

**EXECUTIVE VICE PRESIDENT & EDITORIAL DIRECTOR** Michael J. Miller

**EXECUTIVE VICE PRESIDENT, GENERAL COUNSEL, & SECRETARY** Gregory Barton

**SENIOR VICE PRESIDENTS** Jasmine Alexander (Technology & Sales Operations),

Timothy J. Castelli (PC Magazine Group), Chris Dobbrow (Corporate Sales & Publisher, *eWeek*),

Larry Green (Business Development & Worldwide Licensing), Charles Mast (Circulation),

Sloan Seymour (Enterprise Group), Dale Strang (Game Group), Jason Young (Internet)

**VICE PRESIDENTS** Ken Beach (Corporate Sales), Sarah DeCarlo (Database Marketing), Aaron Goldberg (Market Experts),

Jim Hasl (Event Marketing Group), Julie Herness (Event Marketing Group), Tom Jessiman (VP and General Manager,

1UP.com), Michael Krieger (Market Experts), Charles Lee (Integrated Media), Jim Louderback (Editor-in-Chief,

Internet), Eric Lundquist (Editor-in-Chief, *eWEEK*), Chris Maginn (Internet), Angelo Mandarano (Internet), Paul

O'Reilly (Event Marketing Group), Ellen Pearlman (Editor-in-Chief, *CIO Insight*), Melinda Maginn Reilly (Integrated

Media & Corporate Sales), Beth Repeta (Human Resources), Martha Schwartz (Custom/Conference Group), Pam

Spector (Business Development & International Licensing), Tom Steinert-Threlkeld (Editor-in-Chief, *Baseline*),

Stephen Sutton (Internet Audience Development), Elda Vale (Research & Market Intelligence), Stephen Veith

(Publisher, *CIO Insight*), Monica Vila (Event Marketing Group)

**SENIOR DIRECTOR, MANUFACTURING** Carlos Lugo

**DIRECTOR, CORPORATE COMMUNICATIONS** Randy Zane



**PC Magazine Preview** is a subscriber only notification that gives you an advance look at what you can expect to read inside the next issue of PC Magazine. This special announcement is part of your PC Magazine subscription and is sent as each new issue is shipped to you, typically before it goes on sale. Don't miss out on this added benefit, exclusively for PC Magazine subscribers.



If you're not getting PC Magazine Preview, please log on at

[get-it.pcmag.com](http://get-it.pcmag.com)

# One reliable brand, two amazing products!



## Nero 6 Ultra Edition *Updated!*

The ultimate all-in-one digital media solution with over 14 individual applications for all your **audio**, **video**, **photo**, **data** and **backup** needs. Backup your DVD movies without any loss of quality using Nero Digital™ technology\*. Now includes **Nero PhotoShow Express**.

[WWW.NERO.COM](http://WWW.NERO.COM)

## Nero PhotoShow Elite *New!*

Your easy and complete photo experience. **Manage**, **Make** and **Share** your photos, albums and musical slideshows. Capture, edit, and add effects, Clip Art, captions and text. Share online, burn CD or VCD, or order custom photo gifts and preserve your memories.

[WWW.NEROPHOTOSHOW.COM](http://WWW.NEROPHOTOSHOW.COM)

## NERO - SIMPLIFY YOUR LIFE

For continuous FREE updates and further product information, visit us online.

Available online or at participating retailers.



PC Magazine  
Best of 2003  
is a trademark of  
Ziff Davis Publishing  
Holdings Inc.  
Used under license.

\* Does not copy DVDs with copy protection.



Key words for your company:

**mobility,  
mobility,  
mobility.**

Maximum mobility equals maximum productivity.

And Intel® Centrino™ mobile technology is designed from the ground up for mobile computing. It enables extended battery life in a new generation of thin, light, wireless laptops. And, Intel works closely with industry leaders to support a wide range of wireless security solutions. It's all about mobility.

Unwire your company at [intel.com/business](http://intel.com/business).



**Integrated wireless.**  
No need to deal with  
adapter cards.



**Power conserving.**  
Advanced technology enables  
extended battery life.



**Thin, light designs.**  
Light briefcases mean  
happy users.



**High performance.**  
Power to run the most  
demanding applications.



Wireless connectivity and some features may require you to purchase additional software, services or external hardware. System performance, battery life, wireless performance and functionality will vary depending on your specific hardware and software configurations. See [http://www.intel.com/products/centrino/more\\_info](http://www.intel.com/products/centrino/more_info) for more information. ©2004 Intel Corporation. Intel, Intel Inside and the Intel Inside Centrino logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. All rights reserved.

# PIPELINE

## TECHNOLOGY TRENDS & NEWS ANALYSIS

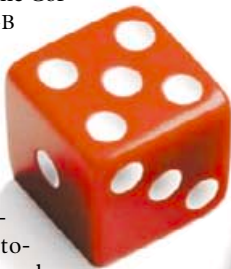
### Taking Cell Phones for a Spin

Tiny hard drives in cell phones may shake up the portable-gadget scene.

AS MANUFACTURERS CRAM many more features into cell phones, there's one glaring problem: storage capacity. So hard drive makers are looking to spin up tiny drives for wireless handsets that can handle everything from photos and streaming video to music.

Small hard drives are already familiar to MP3 fans. Apple's iPod Mini has a 1-inch, 4GB drive from Hitachi, and the Cornice 1-inch, 1.5GB drives are in RCA players. But as smart phones get smarter, there are signs that they may supplant MP3 players and PDAs altogether. Sony has already decided to forgo PDAs in the U.S. for now (see "Sony Halts the Clié" below), and many cell phones can already play MP3 files. What we need now is an inexpensive storage solution.

"Beyond one gigabyte, a hard drive can deliver more storage at lower cost than flash memory," says John Harris, strategic marketing manager for storage-chip maker Agere Systems. A 1-inch, 2GB drive now costs about \$50, he says.

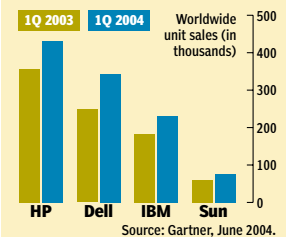


Seagate recently announced a 1-inch offering, and Toshiba has an even smaller 0.8-inch drive—about the size of an SD card (see the photo). Harris expects prices to continue dropping, and he predicts tiny hard drives will be the next big step for cell phones.

Putting hard drives in phones doesn't present a power consumption problem, say drive makers. Most quarter-size drives spin up quickly, dump information to a buffer, and then shut down to save power. Hard drives can also write photo and video files much faster than flash memory devices.

Cornice's executive vice president Scott Holt says that this fall "you'll see drives in digital video cameras, USB storage devices, and mini PVRs about the size of a wallet." Cornice is working on putting hard drives into cell phones, and analysts expect to see 2GB handsets next year. Those phones may be much more versatile than the one you're totting now.—*John R. Quain*

#### SERVER MARKET LEADERS



### Brighter Days

Following years of penny-pinching, signs are showing that IT managers are spending again—especially when it comes to servers. Worldwide server unit sales jumped a healthy 27.1 percent in the first quarter of this year, compared with the same quarter last year, according to Gartner researchers. There were 1,567,633 total systems sold, versus 1,233,222 systems sold in the first quarter of 2003.

That's cheerful news for Hewlett-Packard, Dell, IBM, and Sun Microsystems—the biggest players in the server market (see the chart). Not all the news is quite so bright, though. Revenues for servers grew by only 6.5 percent, which Gartner researchers attributed to "continued price competition among server vendors."—SR

**HEARD YA** The next step for search engines may be recognizing speech and retrieving content from news broadcasts, lectures, and such. StreamSage, Virage, and Hewlett-Packard are busy indexing audio content. Try HP's at <http://speechbot.research.compaq.com/>.

### Sony Halts the Clié

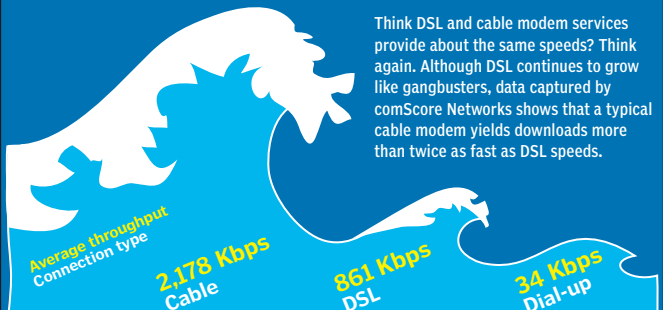


MARKING A MILESTONE in gloomy times for PDAs, Sony announced in June that it will halt production of all Cliés in the U.S. for the remainder of this year. The company says it is taking time to re-evaluate the PDA market.

"Sony continues to view mobile devices as a key pillar to our core business strategy," the company announced in a terse statement that officials wouldn't elaborate on. "Presently, we are reassessing the direction of the conventional PDA market. Product development and sales continue for the Japanese market only."

The buzz around PDAs these days is that they may be a dying breed threatened by smart phones.—*Jennifer M. DeFeo*

### Broadband: Cable Modems Surf Ahead



Source: comScore Networks, April 2004. Results derived by testing ISP services and surveying Internet users, 1Q 2004.

## Wi-Fi on the Move

If you're parked in a hotel room with a wired broadband connection, a new Wi-Fi solution can come to the wireless rescue. The Apple AirPort Express, a new \$129 802.11g mobile Wi-Fi base station, offers what may be the most efficient design yet for roaming wirelessly.

The AirPort Express, for the Mac and the PC, weighs 6.7 ounces. It plugs directly into the wall, eliminating the need to tote a power brick, which other mobile Wi-Fi routers require.

Although Apple initially positioned the AirPort Express as "the world's first 802.11g mobile base station," DLink and APC have offered similar small routers. But Apple's base station is an all-in-one design.

The company's nonmobile version of the AirPort is noted for easy setup of a wireless network; the new mobile version comes with the same software. "This is the first time with AirPort that we've offered PC setup software that's exactly the same as the Mac setup software," says Apple VP Greg Jozwiak.

The AirPort Express also has a built-in digital and analog audio connector, and AirTunes networking, so you can plug the base station into a home stereo or analog speakers to create a wireless music network. Once you connect the AirPort Express, you can wirelessly stream iTunes music from a computer to the base station and to other base stations in other rooms.—SR



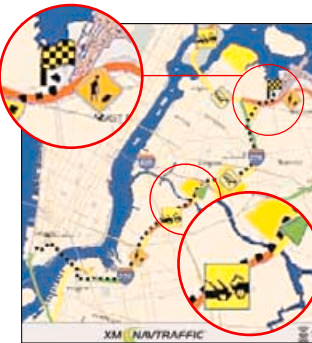
## Dashboard Traffic Feeds

ONE OF TECHNOLOGY'S PIPE DREAMS will become reality this fall: live traffic data streamed to your car, giving you the option to detour around accidents and traffic jams. It debuts in the new Acura RL and Cadillac STS flagship cars, using an XM Satellite Radio feed overlaid on the cars' navigation systems.

Here's how XM NavTraffic works: For 20 major U.S. cities, map data provider Navteq aggregates data from embedded roadway sensors, police reports of accidents, and construction reports. XM compresses and uploads the data to its two satellites and its urban terrestrial repeaters (antennas). The XM receiver separates the traffic data and sends it to car displays. A checkered flag marks your final destination. Orange and yellow icons represent traffic jams, accident locations, and more. Colored routes represent travel speeds: red for below 20 mph, green for above 40 mph, and so on (see the photo). Pricing is expected to be \$3 to \$5 a month in addition to a \$10 monthly fee for music.

For XM and competitor Sirius, the challenge has been to add services that don't overwhelm each system's 4.5-Mbps bandwidth—already serving 100 channels of music and talk. "You want applications that lots of people need, where you can send everyone the same data," says Roderick MacKenzie, XM director of advanced applications.

Sirius and XM have also shown prototypes for satellite TV in cars. Meanwhile, keep your eyes on the road.—Bill Howard



## VIDEO NET

TiVo users will soon be able to connect their recorders to home networks and download or stream movies, music, and television shows from the Web. The arrival date is not yet set. TiVo has 1.6 million subscribers, and analysts say widespread broadband adoption means the Net is ready to compete with broadcast, cable, and satellite systems. Microsoft is on the case too. The company is testing its IPTV service for trafficking HDTV and films over the Net with the help of telecom and cable services. The Web may become the ultimate video library.

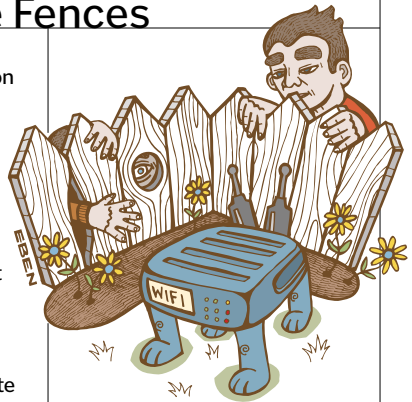
## Tomorrow's Internet: Far More Fences

ROBERT FROST'S famous line "good fences make good neighbors" continues to gain supporters. In a 21st-century spin on Frost's axiom, executives at Silicon Valley software firm Opware (formerly Loudcloud) are predicting that encryption will not just become far more pervasive on the Net than it is now, but will cause the Internet to go dark, in the sense that a lot of currently accessible information will become secure.

"If you supply a credit card number at Amazon today, your information gets encrypted," says Tim Howes, Opware's chief technology officer and executive vice president, "but

a huge amount of information about you and what you do isn't encrypted today. When people go to My Yahoo! and look up stock quotes or go read news articles, they leave personal information available. We haven't seen widespread encryption at the application level yet." Opware chairman Marc Andressen is a vocal advocate of ubiquitous encryption.

The rise of wireless networks is exposing all kinds of electronic trails, says Howes. In a study late last year, wireless gateway provider 2Wire found that 21 percent of home Wi-Fi users could see their neighbors' wireless networks.



Many wireless users completely failed to configure encryption when they set up their networks. On tomorrow's networks, that kind of easy-to-skip job and many similar ones are likely to be taken care of automatically.—SR

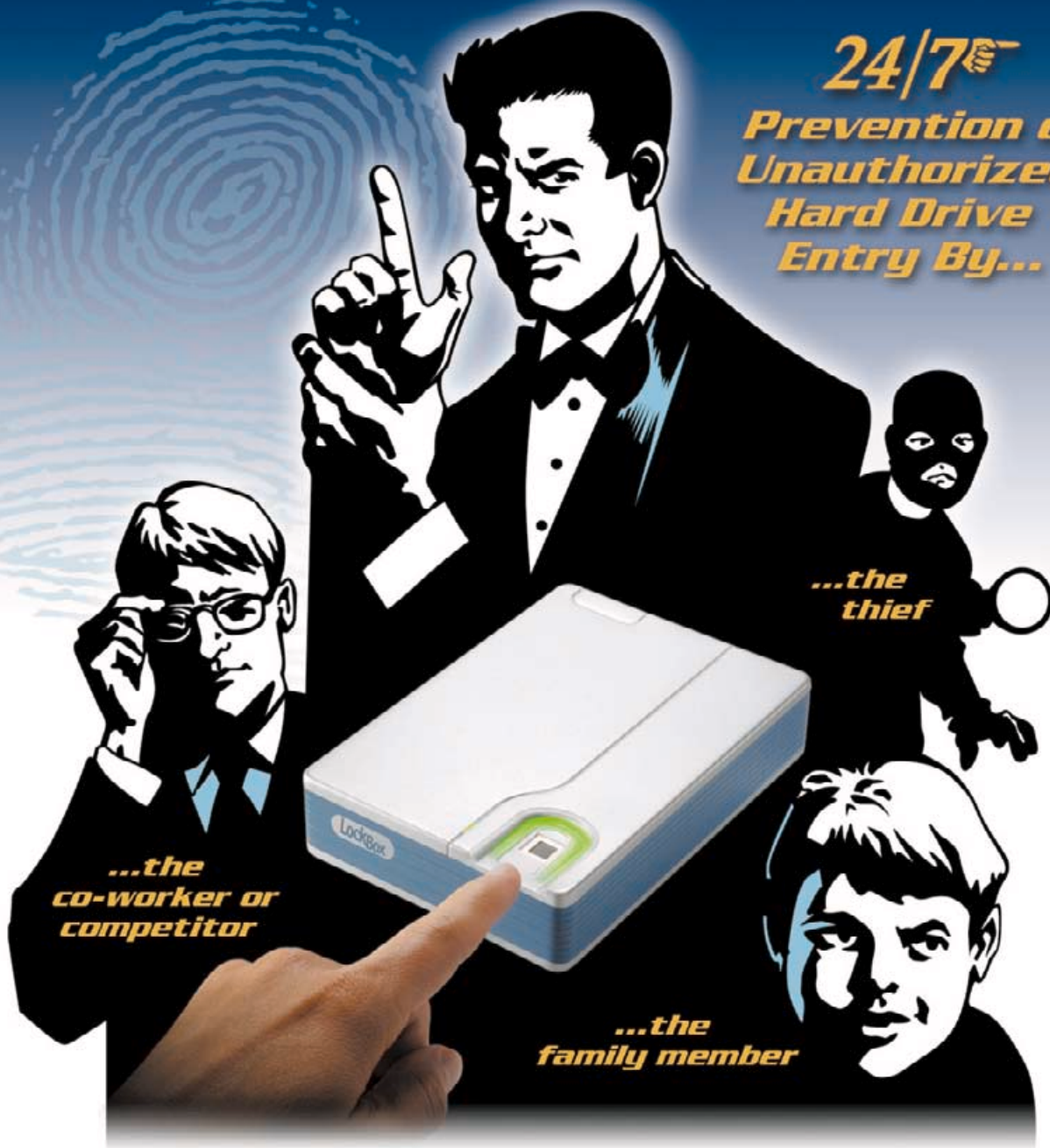
**THE BUBBLE BURST?** More than 4.7 million domain names were registered during the first quarter of 2004—the highest quarterly figure ever, says a Verisign report. The report also notes that Asia now has far more regular Internet users than North America or Europe.

SECRET AGENT TECHNOLOGY AT YOUR FINGER TIPS...

# LockBox

Fingerprint Access Hard Drive

24/7   
Prevention of  
Unauthorized  
Hard Drive  
Entry By...



...the  
co-worker or  
competitor

...the  
thief

...the  
family member

GUARD YOUR **PRIVATE FILES** PROTECT **FINANCIAL RECORDS** AND BUSINESS **CORRESPONDENCE**

NOT TO MENTION YOUR **PERSONAL INVESTMENTS** SAFEGUARD **PHOTOS** AND **VIDEOS**

AS WELL AS **CUSTOMER INFORMATION** AND **PRODUCT PLANS** PROTECTS YOUR **BACKUPS** AS WELL

THE **LOCK BOX HARD DRIVE** IS HI-SPEED **USB 2.0** WITH CAPACITIES OF **80GBs** AND UP

[micro-solutions.com/1.html](http://micro-solutions.com/1.html) 800-890-7227 (US and Canada) **MicroSolutions**

# COMING ATTRACTIONS



## Next Step in Media Center PCs

**H**P is expanding its Media Center PC presence with the upcoming **HP m1000** series. As with previous Media Center models, you'll be able to watch, record, and play back TV programs; pause and rewind live TV; and have all your digital media files (music, photos, video) play through your TV and stereo at the touch of a remote. New to the m1000 is the HP Personal Media Drive, a 160GB hard drive that slides into the front of the PC and allows for quick and easy file transfer. \$1,050 direct and up. Hewlett-Packard Development Co., [www.hp.com](http://www.hp.com).

## Wireless Media Hub from Belkin

**T**he **Belkin PureAV Wireless Digital Audio Receiver (DAR)** quickly links to your wireless network and allows users to play media files on any networked PC or audio system. Its remote control and built-in LCD screen allow for easy content selection anywhere in the house, and you can also stream thousands of Internet radio stations. And unlike other media hubs, your PC doesn't even have to be on to listen to Internet radio with the DAR. \$130 street. Belkin Corp., [www.belkin.com](http://www.belkin.com).



## Aiming for iPod

**W**ith its sleek white-and-silver body and innovative scroll strip, the **Creative Zen Touch** audio player has the popular Apple iPod clearly in its sights. The company claims its 20GB player has three times the battery life (up to 20 hours) of an iPod and can hold twice the number of songs (if you use WMA format). \$270 street. Creative Labs Inc., [www.creative.com](http://www.creative.com).

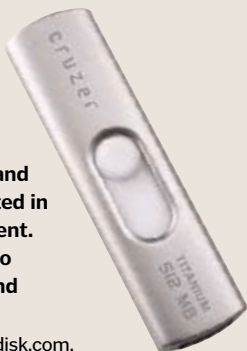


## TomTom on the Go

**T**he **TomTom Go** takes TomTom's personal navigation software and integrates it into a convenient, car navigation solution. Easily mounted on the dashboard or windshield, the GO provides voice-guided directions and a graphical 3D map. Drivers can upload their maps via an SD memory card, and the Go is easily customized with its touch screen. TomTom claims the built-in GPS receiver provides uninterrupted satellite navigation, even in tunnels. \$899 list. TomTom BV, [www.tomtom.com](http://www.tomtom.com).

## Rugged Flash Drive

There are a lot of flash memory USB drives out there, but this one stands apart. Designed for field and factory use, the **SanDisk Cruzer Titanium** is both rugged and fast. The 512MB flash drive is coated in titanium to withstand mistreatment. The USB 2.0-compliant device also features a 13-Mbps write speed and a 15-Mbps read speed. \$200 street. SanDisk Corp., [www.sandisk.com](http://www.sandisk.com).



## Thinking Man's Chair

The new environmentally friendly **Steelcase Think Chair** impresses us in a couple of ways. First, its comfortable, dynamic design adjusts to the user's posture and encourages more natural spinal motion. Second, it's made of 99 percent recyclable content and 50 percent recycled material. \$400 list and up. Steelcase Inc., [www.steelcase.com](http://www.steelcase.com).



For more new products see [www.pcmag.com/productbulletin](http://www.pcmag.com/productbulletin)



SAVE EVERYTHING.™

Save

NEW




**THE IOMEGA® REV DRIVE**

It saves your system, your data and maybe even your job. The Iomega REV drive backs up 35GB of data, or up to 90GB compressed, on durable, removable disks. It's 8x faster than tape, more cost efficient, and accesses data in seconds. So it's easier than ever to backup, protect and save everything.



\*Based on DDS-4 tape comparison. Compressed capacity assuming 26:1 data compression with "high" compression on Iomega Automatic Backup Pro software. This capacity may vary since compression is data and software dependent. Iomega, REV, SAVE EVERYTHING, and the stylized "i" are trademarks or registered trademarks of Iomega in the U.S. and/or other countries. Copyright © 2004 Iomega Corporation. All rights reserved.

[saveeverything.com](http://saveeverything.com)



Designed to work the way you work.


- 19" Analog/Digital TFT-LCD
- Full pivot, tilt and swivel; wall mountable
- 178°/178° — Widest viewing angle of any LCD
- MagicTune™ on-screen image control

### Samsung's 193P display.

We know how you work. So we engineer our monitors to work the same way you do. Our 193P display is ergonomically designed to move the way you move. And with its MagicTune™ software, personalizing your display is now a hands-free experience. This kind of thinking is responsible for over 67 design awards worldwide. Not to mention, monitors that work on the same level as you.

..... Visit [www.samsungusa.com/monitor](http://www.samsungusa.com/monitor) or call 1-800-SAMSUNG

©2004 Samsung Electronics America, Inc. Samsung and MagicTune are registered marks of Samsung Electronics Corp., Ltd. Screen images simulated.



SAMSUNG

# EDITORS' CHOICES

JULY 13–AUGUST 2, 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](http://www.pcmag.com/editorschoice).**

## DESKTOP PCs & SERVERS

### GAMING DESKTOPS

- Falcon Northwest FragBox Pro

**NEW** Falcon Northwest Mach V

- Velocity Micro Vision FX

### MULTIMEDIA DESKTOPS

- Apple Power Mac G5 Dual 2 GHz

**NEW** Dell Dimension 8400

### MEDIA CENTER PC

- Sony VAIO Digital Studio PCV-RZ46G

### VALUE PC

- eMachines T2865

### HOME PC

- Sony VAIO PCV-W500GN1

### SMALL-BUSINESS PC

- IBM ThinkCentre A50p

### CORPORATE PC

- IBM ThinkCentre S50

### ENTRY-LEVEL SERVER

- IBM eServer xSeries 306

### WORKGROUP SERVER

- Dell PowerEdge 1750

Falcon Northwest Mach V



Dell Dimension 8400

## MULTIMEDIA NOTEBOOK

**NEW** Toshiba Satellite P25-S760

### ULTRAPORTABLE

- IBM ThinkPad X40

### TABLET PCs

- Motion M1400
- Toshiba Portégé M205-S809

## MOBILE DEVICES

### PDAs

- HP iPaq Pocket PC h4350
- palmOne Zire 72

### PDA/PHONE COMBO

- Handspring Treo 600

**NEW** Nokia 6600 Video Phone PHONE

- Motorola MPx200

### GPS DEVICE

- TomTom Bluetooth GPS Receiver

## HOME ENTERTAINMENT

### MEDIA HUBS

- Creative Sound Blaster Wireless (music)
- Prismiq MediaPlayer (multimedia)

- Turtle Beach AudioTron AT-100 (music)

### DIGITAL VIDEO RECORDER

- SnapStream Beyond TV 3

## HDTV

- Sharp Aquos 37-inch LCD TV

## CAMERAS

### COMPACT CAMERAS

- Kodak EasyShare LS743
- Sony Cyber-shot DSC-T1

### MIDRANGE CAMERAS

- Casio Exilim Pro EX-P600
- Olympus C-5060 Wide Zoom

### SUPERZOOM CAMERA

- Olympus Camedia C-765 Ultra Zoom

### PROSUMER CAMERAS

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

### DIGITAL SLR CAMERA

- Nikon D70

### ENTRY-LEVEL DV CAMERA

- Sony DCR-HC40 MiniDV Handycam

## DIGITAL IMAGING

### FLATBED SCANNER

- Microtek ScanMaker 6100 Pro

### IMAGE EDITORS

- Adobe Photoshop CS (pro)
- Adobe Photoshop Elements 2.0 (consumer)

### PHOTO ALBUM SOFTWARE

- Adobe Photoshop Album 2.0

### PHOTO SHARING

- OurPictures
- Smugmug

### PHOTO-PRINTING SERVICE

- Shutterfly

## DIGITAL AUDIO & VIDEO

### ANALOG CAPTURE DEVICE

- HP DVD Movie Writer dc3000

### VIDEO EDITORS

- Adobe Premiere Pro (pro)
- Ulead VideoStudio 8 (consumer)

### CD/DVD-BURNING SUITE

- Roxio Easy Media Creator 7

### DVD AUTHORIZING

- Sonic MyDVD 5.2 (consumer)
- Ulead DVD WorkShop 2 (pro)

### PORTABLE AUDIO PLAYERS

- NEW** Altec Lansing inMotion (iPod speakers)

- Apple iPod

- Apple iPod Mini

**NEW** Belkin Digital Camera Link (iPod camera)

- iRiver iFP-390

## SOUND CARD

- Creative Sound Blaster Audigy 2 ZS

## SPEAKERS

- Creative Gigaworks S750
- Klipsch ProMedia GMX D-5.1

## PC JUKEBOX

- Musicmatch Jukebox 8.2

## MUSIC STORE

- Napster 2.0

## WEBCAM

- Logitech QuickCam Pro

Nokia 6600 Video Phone



## PRINTERS

### PERSONAL PRINTERS

- NEW** Brother HL-5140 (laser)
- HP Deskjet 5150 (ink jet)
- Lexmark C510n (color laser)

### PERSONAL MFPs

- Brother MFC-8420 (laser)
- Canon MultiPass MP730 (ink jet)

- Dell A940 (ink jet)

### PHOTO PRINTERS

- Canon i9900 Photo Printer (pro)
- Epson Stylus Pro 4000 (pro)
- HP Photosmart 7960 (consumer)

### NETWORK PRINTERS

- HP LaserJet 9000dn (monochrome laser)
- Xerox Phaser 4500DT (monochrome laser)
- Xerox Phaser 7750DN (color laser)

## DISPLAYS & STORAGE

### BUSINESS DISPLAYS

- IBM ThinkVision C220p
- NEC MultiSync LCD1960NXi
- Samsung SyncMaster 171N

## PORTABLE PCs

### VALUE NOTEBOOKS

- Averatec AV3225HS
- HP Compaq Presario R3000Z

### BUSINESS NOTEBOOKS

- Acer Travelmate 8000
- HP Compaq nc6000

### GAMING NOTEBOOK

- Dell Inspiron XPS

Toshiba Satellite P25-S760



## EDITORS' CHOICES

JULY 13–AUGUST 2, 2004

Sony VPL-CX85

**BUSINESS PROJECTOR****NEW** Sony VPL-CX85**GAMING GRAPHICS CARD**

•ATI Radeon 9800 XT

**MAINSTREAM GRAPHICS CARD**

•PNY Verto GeForce 5700 FX Ultra

**DVD BURNERS**

•HP DVD Movie Writer dc3000

•Memorex True 8X External Dual Format Recorder

•Pioneer DVR-A07XL

•Sony DRU-700A

**EXTERNAL DRIVE**

•Maxtor OneTouch

**REMOVABLE STORAGE**

•Iomega Rev 35

**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 2004 Premium

•QuickBooks Premier 2004

•Quicken 2004 Premier

**WEB SITE CREATION**

•NeoVerve StoreSense

**WEB RESEARCH**

•Onfolio Professional

**MEDIA CREATION SUITE**

•Roxio Easy Media Creator 7

**E-MAIL CLIENT**

•Microsoft Outlook 2003

**VIDEOCONFERENCING**

•SightSpeed Video Messenger

•VidiTel

**DATABASE**

•FileMaker Pro 7

**BLOG/WIKI TOOLS**

•EditMe

•Socialtext Workplace 1.0

•TypePad

**UTILITIES****ANTIVIRUS**

•Norton AntiVirus 2004

**FIREWALLS**

•Norton Personal Firewall 2004

•ZoneAlarm Pro 5

**SECURITY SUITES**

•Norton Internet Security 2004

•ZoneAlarm Security Suite 5

**ANTISPYWARE**

•SpySweeper 2.2

**ANTISPAM**

•Norton AntiSpam 2004

•Qurb

**POP-UP BLOCKER**

•PopUp Cop

**INSTANT MESSAGING**

•MSN Messenger 6.1

**FILTERING/MONITORING****NEW** Cybersitter 9.0**NEW** Spector Pro 5.0**NEW** The Children's Internet**FILE COMPRESSION**

•PKZip 8.0 for Windows

•StuffIt Deluxe 8.0

**BACKUP**

•Retrospect Pro 6.5

**ONLINE BACKUP**

•iBackup

**ROLLBACK**

•Norton GoBack 3.0

**DISK IMAGING**

•Acronis True Image 7.0

**PARTITIONING**

•PartitionMagic 8.01

**DEFRAGGERS**

•Diskeeper 8.0 Pro

•PerfectDisk 6.0

**REMOTE ACCESS**

•LapLink Everywhere 2.0

**REGISTRY CLEANER**

•RegistryFixer

**FILE MANAGER**

•ExplorePlus 6.1

**MIGRATION**

•Alohobob PC Relocator Ultra Control

•Desktop DNA Pro 4.7

**TOOLBARS**

•Dogpile

•Google Toolbar

**KEYBOARD UTILITY**

•Perfect Keyboard 6.15a

**DESKTOP CUSTOMIZATION**

•Object Desktop 2004

**DOWNLOAD MANAGER**

•DownloadStudio 1.0

**SCREEN CAPTURE**

•SnagIt 7.0.3

**TEXT EDITOR**

•UltraEdit-32 10.0

**FILE VIEWER**

•IrfanView 3.85

**TRACE REMOVER**

•Acronis Privacy Expert

Suite 7.0

**VIRTUAL PC**

•VMWare Workstation 5

**PASSWORD MANAGER**

•AccountLogon 2.5

**ENTERPRISE SOFTWARE & DEVELOPMENT****NETWORK ANTIVIRUS**

•Trend Micro Enterprise Protection Strategy

**ENTERPRISE ANTISPAM**

•BrightMail Anti-Spam 5.1

•Postini Perimeter Manager

**E-MAIL SERVER PLATFORM**

•IBM Lotus Notes and

Domino 6.5



The Children's Internet

**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 9

•IBM WebSphere Studio Device Developer 5.6 (mobile)

•SQL Anywhere Studio 9 (mobile)

**WEB SITE DEVELOPMENT**

•Macromedia Contribute

•Macromedia Studio MX

2004

**WEB SITE ANALYSIS****NEW** WebSideStory HBX**VULNERABILITY SCANNER**

•Retina Network Security

Scanner

**NETWORKING****SERVER OS**

•Microsoft Windows Server

2003 Enterprise Edition

**WIRELESS INFRASTRUCTURE**

•Linksys Wireless-G

WRT54GS (802.11g)

•Netgear ProSafe-FWAG114

(802.11a/g)

**SECURITY APPLIANCE**

•ServGate EdgeForce

(small-business)

**REMOTE-ACCESS APPLIANCE**

•Neoteris Access 1000

**GAMES & EDUCATIONAL SOFTWARE****SIMULATION**

•Microsoft Flight Simulator

2004

**ACTION/COMBAT**

•Battlefield Vietnam

•Far Cry

•Halo: Combat Evolved

•Orbz 2

•Savage: The Battle for

Newerth

**SPORTS**

•Madden NFL 2003

**VIRTUAL WORLD**

•Second Life

**ONLINE**

•EverQuest: Evolution

**EDUCATION****NEW** eMedia Beginner Guitar

Method 3.0

•Math Mission: The Race to

Spectacle City Arcade, The

Amazing Arcade Adventure

•Zoombinis Island Odyssey

**MOBILE GAME**

•Bejeweled

**REFERENCE**

•Microsoft Encarta 2004

•Visual Thesaurus

# magicolor 2300

## COLOR LASER PRINTER

### Save time!

**magicolor® 2300** printers from **KONICA MINOLTA** deliver excellent, attention-getting prints at fast speed.

### Save money!

**magicolor 2300** printers are affordable to buy and provide quality color laser pages for just pennies a print (and black-and-white pages for nearly nothing!).

### Save space!

The compact, stylish design of **magicolor 2300** printers also saves your desk space.

### Save sanity!

**magicolor 2300** printers feature factory-installed toner, intuitive drivers, and across-the-board simplicity—so they're easy to set up and use.



KONICA MINOLTA BUSINESS TECHNOLOGIES, INC. TOKYO, JAPAN



#### magicolor 2350 EN

- Photo-quality prints
- 4 ppm color; 18 ppm b&w
  - Photorealistic image quality
  - Mac® & PC compatible
  - Ethernet®, USB & parallel

\$899



PC Magazine-September, 2003

#### magicolor 2300 DL

- Ethernet equipped
- 4 ppm color; 16 ppm b&w
  - 2400 x 600 dpi
  - Windows® XP/2000/NT4/Me/98/95
  - USB & parallel interfaces

\$599



PC Magazine-December, 2002



December 2, 2002  
magicolor 2300 DL  
KONICA MINOLTA

#### magicolor 2300W

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

\$499



PC Magazine-February, 2004



February 1, 2004  
magicolor 2300W  
KONICA MINOLTA

[buymagicolor.com](http://buymagicolor.com)



**KONICA MINOLTA**

For more information about magicolor laser printers call 800-523-2696.

# FIRST

HANDS-ON TESTING OF NEW PRODUCTS • [www.pcmag.com/firstlooks](http://www.pcmag.com/firstlooks)

30 Sony BW-RU101 Professional Disc for Data  
30 Soundmatters MainStage  
30 Linksys Wireless-B Media Link for Music

30 Minnetonka discWelder Bronze  
31 Toshiba Satellite P25-S670  
31 Nokia 6600 Video Phone  
31 IBM ThinkPad T42 2378-EXU  
31 Acer Aspire 1712



34 Brother HL-5140  
34 Samsung ML-1740  
34 Brother MFC-8840DN  
34 HP Designjet 130nr  
34 Hi-Touch HiTi 730PS

## A New Era for Desktops

THE MAGAZINE  
WORLD'S LARGEST  
COMPUTER-TESTING  
FACILITY



BY RICH FISCO

When shopping for a new system, PC buyers are usually focused on the processor, not the supporting chipset. But with Intel's latest parts, the company is offering a boost in performance and features for buyers of Pentium 4 systems. Taken together, the advancements set the stage for increases in both PC speed and convenience—which is why you should look closely at the chipset spec when you make your next PC purchase.

Code-named Grantsdale and Alderwood, Intel's two newest chipsets rival in importance all but the release of a whole new CPU architecture. The 915 and 925 add a host of new features that encompass performance, usability, and bang for the buck. Sure to lead to the phasing out of the 865 and 875 chipsets, 915- and 925-based systems truly usher in a new era for desktop computing.

While Intel's first "desktop" chip with 64-bit extensions will be a Xeon workstation part, rumor has it that the 915/925 chipsets are also 64-bit ready and just awaiting a new P4. What we do know for sure is that right now, the 915 and 925 deliver four innovative changes to the bus, storage, memory, and graphics architectures that make a measurable difference.

### PCI GOES EXPRESS

In the most significant bus transition since PCI replaced ISA, PCI Express arrives with the new chipsets. Similar to the

way hard drives transitioned from the parallel IDE connection to the serial ATA (SATA) connection, PCI's parallel connection is moving to PCI Express's serial connection. While a typical 33-MHz, 32-bit PCI bus has a unidirectional total bandwidth of 133 MBps (megabytes per second), each pair of wires on PCI Express is capable of transferring 2 Gbps (gigabits per second) in both upstream and downstream (read and write) directions for a total bandwidth of 500 MBps.

Since PCI Express is a point-to-point serial connection, that bandwidth is available for each card connected to it, rather than being shared among all the cards as it is for PCI. These pairs of wires can also be grouped together to make x1, x2, x4, x8, x16, and x32 connections (pronounced "by 1," "by 2," and so on), with each pairing doubling the throughput.

Notably, the next generation of high-end graphics cards will no longer be on the 8X AGP bus

but on the x16 PCI Express bus. Today's 8X AGP graphics bus has a unidirectional bandwidth of 2 GBps (gigabytes per second). With x16 PCI Express, bandwidth is 4 GBps in each direction, for a cumulative bidirectional bandwidth of 8 GBps. Besides graphics, the 915 and 925 chipsets will also support up to four x1 PCI Express slots in addition to up to six PCI slots.

### RAD RAID IMPROVEMENTS

The new Intel Matrix Storage Technology is actually a very nice upgrade to the SATA RAID technology found in the ICH5R south bridge of 865 and 875 chipsets. Intel's new south bridge ICH6R gives you RAID Level 0 (striping) for performance and adds RAID Level 1 (mirroring) for data protection—mixed on two drives as you see fit. For example, you can take two 200GB SATA drives and apply RAID Level 1 across half of each drive, then join the other two halves in a RAID Level 0 pairing. That would give you

### THE DELL DIMENSION 8400

(below), which uses the 915P chipset, is our pick for best multimedia workhorse.



100GB of RAID Level 1 storage for critical data files and 200GB of drive space for the OS and any game or application you want to run faster.

Along with the RAID improvement, Intel is also adding support for SATA drive Native Command Queuing (NCQ). Similar to SCSI's existing command queuing, NCQ's algorithms intelligently reorder commands inside the drive's electronics to help reduce mechanical latencies of the head's movements across the platter.

As for memory, both the 915 and 925 support the new DDR2 spec in a dual-channel imple-

PRODUCT PHOTOGRAPHY BY THOM O'CONNOR

# LOOKS

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

- 35 Philips Brilliance 190P5
- 35 Sony VPL-CX85
- 35 PLUS V3-131
- 35 Sharp LL-T15G4
- 35 Sony SDM-S74

- 36 Casper XP 2.0
- 36 DocInfo Pro 1.0, DocSlides 1.0, Destinations 1.1
- 37 MindManager X5 5.1
- 37 PersonalBrain 3.0

- 38 Projected Financials 3.5
- 38 ColorPlus by Pantone ColorVision
- 39 SJ Namu WebEditor 6 Suite
- 39 Apropos Interaction Management Suite v. 6.0

- 40 HBX
  - 40 Axentia OfficeSeries S-200
- Red type denotes Editors' Choice



**IF COST IS NO OBJECT**, buy the Falcon Northwest Mach V.

mentation. With double the size of DDR's data prefetch, DDR2 can transfer twice as much data as DDR per clock cycle. However, DDR2 runs at a slower internal clock speed

than DDR. The result is the same rated throughput as DDR. And did we mention that's only a potential? DDR2 is launching with greater latencies than DDR, meaning that first-generation DDR2 may perform slightly slower than its DDR counterpart. Because the new memory may cost twice as much as standard DDR for a while, Intel was wise to include support for DDR in the 915 as well, making that a good choice for a budget platform.

If you're a corporate buyer or looking for a basic, value PC, then the improvement to Intel's integrated graphics is welcome. Gone are the Extreme Graphics monikers, being replaced with the new Graphics Media Accelerator 900. It's still not a barn burner in terms of 3D performance, but it will get you DirectX 9 compatibility. If you do minimal gaming and mostly use office applications and the Internet, then a system with the new integrated graphics is a good way to save some money.

In addition to performance innovations, Intel has added (or

has in the works) a trio of features that add to the usability and value of systems. For starters, the chipsets now support six USB 2.0 ports on the back and two on the front. Intel still hasn't integrated a FireWire port, however.

If getting good surround sound and not having to shell out hundreds of dollars for a 7.1-capable sound card is what you want, then Intel has the answer. With support for 192 KHz, 24-bit audio in 7.1 Dolby Digital EX, THX Ultra2, and DTS ES surround sound (if the PC maker provides the proper codec), Intel's High Definition Audio rivals that of many dedicated audio cards (though system makers may still opt to use add-in boards to off-load audio tasks from the CPU). There's also support for a 16-element array microphone.

Intel also plans to incorporate wireless technology right into the chipsets. Motherboards with the ICH6W south bridge will enable users to configure the PC as either an 802.11b/g client or access point (AP). This feature didn't make

the earliest 915 and 925 motherboards, but it should debut in PCs soon.

### BY THE NUMBERS

In conjunction with the chipset launch, Intel moved to its new numbering scheme for its desktop processors. You'll still see the GHz rating in a PC's specs, but the official name of the chip will include a number to indicate its overall performance rank relative to other CPUs in Intel's line. So a 3.2-GHz P4 carries the moniker *Pentium 4 540*, a 3.6-GHz chip is a *Pentium 4 560*, and so.

To see how the performance of 915- and 925-based systems stacks up, we tested four brand-new systems and compared the results with those from three two-month-old high-end multimedia and gaming systems. While we didn't see an increase in speed attributable to the new chipsets—the first-generation PCI Express graphics and latency-laden 533-MHz DDR2 memory no doubt dampened performance somewhat—these systems were still among the fastest desktops

## PERFORMANCE TESTS: GRANTSDALE

High scores are best. Bold type denotes first place.

|                                 | CPU (and chipset)                            | Graphics card                | SDRAM              | Business Winstone 2004 | Business Winstone 2004 Multitasking (overall) | Multimedia Content Creation Winstone 2004 | PCMark04 (CPU tests) | 3DMark03 (CPU tests) |
|---------------------------------|----------------------------------------------|------------------------------|--------------------|------------------------|-----------------------------------------------|-------------------------------------------|----------------------|----------------------|
| <b>Dell Dimension 8400</b>      | P4 560 (3.6 GHz) / 925X                      | ATI Radeon X800 XT           | 1GB DDR2 (533 MHz) | 23.0                   | 3.2                                           | 34.8                                      | <b>5,540</b>         | 791                  |
| <b>Falcon Northwest Mach V</b>  | P4 560 (3.6 GHz, overclocked to 3.8) / 925X  | nVidia GeForce 6800 Ultra    | 1GB DDR2 (533 MHz) | <b>27.4</b>            | <b>3.5</b>                                    | <b>36.6</b>                               | 5,197                | <b>1,014</b>         |
| <b>HP Compaq dc 7100</b>        | P4 540 (3.2 GHz) / 915G                      | Intel 82915                  | 1GB DDR (400 MHz)  | 21.0                   | 2.8                                           | 30.7                                      | 4,298                | 621                  |
| <b>Velocity Micro ProMagix</b>  | P4 560 (3.6 GHz, overclocked to 3.79) / 925X | nVidia GeForce 6800 GT       | 1GB DDR2 (533 MHz) | 24.2                   | 3.1                                           | 34.7                                      | 5,456                | <b>1,014</b>         |
| <b>Shuttle XPC G2 7500*</b>     | P4 (3.4 GHz) / 875P                          | ATI Radeon 9800 XT           | 1GB DDR (400 MHz)  | 21.7                   | 2.7                                           | 31.0                                      | 5,194                | 733                  |
| <b>Velocity Micro ProMagix*</b> | P4 (3.4 GHz, overclocked to 3.5) / 875P      | nVidia GeForce FX 5950 Ultra | 1GB DDR (400 MHz)  | 26.1                   | 3.2                                           | 33.6                                      | 5,373                | 924                  |
| <b>Voodoo Rage f:50*</b>        | Athlon 64 3400+ (2.2 GHz) / K8T800           | ATI Radeon 9800 XT           | 1GB DDR (400 MHz)  | 23.2                   | 2.8                                           | 33.4                                      | 4,099                | 691                  |

RED denotes Editors' Choice. \* Reported for comparison.

we've tested to date. And the headroom afforded by the new architecture promises noticeable gains in the future.

For now, there's still a lot to like about the 915 and 925 chipsets: better RAID support, improved integrated graphics, 7.1 audio, PCI Express, and (eventually) built-in wireless. In fact, the only downside is that if you recently bought a high-end gaming card, you can't migrate it to one of the new machines, since there is no AGP support.

So while they're good, not great, out of the gate, the 915 and 925 chipsets certainly mark the coming of the industry's next biggest thing. As the technologies mature and prices come down, the real impact of the new platforms will be felt. If you're getting ready to buy a new system anyway, here are some of the first implementations that you might want to consider.

ALL REVIEWS BY  
JOEL SANTO DOMINGO  
**Dell Dimension 8400**



The Dell Dimension 8400 is designed for the user who can't get enough power but doesn't care about a flashy case. The only outward sign that this is a new Dimension (aside from the understated model badge) is the cooling port on the front. This is needed, since the Dell version of the 3.6-GHz Pentium 4 processor has an elaborate combination of liquid-filled heat pipes and metal fins on the heat sink to keep it cool. To their credit, Dell engineers have kept the 8400 pretty quiet, especially compared with some of the gamer PCs with their multifan setups.

Like gamer boxes, this system comes ready to produce other kinds of noise. Dell's 5650 speakers can fill a small room with sound, although as a 5.1 set they don't take advantage of the promise of 7.1 in new systems.



**THE HP COMPAQ DC 7100** shows that the new chipsets also benefit business buyers.

The center speaker clips to the bottom of the 19-inch 1901FP LCD monitor—a nice touch. The 1901FP's images are crisp, and its 25-ms response time can keep up with most motion video and game frame rates. Speaking of video, the dual-layer DVD+RW drive will let you archive 8.5GB of data on a single disc, or up to 4 hours of DVD video. This is the first such drive we've seen bundled in a system, and it burns at up to 12X speed to boot.

The 925X chipset, on-board SATA RAID 0 configuration (with 320GB of total hard drive capacity), and new LGA 775 (or Socket T) Prescott Pentium 4 processor give the 8400 very good performance, reaching 23.0 on our Business Winstone test and 34.8 on our Multimedia Content Creation Winstone test. The 3.22 score on the Business Winstone 2004 Multitasking test is the highest we've seen on a nonoverclocked desktop.

Thanks to the ATI Radeon X800 XT, which was developed for the PCI-Express x16 interface in the Grantsdale chipset, the 8400's 3DMark03 scores almost double those of systems with the previous generation of graphics (such as the Radeon 9800 XT and nVidia GeForce FX 5950). The 8400 is more than ready for Doom III and Half-Life 2 (yes, we're holding

our breath for them, too).

On the whole, the Dimension 8400 is a very good example of a 925X and Pentium 4-powered system. It's the ideal multimedia machine for the user who wants to get into digital video and 3D gaming but doesn't care about having a flashy (and pricier) gaming box from a boutique system builder like Falcon Northwest or VoodooPC.

#### Dell Dimension 8400

With Pentium 4 560 (3.6 GHz), 1GB 533-MHz DDR2 SDRAM, two 160GB 7,200-rpm SATA hard drives (RAID Level 0), 256MB ATI Radeon X800 XT graphics card, 19-inch Dell 1901FP LCD, 12X DVD+RW dual-layer drive, CD-RW drive, eight USB ports, FireWire port, Creative Sound Blaster Audigy 2 sound card, Dell 5650 5.1 speakers, Microsoft Windows XP Professional, \$2,999 (with E-Value code 6V411-D84RPW). Dell Inc., [www.dell.com](http://www.dell.com). OVERALL ●●●●● Music: 90 (out of 100); Photo: 77; Video: 90; Gaming: 98.

#### Falcon Northwest Mach V

We've come to expect a quality product from Falcon Northwest, and the newest evolution of the Mach V is no exception. The engineers at Falcon enter the fray with a system that overclocks the CPU while chilling the processor with an innovative liquid system.

The hermetically enclosed purified water system keeps the CPU cool enough to do

some serious searing on our benchmark tests. The Mach V took the crown on our Business Winstone and 3D gaming tests when compared with desktops with mainstream chips. It even puts a few high-end Athlon FX and Pentium 4 Extreme Edition systems to shame. The 10,000-rpm Raptor SATA drives (in a RAID Level 0 configuration) and smoking new nVidia GeForce 6800 Ultra help out as well.

The Asus motherboard with the Intel 925G chipset is one we're likely to see again in boutique gamer desktops. The north bridge section of the motherboard is undoubtedly Intel's handiwork. But other items that would be controlled by the Intel ICH-6R south bridge—the network connectors (wired and wireless) and RAID controller—are controlled by separate chips on the motherboard.

Other features include the built-in Intel 7.1 sound chip, which works well with surround sound speakers. A single 7,200-rpm, 250GB SATA drive for deep storage supplements the 74GB drives. In fact, with the south bridge RAID and a discrete Promise RAID controller, the Mach V is capable of handling eight SATA hard drives and four IDE drives—for a total of 4.8 terabytes. That's a lot of space for video.

And the case has lots of room for expansion. Falcon helps matters by tie-wrapping and routing the internal cabling well, making the case one of the most hollow we've seen. It's a looker from the outside, too, with an understated glowing Falcon cutout on the front aluminum panel.

You will be paying a pretty penny for a Mach V configured like this, but it's got all the speed and style to match.

#### Falcon Northwest Mach V

With Pentium 4 560 (3.6 GHz, overclocked to 3.8 GHz), 1GB 533-MHz DDR2 SDRAM, two 74GB 10,000-rpm SATA hard drives (RAID Level 0),



250GB 7,200-rpm SATA hard drive, nVidia GeForce 6800 Ultra graphics, 21-inch NEC CRT monitor, 8X DVD±RW dual-layer drive, DVD-ROM drive, six USB ports, two FireWire ports, internal Intel sound chip, Klipsch 5.1 Ultra speakers, Microsoft Windows XP Professional, \$6,140 direct. Falcon Northwest, [www.falcon-nw.com](http://www.falcon-nw.com). OVERALL ●●●●● Music: 85 (out of 100); Photo: 70; Video: 95; Gaming: 100.

### HP Compaq dc 7100

Grantsdale and Alderwood aren't just about high-end multimedia and gaming PCs. The new 915- and 925-based PCs will eventually replace all of Intel's current desktop-chipset offerings, including those intended for business PCs that need to balance performance and affordability. The HP Compaq dc 7100 is HP's newest high-end business desktop family, and we reviewed the small-form-factor version for this introductory roundup.

The dc 7100 line is built around the 915 chipset, and this particular model in the family uses the 915G version with the built-in Intel Graphics Media Accelerator 900. Unless you work in a gaming or 3D digital content creation business, the integrated graphics will suffice—a good thing, since the small form factor case limits you to a half-height graphics card for an upgrade.

As a business system, the dc 7100 is likable, with easily serviceable parts. It's reasonably quiet when running, and service points in the case are clearly marked. You need a screwdriver to take the mounting studs off drives, but otherwise the case is tool-free. A breakaway panel under the system's front panel hides a single open 3.5-inch drive bay, which you can use for either another hard drive or a legacy drive (such as a floppy disk drive or an Iomega Zip Drive).

The dc 7100's Business Winstone and Multimedia Content Creation Winstone performance was good for a business machine. The single SATA

drive, 3.2-GHz P4, and 1GB of RAM are fine, as costly RAID configurations and peppier processors just aren't needed in this market. As configured, the system should provide a good three to five years of office life. The 915P chipset also lets the system share up to 256MB of system RAM as graphics memory. Translated into English, this means that those who want to take a break from their work will be able to load new games and play them at modest resolutions and detail levels.

With the latest technology at an attractive price, the HP Compaq dc 7100 is a forward-looking business system that is affordable today. Literally and figuratively, it should be a nice fit in cubicles around the country.

#### HP Compaq dc 7100

With Intel Pentium 4 540 (3.2 GHz), 1GB 400-MHz DDR SDRAM, 80GB 7,200-rpm SATA hard drive, integrated Intel graphics, DVD/CD-RW drive, integrated Intel sound, eight USB 2.0 ports, Microsoft Windows XP Professional, \$1,399 direct. Hewlett-Packard Co., [www.hp.com](http://www.hp.com). OVERALL ●●●●●

### Velocity Micro ProMagix

The Velocity Micro ProMagix is a machine that appeals to both gamers and the high-end multimedia crowd. The configuration we tested is ideal for anyone who wants a desktop with the guts to earn bragging rights but doesn't necessarily want to spend over \$5,000 on a system that achieves only a minimal gain on a benchmark test.

Like the Falcon Northwest Mach V, the ProMagix is built on a 925G motherboard with a 3.6-GHz P4 560 processor overclocked to about 3.8 GHz (our timing tests show 3.79 to be exact). Since it uses the same motherboard as the Falcon, it has the same ports and capabilities, including the eight usable SATA ports. Unlike the pricier Mach V, the ProMagix features the nVidia GeForce 6800 GT card, which is just a small step below the top-level 6800 Ultra.

Velocity also saved a bit by using two 200GB, 7,200-rpm SATA drives instead of 10,000-rpm drives.

The mixture of overclocking and very good (though not bleeding-edge) components puts the ProMagix very close to the Mach V on our 3D game performance tests and slightly below Falcon's Mach V on 3DMark03. But the two 7,200-rpm drives (as opposed to a 10,000-rpm unit) contributed to lower performance on our Winstone tests, making this box more on a par with the Dell Dimension 8400 in this roundup.

There are a lot of fans in this PC, since Velocity Micro decided to cool the overclocked P4 with air instead of liquid. In addition to the CPU fan and all the usual case fans, there's a PCI-slot-mounted, glowing dual fan feeding cool air to the nVidia graphics card. You can control fan speed with the ex-

ternally accessible slide switch.

The ProMagix is encased in an automotive-finish windowed case, complete with a front-mounted thermometer that tracks the temperature at the CPU and at two other spots in the case. The wiring is well done and keeps the air flowing through the chassis.

The ProMagix is a fine all-around multimedia and gaming box. And considering the prices of some of the other offerings in the realm of ultra-high-end boutique PCs, it's a relative bargain.

#### Velocity Micro ProMagix

With Pentium 4 560 (3.6 GHz, overclocked to 3.79 GHz), 1GB 533-MHz DDR2 SDRAM, two 200GB 7,200-rpm SATA hard drives (RAID Level 0), nVidia GeForce 6800 GT graphics, 19-inch CRT monitor, 12X DVD±RW drive, DVD/CD-RW combo drive, eight USB 2.0 ports, FireWire port, integrated Intel sound, Creative GigaWorks S750 7.1 Ultra speakers, Microsoft Windows XP Professional, \$3,748 direct. Velocity Micro Inc., [www.velocitymicro.com](http://www.velocitymicro.com).

OVERALL ●●●●○ Music: 63 (out of 100); Photo: 58; Video: 78; Gaming: 95.



**WITH A GOOD MIX OF performance and features, the ProMagix is a relatively affordable high-end machine.**

# Blue Lasers Boost DVD Capacity

BY DON LABRIOLA

If you still haven't forgiven the DVD industry for subjecting us to its endless format wars, you may want to stop reading now. After years of anticipation, next-generation blue-laser optical recorders are finally poised to begin shipping in this country. But competing industry groups have already announced several incompatible blue-laser formats, and even more are on the way.

This is particularly disturbing, because the technology has so much to offer.

as well as dual-layer and double-sided media, are all on the Blu-ray roadmap.

Blu-ray's biggest competitor is the DVD Forum's tentatively named (and totally incompatible) HD-DVD format. The HD-DVD 1.0 specification, which defines 15GB single-layer and 30GB dual-layer media, was just recently approved, but HD-DVD products probably won't hit the shelves until sometime in 2005.

If all this isn't enough, Sony has developed a pair of non-consumer blue-laser formats based loosely on

\$45, roughly half the cost of 9.1GB magneto-optical media. And at about 0.2 cents per megabyte, you get the price of tape storage but the random access and 50-year claimed life of an optical solution.

The ProData solutions go head-to-head with M-O's successor, UDO (Ultra Density Optical; [www.udo.com](http://www.udo.com)). Jointly developed by HP, Plasmon, and Sony (which subsequently withdrew to pursue blue-laser DVD technology), UDO, too, uses blue lasers to increase capacity, in this case from 9.1GB to 30GB.

Our early production unit of the ProData solution boasted rock-solid construction and remarkably easy USB 2.0 installation. Because the BW-RU101 is intended for commercial applications, the only software bundled with our test unit is a utility that let us format discs and drag files to and from rewritable media. Sony plans to add a NovaStor system backup program to the bundle.

Sony claims the BW-RU101 delivers sustained 11-MBps read and 9-MBps write throughput, which would put it in a class with the best SCSI magneto-optical drives. We restored a 12.5GB collection of 282 files in just under 20 minutes, which equates to a sustained throughput of 10.5 MBps—right in line with Sony's specs. It took less than 5 seconds to erase or format a disc.

Sony's blue-laser offering is intriguing. Factor in the drive's inexpensive, high-capacity media and the BW-RU101 begins to look like a logical migration path for businesses that have outgrown magneto-optical or tape technology.

Sony BW-RU101 Professional Disc for Data

\$3,299 list. Sony Electronics Inc., [www.sony.com/prodata](http://www.sony.com/prodata). ●●●●○

Blu-ray technology. The company's XDCAM Professional Disc format will be used in products designed for broadcasters and professional AV studios. Sony's other blue-laser offering is the Professional Disc for Data format (ProData for short), which makes its debut in several internal and external recorders.

We tested the **Sony BW-RU101 Professional Disc for Data**, a USB 2.0 external drive. ProData discs have the same 23GB capacity as Blu-ray and Professional Disc media but are incompatible with any other type of blue-laser format and are marketed solely for commercial data storage and archiving chores, such as server backups.

Single-sided, single-layer ProData discs (which reside in cartridges to protect the media) are now available for about

**POWERED BY BLUE-LASER TECHNOLOGY**, the Sony BW-RU101 Professional Disc for Data DVD burner can store 23GB on a single disc.

The shorter wavelength of blue lasers lets them write data at much greater densities than the red lasers used to record conventional DVDs. A blue-laser disc the size of a DVD can store tens of gigabytes of data in a single recording layer (as opposed to 4.7GB per layer of traditional DVDs).

The first blue-laser DVD technology out of the gate was the consumer Blu-ray format developed by the Blu-ray Disc Association. Blu-ray discs can pack up to 27GB of data onto one piece of single-layer media. Blu-ray discs will initially be used to distribute ultra-sharp high-definition prints of Hollywood movies. Such drives are at least a year off in this country, but Sony has already shipped a \$2,700 Blu-ray home recorder in Japan, where HD content is far more common. Variations like BD-ROM, BD-RW, and BD-R,

## Soundmatters MainStage

**Pros:** Compact, one-box solution for surround sound. Excellent clarity. Reasonably convincing near-field surround effect.

**Cons:** Deficient bass. Up-firing woofer limits installation options.

**Bottom line:** The Soundmatters MainStage delivers reasonably believable surround sound for a computer or TV. But you should plan on adding a subwoofer for full enjoyment.

\$299 direct. Soundmatters Inc., [www.soundmatters.com](http://www.soundmatters.com). ●●●●○

## Linksys Wireless-B Media Link for Music

**Pros:** Affordable wired-and-wireless digital music hub. Fairly easy setup. Speaker and speakerless versions available.

**Cons:** No photo or video support. Hard-to-read integrated display. Rat's nest of wires. So-so speakers. Not enough buttons on remote.

**Bottom line:** Another entry in the wired/wireless hub arena for music and Internet radio (but not photos or video). It's cheap, but we found it a bit unpolished.

\$170 street. Linksys, a division of Cisco Systems Inc., [www.linksys.com](http://www.linksys.com). ●●●●○

## Minnetonka discWelder Bronze

**Pros:** Most affordable DVD-Audio creation tool on the market. Easy to learn and use.

**Cons:** Lack of file compression features limits the sample rate of multichannel tracks.

**Bottom line:** This DVD-Audio authoring application offers only the most basic features. But it's far and away the least expensive and most easily usable tool for creating simple DVD-Audio discs.

\$99 direct. Minnetonka Audio Software Inc., [www.MinnetonkaAudio.com](http://www.MinnetonkaAudio.com). ●●●●○

[www.pcmag.com/guides](http://www.pcmag.com/guides)



# Top-Dog Entertainment Notebook

BY CISCO CHENG



How do you build the ultimate multimedia notebook? Just ask Toshiba. Its latest portable, the **Toshiba Satellite P25-S670**, is a standout Media Center Edition PC that combines component-out and surround-sound capabilities, a first in such a notebook.

Component out lets you run a DVD movie from



your notebook to any high-quality screen (namely an HDTV display), and its Dolby Digital output gives you surround sound. A composite-in port, not commonly found on notebooks, lets you plug in devices such as VCRs or camcorders.

The 9.5-pound notebook's modular bay accepts the included TV tuner card, and the Media Center operating system lets you record television programs to the system's 80GB hard drive (and manage all your digital-media files). Rounding out the multimedia hardware is a multifunction DVD±RW drive.

The high-quality 17-inch WXGA display, powered by the impressive



**NEED PROOF** that the P25-S670 is an entertainment machine? Just check out the remote.

nVidia GeForce FX Go5700 GPU with 128MB VRAM, delivers a crisp, sharp image. The unit's 3DMark 2003 score was quite good: 2,061 at 1,028-by-768. The 3.2-GHz Pentium 4 processor with Hyper-Threading delivered good results on our Business Winstone 2004 and Multimedia Content Creation Winstone tests (17.4 and 23.4, respectively). Wireless throughput (in 802.11g mode) was also fine. The P25-S670's battery life, just over 2 and a half hours, was acceptable for this class of machine.

**Toshiba Satellite P25-S670**

With 3.2-GHz Pentium 4, 512MB DDR SDRAM, 80GB hard drive, DVD±RW drive, nVidia GeForce FX Go5700 graphics, 17-inch WXGA display, 802.11g wireless, Microsoft Windows XP Media Center Edition 2004, \$2,699 list. Toshiba America Information Systems Inc., [www.toshiba.com](http://www.toshiba.com). OVERALL ●●●●● Music: 90 (out of 100); Photo: 84; Video: 91; Gaming: 81



**IBM ThinkPad T42 2378-EXU**

**Pros:** Finally, a 15-inch display. Same great fit and finish, manageability, and protection.

**Cons:** Marginally heavier (5.8 pounds) and one-third bulkier than the 14.1-inch version.

**Bottom line:** At last, IBM offers the option of a 15-inch display in the flagship of its ThinkPad line—and at just \$50 more than the price with a 14.1-inch LCD. Whichever you choose, the T42 remains one of the best notebooks you can carry.

\$2,358 direct. IBM Corp., [www.ibm.com](http://www.ibm.com).



**Acer Aspire 1712**

**Pros:** Sharp display. Plenty of connectivity options. Top performance.

**Cons:** At a whopping 13.9 pounds (16.4 pounds with AC adapter), we thought our scale was broken. Noisy.

**Bottom line:** The Acer 1712 fills the need for those who want desktop power and parts but want the freedom to lug their machine with them from time to time. Acer manages to offer a ton of features for a good price. \$1,899 list. Acer America Corp., [www.acer.com](http://www.acer.com).

OVERALL ●●●●● Music: 78 (out of 100); Photo: 77; Video: 72; Gaming: 87

# One Cool, Smart Phone

BY JONATHAN ROUBINI



The new **Nokia 6600 Video Phone** is an ideal blend of both cool and useful features. Offering everything from streaming video to e-mail, this hot phone is fully loaded.

Wrapped in a sleek-looking 4.4-ounce package, the 6600 has a crisp, bright 2.1-inch screen, Bluetooth and IR ports, a VGA camera, MMC support, and Symbian OS 7.0. This phone is clearly a step up from the 3650, Nokia's previous Symbian-running high-end camera phone. We like the number pad on the 6600, which has a conventional layout and is comfortable to use—much better than the 3650's awkward circle format. We also find the 6600's joystick a much easier way to navigate than the four-directional pad found on the 3650.

Although the 6600 supports MMC media cards, which is a plus, the slot is located behind the battery next to the SIM card, so you have to turn off the phone and remove the battery to get to the memory card.

The 6600 uses the popular Series 60 interface, which is easy to use to scroll through the phone's PDA-like functions. The bundle includes new features like RealOne, which lets you stream audio and video clips from the Web to your phone. But to play MP3 files, you must first download a player compatible with the Series 60

**PHOTO, VIDEO, PDA,** and e-mail features make the 6600 the phone to have.



interface from a third-party seller such as Handango ([www.handango.com](http://www.handango.com)).

Pictures taken with the 6600's VGA camera looked a bit washed out but are fine for viewing on a phone screen or e-mailing to friends. Video playback was a bit choppy, and viewing time is limited to 9 seconds, so you'll probably use this feature primarily for sending MMS (Multimedia Messaging Service) messages. The 6600 also supports SMS as well as POP and IMAP e-mail.

Whether you're a business professional or a consumer looking for a cool camera phone, the 6600 has you covered.

**Nokia 6600 Video Phone**

\$399.99 direct. T-Mobile USA, [www.t-mobile.com](http://www.t-mobile.com). ●●●●●

[www.pcmag.com/guides](http://www.pcmag.com/guides)



| DESKTOPS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              | NOTEBOOKS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | FLAT-PANEL MONITORS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                              |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Starting At \$349</b> #4879825<br/>HP d220 Microtower</p> <p><b>OFFICE</b></p> <p><b>ThinkCentre A30</b></p> <ul style="list-style-type: none"> <li>• 2.8GHz P4</li> <li>• 533MHz FSB</li> <li>• 256MB RAM</li> <li>• Windows XP Pro</li> </ul> <p><b>\$579</b> #466859</p> <p><b>HOME</b></p> <p><b>SONY</b></p> <p><b>VAIO PCV-300G All-in-One</b></p> <ul style="list-style-type: none"> <li>• 2.8GHz P4</li> <li>• Built-in 15" TFT Display</li> <li>• Wireless Input Devices</li> </ul> <p><b>\$1699.99</b> #5075079</p> <p><b>DEAL</b></p> <p><b>acer</b></p> <p><b>AcerPower F1</b></p> <ul style="list-style-type: none"> <li>• P4 2.6GHz</li> <li>• 128MB RAM</li> <li>• Windows XP Pro</li> </ul> <p><b>\$479</b> #4822749</p> <p><i>Monitor sold separately.</i></p> | <p><i>Free Sprint PCS Card With ALL Notebooks!</i><br/>\$180 Value</p> <p><b>Starting At \$799</b> #4765140<br/>Compaq nx9008</p> <p><b>ThinkPad R51</b></p> <ul style="list-style-type: none"> <li>• Centrino P-M 1.5GHz</li> <li>• 256MB RAM</li> <li>• 14.1" TFT Display</li> </ul> <p><b>\$1299</b> #5123608</p> <p><b>SONY</b></p> <p><b>VAIO VGN-A1310</b></p> <ul style="list-style-type: none"> <li>• 1.5GHz P-M</li> <li>• 15" TFT Display</li> <li>• Windows XP Home</li> </ul> <p><b>\$1499</b> #5151692</p> <p><b>hp</b></p> <p><b>HP Compaq nx9010</b></p> <ul style="list-style-type: none"> <li>• P4 2.8GHz</li> <li>• 15" display</li> <li>• 802.11g integration</li> </ul> <p><b>\$1099</b> #5162068</p> | <p><b>Starting At \$319<sup>95</sup></b> #5157411<br/>Compaq VF52</p> <p><b>LG</b></p> <p><b>15" L1515SK</b></p> <ul style="list-style-type: none"> <li>• 1280 x 1024</li> <li>• Auto-adjustment function</li> <li>• Built-in power adapter</li> </ul> <p><b>\$329.95</b> #4897134</p> <p><b>ViewSonic</b></p> <p><b>Airpanel 15" Wireless</b></p> <ul style="list-style-type: none"> <li>• Touchscreen control</li> <li>• Extend your PC around the house</li> <li>• 802.11b wireless</li> </ul> <p><b>\$549.88</b> #441653</p> <p><b>Envision</b></p> <p><b>17" LM720</b></p> <ul style="list-style-type: none"> <li>• 1280 x 1024</li> <li>• Wide viewing angle</li> <li>• VESA wall-mount capable</li> </ul> <p><b>\$379.95</b> #4887083</p> |

| DIGITAL CAMERAS                                                                                                                                                                                                                                                           | CAMCORDERS                                                                                                                                                                                                                                                                                       |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Kodak EasyShare CX7300</b><br/>\$129.95 #4853908</p> <p><b>Canon PowerShot S500</b><br/>\$499 #4850352</p> <p><b>OLYMPUS C-765 Ultra Zoom</b><br/>\$449 #4945722</p> <p><b>Nikon D70 Body</b><br/>\$999.95 #4863938<br/><i>Lens sold separately.</i></p>            | <p><b>Panasonic SV-AV50 D-Snap</b><br/>\$359.95 #4935701</p> <p><b>Canon ZR 80</b><br/>\$395 #4804225</p> <p><b>SONY DCR-DVD 101 Handycam</b><br/>\$895 #4869707</p> <p><b>JVC GY-DV300U DV Streamcorder</b><br/>\$2995 #404025</p>                                                              |
| POWER                                                                                                                                                                                                                                                                     | SOFTWARE                                                                                                                                                                                                                                                                                         |
| <p><b>APC SurgeArrest Personal</b><br/>\$7.95 #451367</p> <p><b>TRIPP-LITE Internet Office 750VA USB UPS</b><br/>\$64.95 #5087416</p> <p><b>Energizer Slim Tower UPS 450VA</b><br/>\$36.95 #434172</p> <p><b>TRIPP-LITE SmartPro UPS 1500VA</b><br/>\$339.95 #5087424</p> | <p><b>Microsoft Office 2003 Standard Upgr.</b><br/>\$224.95 #455482</p> <p><b>roxio Easy Media Creator 7</b><br/>\$69.95*† #4801876</p> <p><b>Adobe Acrobat 6.0 Professional Upgrade</b><br/>\$134.95 #434445</p> <p><b>symantec SystemWorks &amp; Personal Firewall</b><br/>\$85.95 #468230</p> |

WE GIVE YOU MORE...

GREAT SERVICE

OVERNIGHT SHIPPING

100,000+ PRODUCTS

AUTHORIZED DEALER

NAME BRANDS

SPECIAL OFFERS

©2004 PC Connection. All rights reserved. PC Connection is a trademark of PC Connection, Inc. or its subsidiaries. All other trademarks remain the property of their respective companies. \*†After \$20 upgrade rebate.

# WAY. NEXT DAY.®

www.pconnection.com/pcmag

888.800.4518

| HANDHELDS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                             | MULTIFUNCTION CENTERS                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                   | STORAGE                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |
|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>Starting At \$99</b> #461793<br/>Palm Zire 21</p> <p><b>Free Sprint PCS Card!</b><br/>\$180 Value</p> <p><b>SHARP</b><br/><b>Zaurus SL-6000</b></p> <ul style="list-style-type: none"> <li>• 4" 640 x 480 VGA display</li> <li>• 802.11b connectivity</li> <li>• 64MB memory</li> <li>• Incorporates Linux &amp; Java</li> </ul> <p><b>\$699</b> #4879737</p> <p><b>palmOne</b><br/><b>Palm Zire 31</b></p> <ul style="list-style-type: none"> <li>• 200MHz Intel AMR processor</li> <li>• 16MB RAM—SD card slot</li> <li>• Palm OS 5.2.8 pre-installed</li> </ul> <p><b>\$149</b> #4943225</p> <p><b>GARMIN</b><br/><b>Street Pilot III Deluxe</b></p> <ul style="list-style-type: none"> <li>• Intuitive menus offer shortest/fastest route</li> <li>• Automated voice alerts you of upcoming turns</li> </ul> <p><b>\$549.95</b> #249229</p> | <p><b>Starting At \$299.95**</b> #5082164<br/>Lexmark 2250 All-in-One</p> <p><b>Free Surge Arrest 8!</b></p> <p><b>HP</b><br/><b>Officejet 9130</b></p> <ul style="list-style-type: none"> <li>• Digital sending</li> <li>• 25ppm B&amp;W printing</li> <li>• 22ppm color printing</li> <li>• Internal print server</li> </ul> <p><b>\$999</b> #4869601</p> <p><b>EPSON</b><br/><b>Stylus Photo RX500</b></p> <ul style="list-style-type: none"> <li>• 5760 x 1440</li> <li>• Fast PC-free photo copies</li> <li>• Scan-to-card technology</li> </ul> <p><b>\$249.95</b> #4832904</p> <p><b>LEXMARK</b><br/><b>x2250 All-in-One</b></p> <ul style="list-style-type: none"> <li>• 35mm photo-quality resolution</li> <li>• Up to 14ppm B&amp;W</li> <li>• 48-bit color scan</li> </ul> <p><b>\$299.95**</b> #5082164</p> | <p><b>200GB Hard Drives From \$135.95</b> #4822909<br/>Seagate 200GB Barracuda Ultra ATA</p> <p><b>iomega</b><br/><b>iomega REV Drive</b></p> <ul style="list-style-type: none"> <li>• 7x faster than DDS4/5 tape</li> <li>• Removable disks give unlimited capacity</li> <li>• Maintenance-free design</li> </ul> <p><b>\$378.95</b> #4780500</p> <p><b>LACIE</b><br/><b>DVD +/- RW CD-RW</b></p> <ul style="list-style-type: none"> <li>• 4X DVD +/- Write</li> <li>• USB 2.0</li> <li>• Porsche design</li> </ul> <p><b>\$124.95</b> #456794</p> <p><b>Maxtor</b><br/><b>200GB One-Touch Drive</b></p> <ul style="list-style-type: none"> <li>• USB 2.0</li> <li>• 7200rpm</li> <li>• Simple one-touch backup</li> </ul> <p><b>\$249.95</b> #5105792</p> <p><b>Free Carry Case!</b><br/>\$29.95 Value</p> |



## NETWORKING

|                                                                                                                                                                                                                                                                             |                                                                                                                                                                                                                          |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p><b>FREE Toolkit!</b></p> <p><b>OfficeConnect Gigabit Switch</b></p> <ul style="list-style-type: none"> <li>• 8 10/100/1000 ports</li> <li>• Plug-and-Play install</li> </ul> <p><b>ONLY \$149.95</b> #5078018</p> <p><b>3COM</b><br/><b>BELKIN</b></p>                   | <p><b>Exclusive! Hurry! Offer ends July 31!</b></p> <p><b>108Mbps Wireless Media Router &amp; 120GB One-Touch Drive</b></p> <p><b>SAVE \$30! BOTH FOR \$299.95†</b> #4872455</p> <p><b>NETGEAR</b><br/><b>Maxtor</b></p> |
| <p><b>206W Wireless Network Camera</b></p> <ul style="list-style-type: none"> <li>• Live video for your 802.11b LAN</li> <li>• World's smallest network camera</li> </ul> <p><b>ONLY \$299</b> #5149867</p> <p><b>New!</b></p> <p><b>AXIS</b><br/><b>COMMUNICATIONS</b></p> | <p><b>Save \$40!</b></p> <p><b>XTreme G Wireless Cable DSL 4-Port Router with Wireless Adapter Card</b></p> <p><b>BOTH ONLY \$89.95†</b> #461657</p> <p><b>D-Link</b><br/><b>Systems, Inc.</b></p>                       |

www.pconnection.com/pcmag

888.800.4518

**PC Connection**  
we have your brand.™

\*With two year agreement. Call for details. \*\*After \$50 rebate with purchase of digital camera or computer system. †After rebate. Offer ends 7/31/04.

# Personal Printer, Workgroup Speed

BY M. DAVID STONE

**PC** MAGAZINE EDITORS' CHOICE  
By the usual criteria of size, weight, and price, the **Brother HL-5140** (\$230 street) is clearly a personal printer. At 9.9 by 15.0 by 15.1 inches (HWD) and 23.1 pounds, it's small enough to be a comfortable desktop companion and inexpensive enough to be affordable. But the 21-page-per-minute (ppm) engine spits pages out faster than many workgroup printers.

Not only is the 21-ppm engine notably faster than you'd expect for a personal printer, its throughput is actually faster than that of printers we've tested with the same or faster engine ratings. The HL-5140's total time for our Business Applications suite (using QualityLogic's testing

software and equipment; [www.qualitylogic.com](http://www.qualitylogic.com)) was 7 minutes 42 seconds. That's 19 seconds faster than the 35-ppm Kyocera FS-3830N we tested recently (First Looks, July).

We rate the HL-5140's text output as just short of excel-

lent: More than half the fonts we test with were easily readable at 5 points, and some were readable at 4 points. Its rating for photos was good. But graphics showed posterization and dithering patterns. On its default setting, the HL-5140 also failed to print lines against a black background on one of our Excel tests, although this problem can be fixed by changing the driver settings.

For most people, however, the fast performance and high-quality text and photos will more than make up for the less-than-ideal graphics, making the HL-5140 a very attractive choice.



**OUR CURRENT FAVORITE** personal laser printer, the Brother HL-5140 is fast and affordable.

**Brother HL-5140**  
\$230 street. Brother Industries Ltd., [www.brother.com](http://www.brother.com).  
OVERALL ●●●●○ Text ●●●●○  
Graphics ●●●○● Photo ●●●●○

**Brother MFC-8840DN**  
**Pros:** Good performance. Built-in 50-sheet automatic document feeder and duplexer.

**Cons:** Graphics and photos just okay.

**Bottom line:** This four-function all-in-one offers lots of features. Graphics output is below par, but overall quality is better than for most monochrome printers.

\$650 street. Brother International Corp., [www.brother.com](http://www.brother.com).  
OVERALL ●●●●○ Text ●●●●○  
Graphics ●●●○● Photo ●●●●○



**HP Designjet 130nr**

**Pros:** Handles paper up to 24 inches wide.

**Cons:** Installation instructions are limited to pictures. Relatively slow speed.

**Bottom line:** The HP Designjet 130nr offers a great variety of paper-handling features, along with good output quality. But its installation instructions are hieroglyphics, and its front-panel controls are obscure.

\$2,190 street. Hewlett-Packard Co., [www.hp.com](http://www.hp.com). ●●●○●



**Hi-Touch HiTi 730PS**

**Pros:** Delivers 4-by-6, 5-by-7, and 6-by-8 prints at a reasonable cost, starting at 40 cents for a 4-by-6. Prints directly from memory cards.

**Cons:** Minimal user guide.  
**Bottom line:** This dedicated thermal-dye photo printer offers true photo-quality waterproof output at a high speed.

\$400 street. Hi-Touch Imaging Technologies Inc., [www.hitouchimaging.com](http://www.hitouchimaging.com).  
●●●●○



# Redefining the Low-Price Laser

BY M. DAVID STONE

At first glance, you might appreciate the **Samsung ML-1740's** (\$150 street) sleek design. Crank the printer up to speed and you'll see performance and output quality that you probably wouldn't expect at this price,

even if you already knew about the 17-ppm engine inside.

Setup is standard fare for a personal monochrome laser printer, with a choice of using either a parallel port or a USB 1.1 connection, which is what we used. The paper tray takes a full 250 sheets, which is a nice touch that's somewhat surprising at this price.

A separate manual feed takes one sheet at a time for feeding envelopes or special paper stock.

On our performance tests (using QualityLogic's testing equipment), the printer lived up to

its promise. We timed the ML-1740 at 29 or 30 seconds for each of the 4-page Acrobat test files, 25 seconds for the 3-page Excel file with charts and

graphs, and 25 seconds for printing four full-page slides from PowerPoint. On our 50-page Word file, the printer managed 3 minutes 10 seconds, or just less than 16 ppm. Total time for the business applications suite was 9:45, marginally faster than the 29-ppm Kyocera FS-1920 we tested recently. Output quality is good enough for most purposes and appropriate for the 600-dpi resolution. Text in half the fonts we test with was easily readable at 5 points, and some at 4 points.

Although the ML-1740 falls short of perfection, it's a lot of printer for the price. On any reasonable scale, it offers a tremendous bang for the buck.

**Samsung ML-1740**  
\$150 street. Samsung Electronics America Inc., [www.samsungusa.com](http://www.samsungusa.com).  
OVERALL ●●●●○ Text ●●●●○  
Graphics ●●●○● Photo ●●●●○



**CAN A \$150 PRINTER** really deliver output this quickly? It can if it's the Samsung ML-1740.

[www.pcmag.com/printers](http://www.pcmag.com/printers)

# A No-Compromise 19-Inch Display

BY ALFRED POOR

**T**he Philips Brilliance 190P5 retails for around \$780—at the upper end of the price range for a 19-inch LCD. But you get a monitor with above-average image quality and premium features.

The appeal starts right with the stand. Where most LCD monitors now offer no more than a vertical tilt adjustment, the 190P5 delivers a full range of motion: tilt, swivel, and height. The panel also rotates between standard landscape and portrait mode and comes bundled with Portrait Display's desktop-rotation utility. The unit also has a pair of built-in speakers that sound better

than most monitor speakers, but they're a bit weak in the bass, as you'd expect. A mute button on the front panel would be a useful addition.

The monitor has both analog and digital connections and comes bundled with both cables. The panel has a 1,280-by-1,024-pixel resolution—typical for 19-inch LCD monitors—and comes with a utility to help you adjust the image for an analog signal. Using the 190P5's LightFrame feature, you can increase the brightness and contrast for an individual win-

dow, multiple windows, or the entire screen.

Image performance in our testing, using DisplayMate ([www.displaymate.com](http://www.displaymate.com)), was excellent. The auto-sync feature worked flawlessly on the analog signal, brightness uniformity was good, and we saw no apparent pixel defects. Color ramps were smooth, and the image quality degraded only slightly at extreme viewing angles. The weakest point was poor performance with light shades of gray in analog mode. But this is a minor flaw in light of the rest of the monitor's features and performance. Its response with a digital signal was excellent.

All in all, the Philips 190P5 is a premium monitor that deserves to make your short list.



**THE 190P5** delivers fine features and image quality.

Philips Brilliance 190P5

\$780 street. Philips Electronics N.V., [www.philips.com](http://www.philips.com). ●●●●○

## PLUS V3-131

**Pros:** At just 2.4 pounds, a true ultraportable projector. Good image quality. XGA resolution.

**Cons:** No remote mouse control. Noisier than most projectors. Minimal controls on remote.

**Bottom line:** The PLUS V3-131 is possibly the ultimate portable projector. It has some flaws, but most are to be expected in a unit this small, and none are fatal. If you want to make a big impression with a tiny projector, this is the one.

\$2,295 street. PLUS Vision Corp. of America, [www.plus-america.com](http://www.plus-america.com). ●●●●○



## Sharp LL-T15G4

**Pros:** Analog and digital connections. Good documentation.

**Cons:** No auto-sync button on front panel. Stand only has tilt adjustment. Speakers have limited tonal quality.

**Bottom line:** The dual inputs and built-in speakers push the price up for this 15-inch LCD monitor. Image quality is generally good, but you can save some money if you don't need the extra features.

\$399 direct. Sharp Systems of America, [www.sharpsystems.com](http://www.sharpsystems.com). ●●●●○



# Sony Projector Delivers—Wirelessly

BY ALFRED POOR

**PC** The Sony VPL-CX85 is not as tiny or light as some projectors, yet it is portable and a veritable light cannon compared with smaller units. Its price (\$3,700 list) is steep, but it packs a lot of premium features.

Once you connect the cables, you barely need to touch the VPL-CX85 to use it: The integral lens cover, focus, zoom, and even tilt adjustment are all motorized and can be controlled with a remote. The projector has plenty of inputs and pass-through connectors for RGB and stereo sound.

Even better, you don't need to connect any cables (aside from the power cord), thanks to a Wi-Fi adapter for the projector and a USB 2.0 adapter for your computer. The wireless connection defaults to a "simple

mode" that's easy to use, but you can set it for ad hoc mode or access across a network.

The projector's LCD engine has an XGA native resolution (1,024 by 768 pixels) and has both vertical and horizontal digital keystone adjustments. But the big news is the brightness. The projector is rated at 3,000 lumens in "high mode" and 2,200 lumens in standard mode. We measured 2,089 lumens in

standard mode—making it one of the brightest units we've tested, and more than sufficient to fill a large screen under normal lighting conditions.

Our tests with DisplayMate revealed excellent image quality. The projector also comes with two remote controls. One is a stylish "executive" control with a laser pointer, and the other is larger and has more functions. One nit: The bigger remote is cluttered and confusing to use.

If you're looking for a handsome projector and can take advantage of built-in Wi-Fi support, the Sony VPL-CX85 is a great place to start.



**A BUILT-IN WI-FI ADAPTER** makes using the VPL-CX85 easy.

Sony VPL-CX85

\$3,700 list. Sony Electronics Inc., [www.sony.com/projectors](http://www.sony.com/projectors). ●●●●○

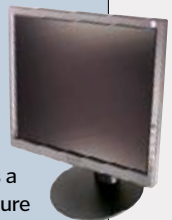
## Sony SDM-S74

**Pros:** Generally good image quality. Analog and digital connections. Thin-bezel design.

**Cons:** Somewhat limited viewing angle. Weak performance on light-gray shades. Tilt-only stand.

**Bottom line:** The 17-inch Sony SDM-S74 has a simple design and feature set and produces images of about average quality. The price is competitive, especially for a dual-input model.

\$519.99 list. Sony Electronics, [www.sony.com](http://www.sony.com). ●●●●○



[www.pcmag.com/displays](http://www.pcmag.com/displays)

# Casper XP: The Friendly Backup Utility

BY OMAR CINTRON

Those searching for an easy-to-use utility to back up a hard drive need look no further than **Casper XP 2.0**. Casper does an excellent job of demystifying the backup process, providing a simple, effective interface.

If the name Casper conjures up the popular Norton Ghost disk-imaging program, the reference is intentional: Casper bears some technological resemblance to Ghost. But whereas the Norton offering has a host of IT-focused functions, Casper focuses more narrowly on disk-to-disk backup. Casper can't save an image to a partition on the same hard drive as the one being backed up, and it doesn't clone drives to a retrievable image that can be saved to optical media or a network drive.

The program launches a neat-looking menu that includes all the software's usable

options; there are no hidden settings. The first three options, Copy Drive, Create Drive, and Remove Drive, invoke easy-to-follow wizards.

The Copy Drive wizard copies the contents of a drive, including partition and boot-record information, onto another. If you upgrade to a larger hard drive, the software will automatically resize the partition on the target drive accordingly, which is a nice touch. Of course, you can also set the size of the new partition on the target drive manually.

The Create Drive wizard is the equivalent of using Windows' built-in drive management console, except that all the required tasks are done with minimal human intervention. Casper determines whether additional hard drives are present, and if those it finds have no data you want

to keep, it will partition and format them. The Remove Drive wizard deletes existing partitions on hard drives other than the system drive.

Casper also includes a drive

The convenient Schedule Copy wizard can schedule background backups that occur as you work, ensuring that your drive is backed up regularly. There is no need to recall the

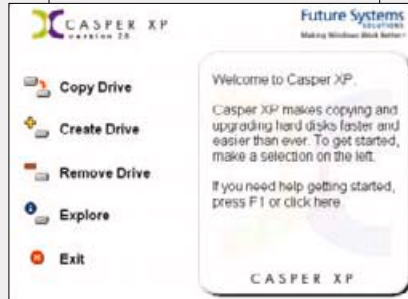
last time a hard drive was copied, because the software also keeps a history listing every task performed, including a detailed report of each item.

If you need a complete disk-cloning utility, a package such as Ghost or Acronis True Image 7.0 ("2004 Utility Guide," June 8) is the way to go. Likewise, if you want a full-featured backup program, Dantz's Retrospect Pro 6.5 (also in that June 8 feature) is our

current favorite. But Casper XP may be all you need for simple backup and imaging.

## Casper XP 2.0

\$44.95 direct. Future Systems Solutions Inc., [www.fssdev.com](http://www.fssdev.com).



**FOR SIMPLE DISK-TO-DISK BACKUP,** Casper XP is tough to beat thanks to its easy-to-understand interface.

browser that displays partition information and the health status of existing drives, as well as a utility that fixes a master or volume boot record in the event that either record becomes corrupt.

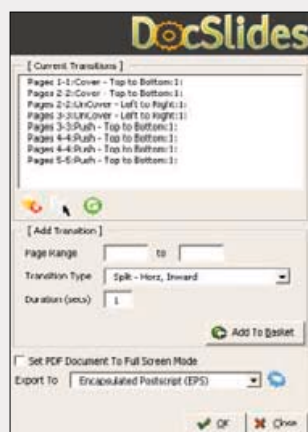
# An Easier Way to PDF

BY M. DAVID STONE

Don't have the time to master Adobe Acrobat but still want to take advantage of some of its advanced features? **Office2PDF** is here to help. The company's utilities—DocInfo Pro 1.0, DocSlides 1.0, and Destinations 1.1—let you perform tasks such as defining document information and creating PDF slide shows.

When you install the first Office2PDF utility, it places a toolbar with one button in Microsoft Word (we tested using Microsoft Office 2003). Buttons for any additional Office2PDF utilities you install show up on the same toolbar.

To use a utility, you click on its button to open a dialog box and define settings. These utilities don't generate PDF files,



**THE DOCSLIDES UTILITY** lets you easily create polished-looking PDF slide shows.

though. When you're finished editing your document and defining the settings, you use Acrobat to convert the file to

PDF format. This means you will still need to have a copy of Adobe Acrobat (these utilities support Versions 5 and 6), a \$299 investment.

We found DocSlides and DocInfo Pro easy enough to use without instructions. With DocSlides, you simply pick from a list of 30 transitions, enter the page range to which you want to apply that transition, set a duration in seconds, choose *Add To the Basket*, and move on to another set of pages. The Destinations dialog took a little longer to understand, but we still managed to make sense of its options without turning to the instructions. If all else fails, you can read the on-disk user guide or contact Office2PDF for support by e-mail.

Beyond the ease of use, the

real strength of these utilities is that once you define PDF settings, you can reuse the settings whenever you recreate the PDF file. You can't move the settings to another document (as you can with Microsoft Word's settings), but for monthly reports or other recurring documents, you can edit the existing file and not have to set up all the PDF options time after time.

Granted, the collection of utilities is not worth the investment for someone who doesn't use Acrobat very often. But they are well suited to those who use it frequently and often need to edit an original document and recreate the PDF.

## DocInfo Pro 1.0, DocSlides 1.0, Destinations 1.1

DocInfo Pro, \$79 direct; DocSlides, \$59; Destinations, \$199. Office2PDF, [www.office2pdf.com](http://www.office2pdf.com).





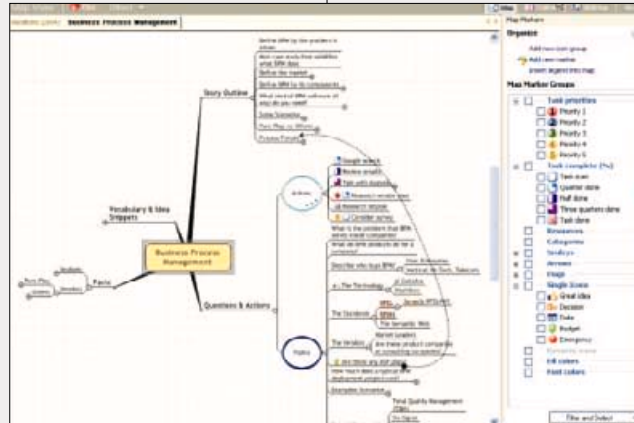
# Food for the Mind

BY ROBERT P. LIPSCHUTZ

Starting a new project, researching a topic, or thinking through an idea? Then **MindManager X5 5.1** should be the first place you turn. This mature “mind mapping” tool is designed for people who need to organize and act on information, helping to catalyze thinking. The latest build offers Tablet PC support and (in the Professional edition) the ability to import RSS feeds and XML.

You start a mind map with a central idea, then expand out from this center with related ideas. Each idea can have related ideas, and so on and so on. A full library of shapes, icons, images, and formatting choices helps emphasize each item in a mind map. Ideas can be edited, moved around, or expanded as your thinking evolves. Hyperlinks within your mind maps can point to other files, Web sites, or other topics in the map.

One of the jewels that make this product so special is Map Markers: visual indicators that can be applied to ideas in the



**A CENTRAL IDEA** can take shape and grow within MindManager X5.

mind map. For example, a Task Completion Marker specifies whether a task is just starting, done, or somewhere in between. A Task Priority Marker shows a 1 through 5 rating for the priority of a given action

item. Colored flags can call attention to specific items. The best part: You can select and view only those ideas with a certain mark (all Priority 1 tasks, for example).

If you find starting with a

blank map intimidating, the program supplies a host of templates and wizards to get things rolling. In addition, you can insert common information or structures, using reusable parts. Data-hungry users will like

Smart Map Parts, which can import XML feeds (including RSS feeds) into a mind map. Once a Smart Map Part is inserted into a map, it is updated, showing the latest headlines and links to the respective site, whenever the user requests it or opens the map.

A mature mind map can be shared with other stakeholders in a project. Like PowerPoint, the product has a full-screen presentation mode that highlights the topic under discussion and centers it on the screen. Mind maps can also be saved as PowerPoint presentations and Microsoft Word documents, or published as Web pages, using fully customizable templates.

To be sure, mind mapping isn't for everyone. But if you need to collect and crystallize a sea of information into one cohesive plan, MindManager is worth a try.

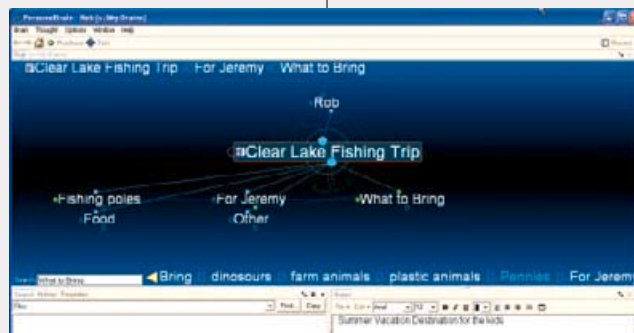
**MindManager X5 5.1**  
 \$199 direct; Professional edition, \$299. Mindjet LLC, [www.mindjet.com](http://www.mindjet.com). ●●●●●

# Are Two Brains Better than One?

BY ROBERT P. LIPSCHUTZ

PersonalBrain 3.0 gives you a distinctive way to organize and access ideas and files on your computer. You organize content, including Web pages and e-mail, in 3D structures, classified by general topics and in thought patterns that are natural to you. PersonalBrain has always been a quirky application that attempts to interconnect thoughts, ideas, and facts. The new version adds a few useful features, including new shortcut keys and the ability to drag and drop e-mail messages from Outlook or Outlook Express.

PersonalBrain organizes topics, called *thoughts*, by means of a visual map and relationship system. A *Brain* begins with a central thought, to which you



**IN PERSONALBRAIN**, you can connect a range of files, action-items, and messages to one central thought.

can then add related *child* thoughts. *Siblings* and *jumps* (links to any other thought) help to create any desired relationships and ultimately a highly interconnected web of information.

When you click on a thought, it rotates to the center of the in-

terface, and its related thoughts come into view. Other thoughts are shown on the outskirts of the interface. You can add notes for each thought to expand on an idea. PersonalBrain incorporates files (including photos) in addition to thoughts. To make it easy to find any thought, Per-

sonalBrain uses *pins* (similar to browser favorites) that take you to a place in your Brain.

While we like the concept, we're not as sold on PersonalBrain as we are on other organizational schemas, such as MindManager (see above). For example, we found the user interface a bit claustrophobic: We often wanted to see multiple parts of the same Brain at the same time but could not. Other nits: There is only a single-level, not multilevel, Undo, and the printing options are fairly rudimentary. When we tried to import large directories of files, the product would crash on us.

All told, PersonalBrain is a neat concept that might fit how some people think and work, but we don't find it an indispensable tool.

**PersonalBrain 3.0**  
 \$79.95 direct. TheBrain Technologies Corp., [www.thebrain.com](http://www.thebrain.com). ●●●●●

# Is That Business Venture Going to Fly?

BY KATHY YAKAL

Excel is, undeniably, a masterful program, but building business financials in it requires skill. **Projected Financials 3.5** makes it possible for businesspeople who don't have CPA after their names to build integrated, multiyear income statements, balance sheets, and cash flow statements, and create a variety of what-if scenarios. A \$1,500 price and a difficult learning process, however, make this desktop/online combo more suitable for financial consultants and business owners who need flexible forecasting and top-to-bottom, integrated financial reporting with rock-solid integrity.

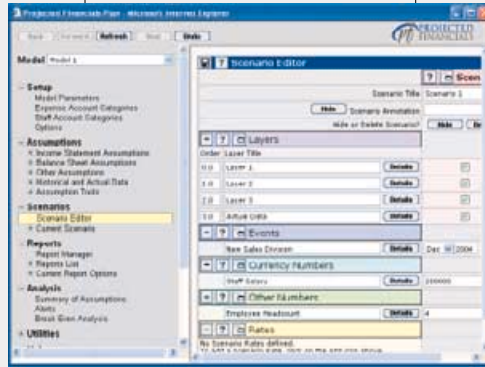
Unlike with Excel, there's no need to create complex formulas that can cause problems as the document evolves; Projected Financials has sophisticated business rules built in. But because of the program's unusual structure, you can't import financial data: You have to enter

everything—including historical data—manually. You create your model by working through a tree-like menu. A quick-start guide and help system assist in this process, though the program screams for better and more context-sensitive help.

The initial setup tasks include entering your model parameters and also defining expense and staff account categories. Then you enter any historical data in a table, along with your income statement and balance sheet assumptions. These assumptions cover all of a business's financial ground: revenue sources, operating expenses, accounts receivable and payable, assets and liabilities, and so on.

Projected Financial's new Scenario Editor provides a simple, powerful way to run what-

if analyses. For example, you can instantly see how different pricing tactics might ripple through to the bottom line. The application's other strength lies



**PROJECTED FINANCIALS'**

Scenario Editor lets you test out various what-if business cases.

in its financial reports, which include balance sheets and cash flow projections (the latter up to ten years, unusual in a standalone financial program).

With the online version, you can let remote users view your

data. That's handy if, for example, you're sitting with your bank's loan officer or a potential investor. Reports can be exported to Excel and as HTML.

And new in this version is the ability to create separate models for different business units within a company, then merge them into a master model that shows the combined financials.

There are other alternatives to building your own financials painstakingly in Excel. Several Excel

add-ons contain a subset of the features found in Projected Financials (at a much lower cost). But we've not seen Projected Financials' unique set of intelligent, flexible tools anywhere else.

**Projected Financials 3.5**

\$1,500 direct. Whitebirch Software Inc., [www.projectedfinancials.com](http://www.projectedfinancials.com).



# Get the Color Right with ColorPlus

BY ALFRED POOR

Pantone and ColorVision have developed affordable and easy-to-use color calibration systems for computer monitors.



**ColorPlus by Pantone ColorVision**, the newest entry in their joint product line, is aimed at digital-photography enthusiasts. In the past, hardware calibration systems could cost thousands of dollars; ColorPlus costs \$119 (direct). It does not provide the choices offered by the more flexible Spyder (\$149) and Spyder Pro (\$229), but it's ideal for anyone with a digital camera and photo printer.

The system works with both CRT and LCD monitors. After you install the software, you plug the light meter's 7-foot cable into a USB port on your computer. The meter uses a suction cup to attach to CRT's

and has a clever hanging bracket for LCD screens. The program takes a few minutes to display a series of colored squares under the light meter, cycling through red, green, and blue from the darkest to the brightest shades.

ColorPlus then creates a customized ICC color profile for your display, showing before and after images so that you can see the difference. In general, it creates a warmer image with a more extended grayscale response. Behind the scenes, it attempts to adjust the gamma to a standard 2.2 setting. The good news is that it does all this automatically. You don't have to squint at screens and try to match a box to its background, or futz with com-

plex compensation curves and different color channels. And the end result is better than what most users can achieve by such manual calibration methods anyway.

The system does end up making CRTs dimmer than you might like—ColorVision recommends only 85 to 95 candelas per square meter on CRTs for color-critical work—but it uses the default settings for LCD brightness. Also, you should disable any other color-calibration software (such as Adobe Gamma, which comes with Photoshop).

If you do a lot of work with digital photography or color graphics, you'll find that ColorPlus delivers very good results at a surprisingly low price.

**ColorPlus by Pantone ColorVision**

\$119 direct. Pantone Inc., [www.pantone.com](http://www.pantone.com).



# Namo Lets Amateurs Code like Pros

BY LUISA SIMONE

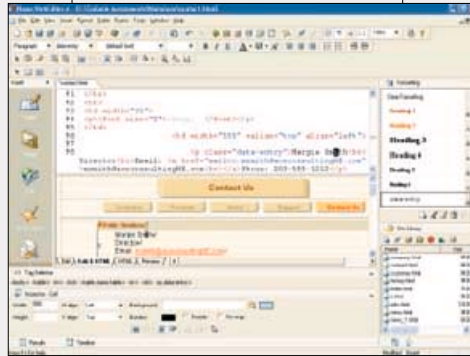
**A**spirating Web developers can relax, because **SJ Nammo WebEditor 6 Suite** makes site design easy—enabling nonprofessional users to generate sophisticated sites with multilevel architectures, predefined design themes, database-driven content, dynamically generated navigation, and JavaScript interactivity. The latest release of WebEditor offers the same WYSIWYG HTML editing tools, automated wizards, and low price that have made it a popular choice for cost-conscious Web developers.

WebEditor 6 Suite adds many conveniences, such as a shortcut bar for frequently used commands, an updated Property Inspector that lets you modify the attributes of virtually any HTML element, and a Macro-media Dreamweaver-style tag selector. Experienced coders

will appreciate the split-screen view of both the WYSIWYG page layout and HTML code and WebDAV collaboration.

Improved cascading style sheet (CSS) support is apparent on several fronts. The new formatting panel provides quick access to custom classes (but not pseudo-classes or IDs), and all of the ready-to-use design themes are now CSS-savvy. Creating styles is also easier, thanks to a new streamlined dialog box that presents CSS attributes in a simplified interface.

The suite also bundles WebCanvas 1.1, a vector-based graphics program that generates SVG graphics. Straightforward drawing tools, formatting options, and special effects make it easy to generate professional-



**THE SPLIT-SCREEN VIEW** in WebEditor 6 Suite lets experienced coders view the WYSIWYG layout and HTML code simultaneously.

looking logos, buttons, and banners for your site. When you're constructing an HTML page, you can modify graphics on the fly with a subset of WebCanvas functions that are integrated in WebEditor. WebCanvas does not include predefined scripts for novice users or robust optimization functions for exported bitmaps, however.

Dreamweaver users will find fault with several of Nammo's coding conventions. For example, the program does not edit externally stored cascading style sheets. Nor does it color-code scripts, provide code hints, or auto-complete tags as do Dreamweaver and other tools.

But when you consider the extremely low price, WebEditor 6 Suite is a fine alternative for users who have out-

grown freeware Web-editing tools such as Netscape Composer. And the program's ease of use makes it a very good option for users struggling with more complex programs like Microsoft FrontPage.

**SJ Nammo WebEditor 6 Suite**  
\$89 direct. SJ Nammo Interactive Inc.,  
www.nammo.com. ●●●●○

# Better Call-Center Management

BY RICHARD V. DRAGAN

**F**or businesses that need to streamline costs in their call centers, offshoring isn't the only option. **Apropos Interaction Management Suite v. 6.0** offers a flexible and customizable set of administration tools for improving the level of customer support—and employee efficiency—for phone, e-mail, and online chat support reps.

Setting up a call center usually requires support services from Apropos (included in the price) and two other tools: Application Designer and Configuration Manager. We

found both configuration tools quite flexible and powerful.

Application Designer is a design environment for building voice and IVR (interactive voice response) applications. Using a palette of two dozen visual com-

ponents, you design the logic behind voice menus. We liked the highly detailed property window for selecting valid Touch-Tone options. Administrators use the powerful Configuration Manager for modeling call-center agents and queues.

The Apropos report module offers a capable array of 60 templates for generating the right metrics for your organization. We liked the reports for agent productivity, and the standout Interaction Vault report shows the time customers and agents spend on phone calls, e-mail, and chat.

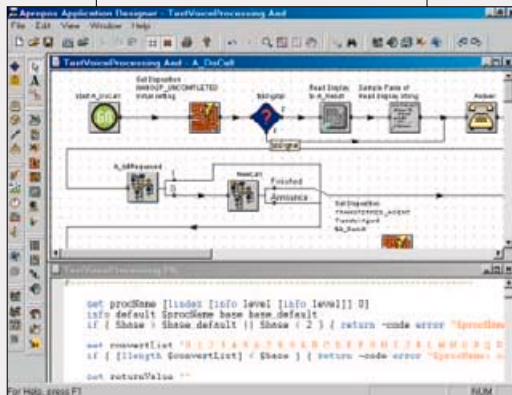
The client software used by your call-

center reps is an easy-to-install utility that works with Windows 2000 and Windows XP. The utility runs a simple on-screen toolbar with buttons for answering, ending, and transferring calls. Agents can gauge their performance using charts that show the time spent on calls and the number of calls handled. Apropos also includes an e-mail client with a response library feature, where reps cut and paste common responses to save time and improve consistency. Response libraries are available for voice calls and chat sessions, too.

Apropos strikes a powerful balance between configurability and control that can streamline any call center's operations.

**Apropos Interaction Management Suite v. 6.0.**

For 50 clients, \$230,000 (including support). Apropos Technology Inc.,  
www.apropos.com. ●●●●○



**WITH OVER TWO DOZEN** visual components, Apropos Application Designer lets call-center administrators design a processing flow for incoming calls.

# Study Your Web Traffic Deeply, Easily

BY MATTHEW D. SARREL



Looking for a comprehensive reporting package to tell you exactly where traffic is flowing on your site?

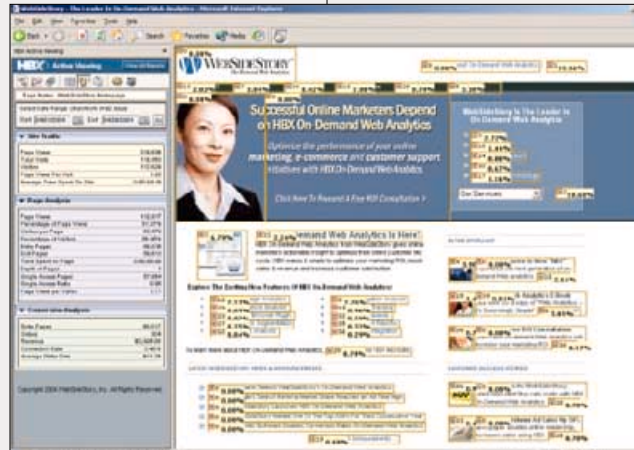
Your search is over. **HBX**, an on-demand Web analytics service, slices and dices Web traffic data in an awe-inspiring number of ways.

HBX presents users with simple and relevant information in real time. Thankfully, it's targeted more at marketing and business people than at IT departments. The browser-based interface is remarkably easy to learn and use. At log-on, users can see either a display of general site statistics or a customized dashboard view of the measurements that are most important to them. HBX has several graphic interfaces that can be used to assess Web site initiatives quickly, such as pie charts, bar charts, goal-mon-

toring thermometers, conversion-rate funnels, and gauges. You can easily compare different time periods, so you can quickly ascertain historical site traffic patterns.

One standout feature is the HBX Active Viewing Plug-in for Internet Explorer, which lets you see real-time site sta-

tistics while browsing your site. HBX Active Viewing displays an overlay of traffic patterns above links on your site, such as the link's popularity rank among the other links on the page, the percentage of clicks on the page that were for that link, and the absolute number of clicks on that link.



**HBX'S ACTIVE VIEWING** plug-in shows you site stats in real time.

We also like the HBX Report Builder, which lets you query your site's visitor data directly from Microsoft Excel.

Using funnels can shed light on what works and what doesn't on your site and in your marketing campaigns. You can set various and escalating targets to display within the same funnel. For instance, setting your home page, a product category page, a product selection page, the entry to the shopping cart, and the successful purchase page as data points will tell you exactly where your customers drop out of the purchasing process.

HBX is a compelling option for high-volume Web sites looking for in-depth analysis of visitor traffic and usage. It's the best tool of its kind we've seen yet.

HBX

Approximately \$15,000 per year and up (based on volume). WebSideStory Inc., [www.websidestory.com](http://www.websidestory.com).



# Small-Office Services in a Single Box

BY OLIVER KAVEN

**T**he **Axentra OfficeSeries S-200** is a step forward in the development of all-in-one server appliances. Extremely easy to set up, it provides a host of applications and is attractively priced (\$799 direct). In addition, the S-200 includes many interface-related features we haven't seen in comparable appliances, such as the EmergeCore IT-100 and the Net Integration Technologies NITIX Autonomic Linux Server OS ("Taking Care of Small Business," February 3). The S-200 also provides an integrated application server and a built-in 802.11g wireless access point.

Gearing toward small offices, the S-200 offers a variety of net-

work services, such as IMAP (Internet Message Access Protocol) mail, a Web server, and remote access, either using secure communication over SSL (Secure Socket Layer) or plain communication. We were disappointed, however, that it doesn't have an IPsec VPN.



**ABOUT THE SIZE**

of a desktop PC, the S-200 is a complete small-office appliance.

Another shortcoming is the inability to customize network services to fit each user's needs; services can be enabled or disabled globally only. So if you want to give everyone e-mail access but grant only FTP, shell, or Web publishing access to a select few, you're out of luck.

The S-200 has a host of other configuration options, such as Windows networking and IP filtering for outgoing traffic. It also offers basic content filtering and port forwarding. It even comes with an integrated messaging server, supplying instant messaging capabilities for your users and instant e-mail alerts when new mail arrives. And we applaud the S-200's integrated backup application,

which lets you back up both system and user data to either a local folder or an attached USB hard drive.

Once users log on, they are presented with the Application Center, which displays the available apps and services. A menu bar at the top of the screen provides links to e-mail, an address book, calendar, bookmarks, and file-sharing applications. In addition, it gives access to a sticky note-like tool, user settings, and a Web publishing application that lets users create quick, template-based Web sites.

We are very impressed with the vast feature set of the S-200. If you need all the usual core network services and a fast deployment at a low price (and won't miss granular settings for individual users), take a look.

Axentra OfficeSeries S-200

\$799 direct. Axentra Corp., [www.axentra.com](http://www.axentra.com).



# Buffalo Touch.

Secure Wireless Networking Made Simple.



AOSS™

One touch.  
One click.  
Done.

WHR3-G54

Setting up a secure wireless network can be very complicated. That's why Buffalo Technology introduced AirStation One-Touch Secure System (AOSS™) to make secure wireless connections hassle-free. Buffalo's new AOSS technology allows you to create a hi-speed secure wireless LAN with the push of a button and a click of the mouse. AOSS automatically detects and configures other AOSS enabled wireless devices and clients and seamlessly creates secure connections. As you add additional devices, security is negotiated at the highest level possible for all devices on the network.\*



For more information, visit us at

[pcmag.buffalotech.com](http://pcmag.buffalotech.com)

Our most popular AOSS-enabled products:



Ethernet Converter  
WHL2-TX1-G54



Notebook Adapter  
WLI-CB-G54S



Cable/DSL Router  
WBR2-G54



Desktop PCI Adapter  
WLI2-PCI-G54S



USB Adapter  
WLI2-USB2-G54

# BUFFALO™

\*AOSS functions between two AOSS enabled devices only. Clients are AOSS enabled by using Buffalo's updated client software (Windows Client Only).

© Buffalo Technology (USA), Inc. Buffalo Technology, Buffalo Technology logo and AOSS logo are registered trademarks of Buffalo Technology (USA), Inc. The names and logos of other companies mentioned herein belong to their respective owners.

### 3 OPEN THE VICTIM'S AIRWAY

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



# Lifesaver.

## Firefighter. Educator. Presenter.

He takes no chances with his equipment. Neither do you. You require reliability, ease of use and innovative features. So when it comes to projectors, you demand InFocus.

InFocus innovation makes your job easy. You buy from the worldwide leader in digital projection technology. Users get ultimate dependability, the most intuitive interfaces — and incredibly powerful tools for sharing their ideas with impact.

That means less maintenance. Fewer emergency calls. Perhaps even the occasional thank-you call. And more time to focus on what really matters.

**People rely on you. You rely on InFocus.**



#### The InFocus® X2™

All work. All play. All affordable.

- 3000-hour long-life lamp
- 1600 lumens for incredible brightness
- Outstanding digital video

**\$999**



#### The InFocus® LP 640

Designed by I.T. professionals around the world.

- 2200 max ANSI lumens
- Outstanding color saturation
- Wireless ready

**\$1999**

**InFocus®** The Big Picture™

To find out more about InFocus or where to buy: call **1-888-InFocus** or visit **www.InFocus.com**

# FEEDBACK

“It’s frightening that these folks design the systems that control the brakes in our cars at 65 mph.”

## THE PERILS OF EMBEDDED TECHNOLOGY

BILL MACHRONE’S COLUMN “Interface Disappointments and Delights” (May 4, page 61) is so true and far-reaching it is frightening. In comparing the decisions and executions involved in a consumer product that plays music, he highlighted my field, embedded products. These vital devices, which generally surround at least one microcontroller with transducers that talk to the outside world, are included in everything from toys to cars to aircraft. The blatant errors he noted are the results of execution and of judgment.

My field is filled with well-meaning techies, some with advanced degrees, who lack both the talent and desire to produce great products. What’s frightening is that these folks are designing the systems that control the brakes in our cars at 65 mph or our airliners at 38,000 feet. Though there are backup systems, they are the judgments of these same folks. One just has to look at the Mars Climate Orbiter taking a nosedive because two teams of embedded designers never bothered to check meters versus feet.

There are no qualifications on who can design these products. You will get sued if you recommend a legal solution to a parking problem or suggest that an aspirin might cure a pain, but if you design a system that dumps the atmosphere from a jet at 35,000 feet, they call it “bad luck.” Bill’s observations aren’t limited to just our listening pleasure; an open discussion of the matter can help all of us interface better with the computer-controlled devices upon which we depend.

TOM MARINER

## AOL DEATH CANCELLATION: A BETTER WAY

IN RESPONSE TO THE READER inquiry about how to cancel the AOL account of a loved one who is no longer living, the easiest method is to send a fax to 904-232-4800 (the Jacksonville, Florida call center). You need to include a letter of cancellation noting the master screen name on the account, the name and address listed on the account, the billing contact’s name that appears on the account, and the method of payment used (as well as the last four digits of that method). A certified copy of the death certificate should accompany the letter of cancellation.

BILL MATHERLY, JR.  
Former AOL Technical Support Representative

## 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](mailto: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.



## WHERE'S THE PHONE?

YOUR REVIEW OF THE Toshiba VM4050 PCS Vision Video Phone, “The Best Phone on the Market?” (May 4, page 45), prompted me to send this comment instead of just quietly shaking my head in wonder. Out of 17 sentences, only one complete and one-half of another sentence had anything remotely to do with its function as a phone. Consider me a Neanderthal and unhip if you must, but if I’m stuck in the boonies at 3:00 A.M., I want to be able to contact a real person for help, not exchange photos of family and friends while waiting slowly to die. How good is the battery? Or the reception? Or anything else phone-related? Okay, maybe I’m not looking at the “big picture.” Maybe if I had a bigger screen on my phone....

ERICH WESTER

## IRREPLACEABLE?

EVERY ONCE IN A WHILE, John Dvorak writes something that makes me laugh out loud. When discussing MP3 and Ogg Vorbis (June 22, page 71) he states that “Nobody who has accumulated a large MP3 inventory is about to start over” and “Any new devices that won’t play the old stuff simply won’t sell.” I’m not prepared to tackle a debate on the technical merits of one format versus the other, but aren’t his arguments precisely the same as those that were put forth 20-plus years ago by audiophiles who were concerned about CDs displacing LPs?

PHIL HOFFMAN

## LOVE THAT WEB SITE

I WANT TO THANK YOU for your excellent product. I enjoy my daily tips and have garnered so much useful information that I realize that a word of praise is in order. Your Web site is very user-friendly, easily navigated, and overflowing with vital, up-to-the-minute facts, reviews, data, software, and editorials. I often share my newsletters and articles from your site with friends and family.

BRIAN SMOAK

## Corrections and Amplifications

■ In our review of Registry Mechanic 2.1 in our Utility Guide (June 8, page 110), we stated that Registry Mechanic doesn’t attempt to locate missing files and folders. Registry Mechanic can in fact attempt to locate missing files and folders, but this feature is turned off by default. When we retested with this feature turned on, the process took substantially longer, though the speed was still good compared with that of other products that attempt to locate missing files. We’d also like to raise Registry Mechanic’s rating from 2 stars to 2.5.

■ In our June 22 First Looks section (page 56), we ran an incorrect photo with the review of the Micro Solutions RoadStor portable drive. The correct photo (as well as the full review) can be found at [www.pcmag.com/roadstor](http://www.pcmag.com/roadstor).



$$\left( \begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array} \right)^2 + \left( \begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array} \right)$$

$$\begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array} (x,t) = \begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array} (a)$$

MOBILE TECHNOLOGY

$$\Sigma \left\{ \begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array} \right\}^3 \left( \begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array} \right) = \begin{array}{c} \text{intel inside} \\ \text{centrino} \end{array}$$

## Secret formula for extreme mobility.

Stay connected in thousands of places around the world. Get a wireless laptop powered by Intel® Centrino™ mobile technology. Find out more at [intel.com/unwire](http://intel.com/unwire).





# Bill Machrone



## No Second Acts?

Late in life, F. Scott Fitzgerald wrote, “There are no second acts in American lives.” Maybe that was true in his day; if you didn’t make it the first time around, nobody gave you a second chance. But today, people reinvent themselves all the time. And even the most successful aren’t content to rest on their laurels.

The late Eli Callaway, for instance, retired from a Fortune 100 company and founded the successful winery that bears his name. Then he revolutionized golf with his Big Bertha drivers.

Closer to home, Jim Lewis created a DOS program, Tornado Notes, which evolved into the Windows-based personal information manager and freeform database Info Select. Now up to version 8, Info Select is still my favorite environment for note taking and instantaneous retrieval of anything. But Jim is much more than a programmer, and like Callaway, he keeps turning his interests and hobbies into companies.

Unlike many programmers, Lewis is very much involved in the physical world. At one of his start-ups, eMachineShop, you can download a powerful yet straightforward CAD program to design objects. You then specify the material and submit your design to the site, and eMachineShop will price it according to the materials and machining or forming difficulty, along with the number of steps involved in manufacturing and finishing. The available materials range from every imaginable kind of plastic to metals such as aluminum, brass, and steel. You can specify bending, drilling, milling, turning, and various other operations. You can also specify finishes, including plating and powder coating.

The eMachineShop software prices your job on the spot, while the 3D rendering is on your screen. You find out what your part or run of parts will cost you in minutes, not days. When you give the okay, eMachineShop makes your parts and ships them to you. It’s a full-capability fabrication facility that you pay for on an as-needed basis. Customers have created both simple and complex parts; you can see some photos on the site.

Lewis wasn’t content to stop at mechanical fabrication. His goal is to be a one-stop product development facility. “As Amazon is to books I want to be to manufacturing,” he says. Since more and more devices contain electronics, it made sense to offer circuit board fabrication too. You can go to sites like [www.pcbexpress.com](http://www.pcbexpress.com) and order up a run of single-

layer or multilayer circuit boards, but you have to be sufficiently knowledgeable to generate files that will control their drilling and routing equipment.

So Lewis created the Web site Pad2Pad, where you can design your board with simple downloadable software, place parts, run traces, spot holes, and connect layers. Like eMachineShop, Pad2Pad prices your work in advance and actually assembles the boards from a large inventory of parts instead of delivering solder-ready boards.

Of course, Pad2Pad can’t stock all of the millions of electronic components, especially the more esoteric integrated circuits, but it can leave holes or surface-mount pads on the board for you to stuff or solder to. Pad2Pad is still in launch mode, and Lewis is expanding the parts inventory. He plans to connect with a major parts distributor, thus gaining access to just about anything you can put on a circuit board.

I tried a simple circuit, the heart of a distortion pedal for electric guitar. It took me less than an hour to learn the software, lay out the circuit board, and place the parts. Pad2Pad then told me how much the board would cost for 2-, 4-, or 15-day delivery. Start-up costs and quantity discounts are built-in, and with a simple design like mine, ten boards cost only about twice as much as one.

A one-off board is fairly expensive; you’d have to want it badly. But the quantity prices quickly become very reasonable. Suddenly, that 25- or 100-piece manufacturing run seems quite feasible, even tempting. As you increase the number of boards in your order, the number of days for delivery inches up, but you can always pay a premium for fast turnaround.

Designing a part to be machined by eMachineShop is harder, because you have to work in three dimensions. I chose to duplicate a small brass part that I’d recently made on my benchtop milling machine, and I could almost have made one in the time I took to draw it. But if you take shipping costs and a black oxide-plated finish into account, eMachineShop wins hands down when you want quantities.

I often react emotionally to the products I test, but eMachineShop and Pad2Pad stirred something different in me: I felt empowered. This is the stuff that turns dreams into reality

**eMachineShop is a full-capability fabrication facility that you pay for on an as-needed basis.**

**MORE ON THE WEB:** You can contact Bill Machrone at [Bill\\_Machrone@ziffdavis.com](mailto:Bill_Machrone@ziffdavis.com). For more *ExtremeTech* columns, go to [www.pcmag.com/machrone](http://www.pcmag.com/machrone).

**\$59/month** Dedicated Servers  
 1 Terabyte Data Transfer  
 866.856.7147

*"ValueWeb gives me the best balance of reliability and value. Their support is great when I need it and I have never experienced a problem with my servers..."*

**ValueWeb** [www.valueweb.com](http://www.valueweb.com)  
 by **affinity** 866.856.7147  
 Referral Code: 3680

Your One-Stop Hosting Solution

Your servers are hosted in our **Class A** data center

- 4000 servers under management
- 24/7/365 Network, Plant and Access Security
- Four, carrier diverse OC 12 bandwidth circuits
- Telco class climate and power management

**GET MACROMEDIA DREAMWEAVER MX**



When you order any ValueWeb Pro server, you may elect to receive a complimentary copy of Macromedia Dreamweaver MX 2004.

**STARTER**

- Intel 1.7 GHz CPU
- 512MB RAM
- 80 GB IDE Hard Drive
- 1000 GB Data Transfer

*ValueWeb's Price*

Linux  
**\$59/mo**

Windows  
**\$89/mo**

\$99 setup

**BASE**

- Intel 2.4 GHz CPU
- 1024MB RAM
- 80 GB IDE Hard Drive
- 1000 GB Data Transfer

*ValueWeb's Price*

Linux  
**\$99/mo**

Windows  
**\$129/mo**

\$99 setup

**PRO**

- Intel PIV 2.8 GHz CPU
- 1024MB RAM
- 2x80 GB IDE Hard Drive
- 1000 GB Data Transfer

- **Macromedia Dreamweaver MX 2004 Included**

*ValueWeb's Price*

Linux  
**\$145/mo**

Windows  
**\$175/mo**

\$99 setup

Hosting solutions built specifically for small business and web professionals.

**affinity**<sup>®</sup>  
 guiding you to web success

# John C. Dvorak



## Smear Factor

**C**ould Microsoft be behind a smear campaign aimed at Linux? If not Microsoft, then who? Let's look at the continued attacks against Linux. The media is peppered with them. When one starts to die down, another one crops up. While every single one of these assertions is laughable, the never-ending barrage of anti-Linux propaganda has got to take its toll on potential users. Here are a few of the accusations you might find in articles planted here and there in the media.

- Linux is not at all secure and poses a major security risk.
- Linux is not cheap. Despite being free, it actually costs more to implement and maintain.
- Linux is prone to hackers and viruses, because the code is easily available.
- Linux Torvalds didn't write Linux; it is in fact a compendium of old code that was cobbled together.
- Linux is next to impossible to support, because no one company is responsible for it.
- As there are no profits to be made from distributing or supporting Linux, it must die from eventual neglect.
- Much of Linux is stolen proprietary code, and you could be liable if you use it. Furthermore, SCO will sue you if you use it.

This hit-and-run strategy, based on a wide variety of differing complaints, is new to me. In the past, Microsoft attempted various "Astroturf PR campaigns," which mostly failed. An Astroturf campaign is a public relations firm's attempt to create a faux-grassroots movement to support a position, strategy, or product. If Microsoft were, for example, trying to unseat Adobe Photoshop, Microsoft might find a research company supporting the notion that Photoshop is too hard to use and not that powerful a tool. This would be coupled with praise for the Microsoft product from other corners of the media world. The Astroturf campaign would then report that users are bailing out of Photoshop, even though that might be a blatant lie.

Making one of these campaigns work takes a lot of resources and skill, and it has to be secret too. Since I have not been able to spot one for a while, I suspect the basic strategies have changed. We may be witnessing a whole new way of trashing a product—an eclectic assault on all known fronts and even the

creation of some new ones.

One example of creating a new phalanx to support the main thrust is the report that Torvalds did not write Linux and that it's actually a kludge. Here, I believe the main thrust is that Linux is dangerously laced with stolen code, and using it could ruin your company. All the other arguments against Linux have fallen on deaf ears, and this is the main negative message. All the new messages support this theme but never actually mention it.

You thus get the weird report by the folks at the Alexis de Tocqueville Institution (AdTI) that Torvalds slapped Linux together from old bits and pieces of possibly stolen code. This could be a subtle effort to support the notion that Linux might be illegal to use. Where there's smoke, there's fire. First SCO, then this!

Nobody I know has proved that the AdTI was taking money from Microsoft, but a lot of critics are making the claim. And if you look at the institute's Web site, you have to wonder what Linux has to do with anything else these folks do. It seems off the wall; thus, it's suspicious.

Microsoft's goal is to make companies take a wait-and-see approach to any decision to use Linux. If that happens, Microsoft wins.

The problem is that the strategy must be pursued unrelentingly. It's not as if the competition can be destroyed; Linux is like a *Night of the Living Dead* zombie that cannot be killed. It can only be slowed down. Thus, the anti-Linux forces will have to invent more and more concepts like the Linux/Torvalds code ploy to keep the pressure on.

A killer virus that destroys large Linux facilities such as Google would surely be a setback for Linux. Microsoft, however, knows from past experiences that it could easily be discovered as the culprit, which would ruin the company. So what we are bound to see is more and more of the subtle, sniping, guerrilla ploys that do not amount to much individually but collectively do a lot of damage. The best ones won't even be associated with Microsoft but will look as if they have emerged spontaneously from within the Linux user community. It should be fun to watch.

**Linux is like a *Night of the Living Dead* zombie that cannot be killed. It can only be slowed down.**

**MORE ON THE WEB:** Read John C. Dvorak's column every Monday at [www.pcmag.com/dvorak](http://www.pcmag.com/dvorak). You can reach him directly at [pcmag@dvorak.org](mailto:pcmag@dvorak.org).



Visionary **by design.**

1. Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points limited. 2. Gigabyte (GB) means  $1,000 \times 1,000 \times 1,000 = 1,000,000,000$  bytes using powers of 10. The computer operating system, however, reports storage capacity using powers of 2 for the definition of  $1 \text{ GB} = 1,024 \times 1,024 \times 1,024 = 1,073,741,824$  bytes, and therefore may show less storage capacity. Available storage capacity will also be less if the product includes pre-installed operating system and/or application software. Actual formatted capacity may vary. 3. Small bright dots may appear on your TFT display when you turn on your PC. Your display contains an extremely large number of thin-film transistors (TFT) and is manufactured using high-precision technology. Any small bright dots that may appear on your display are an intrinsic characteristic of the TFT manufacturing technology. 4. Due to FCC limitations, speeds of 53Kbps are the maximum permissible transmission rates during download. Actual data transmission speeds will vary depending on line conditions. 5. For limited warranty terms see [www.warranty.toshiba.com](http://www.warranty.toshiba.com). 6. Three months of AOL membership included with the purchase of a Toshiba Satellite or Satellite Pro PC. Availability may be limited, especially during peak times. TO AVOID BEING CHARGED A MONTHLY MEMBERSHIP FEE, SIMPLY CANCEL BEFORE THREE MONTH PROMOTIONAL PERIOD ENDS. Premium services carry surcharges, and communication surcharges may apply, including in Alaska, even during promotional period. Members may incur telephone charges on their phone bill, depending on their location and calling plan, even during promotional period. Available to new AOL members in the United States, age 18 or older; a major credit card or checking account is required. 7. 30-month lease offer with fair market value end-of-term purchase option available through Toshiba America Information Systems, Inc. to qualified commercial business customers only. Each lease subject to credit approval, acceptable documentation, 10% soft cost limit and order of Toshiba computer products of \$1,500 up to \$100,000 (exclusive of



## New Satellite® M35-S456 Special Edition

**Advanced graphics. Exceptional sound.**

- **Power** Intel® Centrino™ Mobile Technology delivers greater processing power on the go
- **Fidelity** Built-in Harman Kardon® speakers deliver dynamic sound
- **Flexibility** Burn movies or data with the DVD SuperMulti drive that supports DVD-R/RW, DVD+R/+RW and DVD-RAM formats
- **Functionality** Monitor-in port allows easy connection of digital cameras or game consoles
- **Perspective** View DVD movies with theater style or work on extra wide spreadsheets on the 15.4" diagonal WXGA display
- **Clarity** With TruBrite™ screen technology for exceptional image brightness and the High-quality Video Engine for superior video playback — experience higher contrast, smoother motion, richer color and greater detail



Simulated With TruBrite™



Simulated Without TruBrite™

# TOSHIBA

**Toshiba recommends Microsoft® Windows® XP Professional for Mobile Computing.**

**New Satellite® M35-S456 Special Edition**  
 Intel® Centrino™ Mobile Technology

- Intel® Pentium® M processor 735 (1.70GHz processor, 2MB L2 cache, 400MHz FSB)
- Intel® 855 chipset
- Integrated Wireless LAN: Intel® PRO/Wireless Network Connection (802.11b/g)<sup>1</sup>

Microsoft® Windows® XP Home  
 Microsoft® Office OneNote™ 2003  
 A \$199 value (MSRP)

512MB DDR SDRAM  
 80GB<sup>2</sup> hard drive  
 DVD SuperMulti optical drive  
 15.4" diagonal WXGA TFT<sup>3</sup> display with TruBrite™ screen technology  
 Toshiba High-quality Video Engine  
 NVIDIA® GeForce™ FX Go5200 with 64MB video memory  
 10/100 Ethernet and V.92/56K modem<sup>4</sup>  
 Limited warranty: 1-year parts and labor  
 1-year battery<sup>5</sup>  
 Toshiba ConfigFree™ software  
 Three months of AOL® membership<sup>6</sup>  
 Part #: PSM33U-001001

### Included with every Toshiba notebook:

Integrated wireless  
 Proprietary ConfigFree™ networking software  
**FREE Microsoft® Office OneNote™ 2003 (a \$199 value)**  
 Quick-return UPS repair service

**\$1,999** | Lease for as low as \$66.63 per month<sup>7</sup>

Jump Code: JAGC-M35S456

### Popular Upgrades:

Toshiba 12-Cell High Capacity Li-Ion Battery Pack \$149  
 3-Year SystemGuard® Protection + 2nd/3rd Year Warranty Extension \$199

## Free shipping<sup>8</sup>

if you order by phone or online using offer code MAGC by August 31.

**toshibadirect.com/pcmag804b**

**Call 877-850-2451.**

**Or visit a reseller or retailer near you.**

taxes, fees and shipping). Rates quoted do not include taxes or shipping. Offer available in the United States only, valid only until 8/31/04 and may be withdrawn or changed at any time without notice or obligation. Other terms and conditions apply. For full description of terms and conditions call 1-800-207-8362 or go to [www.augustzerorelease.toshiba.com](http://www.augustzerorelease.toshiba.com). 8. Free ground shipping on new notebook orders of \$999 or more via [toshibadirect.com](http://toshibadirect.com) or by calling 877-850-2451. Enter code MAGC during online checkout or mention code MAGC when placing orders via phone. Offer valid from June 22, 2004 through August 31, 2004.

Satellite, and SystemGuard are registered trademarks and ConfigFree and TruBrite are trademarks of Toshiba America Information Systems, Inc. and/or Toshiba Corporation. Intel, Centrino, Intel Inside, Pentium, the Intel Centrino logo, and the Intel Inside logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks and OneNote is a trademark of Microsoft Corporation in the United States and/or other countries. NVIDIA and GeForce are registered trademarks or trademarks of NVIDIA Corporation in the United States and/or other countries. All other trademarks are the property of their respective owners. Product specifications, configurations, prices, system/component/options availability are all subject to change without notice. Reseller/Retailer pricing may vary. © 2004 Toshiba America Information Systems, Inc. All rights reserved.

Performance plus style. Power plus elegance.

# Exclusive combinations of features and software

you won't find anywhere else.



**New Satellite® A60-S166**  
**Power for the road.**  
**Relief for your budget.**

Mobile Intel® Pentium® 4 processor 518 supporting Hyper-Threading Technology (2.80GHz processor, 1MB L2 cache, 533MHz FSB)  
 Microsoft® Windows® XP Professional  
 Microsoft® Office OneNote™ 2003  
 A \$199 value (MSRP)  
 256MB DDR SDRAM  
 40GB<sup>1</sup> hard drive  
 DVD/CD-RW  
 15" diagonal active-matrix TFT<sup>2</sup> display  
 ATI® mobility Radeon™ 7000 IGP with 64MB shared video memory  
 Integrated Wi-Fi® (802.11b/g),<sup>3</sup> 10/100 Ethernet and V.92/56K modem<sup>4</sup>  
 Limited warranty: 1-year parts and labor, 1-year battery<sup>5</sup>  
 Toshiba ConfigFree™ software  
 Three months AOL® membership<sup>6</sup>  
 Part #: PSA60U-01G01D



**Tecra® M2V-S330**  
**Long-lasting performance**  
**for road warriors.**

Intel® Centrino™ Mobile Technology  
 – Intel® Pentium® M processor 1.50GHz  
 – Intel® 855 chipset  
 – Integrated Wireless LAN:  
 Intel® PRO/Wireless Network Connection (802.11b/g)<sup>3</sup>  
 Microsoft® Windows® XP Professional  
 Microsoft® Office OneNote™ 2003  
 A \$199 value (MSRP)  
 256MB DDR SDRAM  
 40GB<sup>1</sup> hard drive  
 Slim SelectBay® DVD-ROM/CD-RW  
 14.1" diagonal XGA TFT<sup>2</sup> display  
 Intel® Extreme Graphics 2  
 10/100 Ethernet and V.92/56K modem<sup>4</sup>  
 Limited warranty: 3-year parts and labor, 1-year battery<sup>5</sup>  
 Toshiba ConfigFree™ software  
 Part #: PTM2VU-000HK8



**New Tecra® A2-S336**  
**Performance and adaptability**  
**for business.**

Intel® Centrino™ Mobile Technology  
 – Intel® Pentium® M processor 715 (1.50GHz processor, 2MB L2 cache, 400MHz FSB)  
 – Intel® 855 chipset  
 – Integrated Wireless LAN:  
 Intel® PRO/Wireless Network Connection (802.11b/g)<sup>3</sup>  
 Microsoft® Windows® XP Professional  
 Microsoft® Office OneNote™ 2003  
 A \$199 value (MSRP)  
 512MB DDR SDRAM  
 60GB<sup>1</sup> hard drive  
 DVD-ROM/CD-RW  
 15" diagonal XGA TFT<sup>2</sup> display  
 Intel® Extreme Graphics 2 with up to 64MB dynamic VRAM  
 10/100 Ethernet and V.92/56K modem<sup>4</sup>  
 Limited warranty: 3-year parts and labor, 1-year battery<sup>5</sup>  
 Toshiba ConfigFree™ software  
 Part #: PTA20U-02H01F



**Tecra® M2-S630**  
**The business workhorse**  
**engineered for longevity.**

Intel® Centrino™ Mobile Technology  
 – Intel® Pentium® M processor 1.70GHz  
 – Intel® 855 chipset  
 – Integrated Wireless LAN:  
 Intel® PRO/Wireless Network Connection (802.11b/g)<sup>3</sup>  
 Microsoft® Windows® XP Professional  
 Microsoft® Office OneNote™ 2003  
 A \$199 Value (MSRP)  
 512MB DDR SDRAM  
 60GB<sup>1</sup> hard drive  
 Slim SelectBay® DVD-ROM/CD-RW  
 14.1" diagonal XGA TFT<sup>2</sup> display  
 NVIDIA® GeForce™ FX Go200 with 64MB video memory  
 10/100/1000 Ethernet and V.92/56K modem<sup>4</sup>  
 Toshiba ConfigFree™ software  
 Limited warranty: 3-year parts and labor, 1-year battery<sup>5</sup>  
 Part #: PTM20U-0PMGV8

Included with every Toshiba notebook: Integrated wireless • Proprietary ConfigFree™ networking software • FREE Microsoft® Office OneNote™ 2003 (a \$199 value)

**\$1,249**

Lease for as low as \$41.63 per month<sup>7</sup>

Jump Code: JAGC-A60S166

**Popular Upgrades:**

Additional Toshiba 120W Global AC Adapter \$99

3-Year SystemGuard® Protection +2nd/3rd Year Warranty Extension \$199

**\$1,499**

Lease for as low as \$49.97 per month<sup>7</sup>

Jump Code: JAGC-M2VS330

**Popular Upgrades:**

Toshiba 12-Cell High Capacity Li-Ion Battery Pack \$169

3-Year SystemGuard® Protection \$99

**\$1,599**

Lease for as low as \$53.30 per month<sup>7</sup>

Jump Code: JAGC-A2S336

**Popular Upgrades:**

Toshiba 12-Cell High Capacity Li-Ion Battery Pack \$169

3-Year SystemGuard® Protection \$99

**\$1,899**

Lease for as low as \$63.30 per month<sup>7</sup>

Jump Code: JAGC-M2S630

**Popular Upgrades:**

Toshiba Port Replicator \$199

3-Year SystemGuard® Protection \$99

1. Gigabyte (GB) means 1,000 x 1,000 x 1,000 = 1,000,000,000 bytes using powers of 10. The computer operating system, however, reports storage capacity using powers of 2 for the definition of 1 GB = 1,024 x 1,024 x 1,024 = 1,073,741,824 bytes, and therefore may show less storage capacity. Available storage capacity will also be less if the product includes pre-installed operating system and/or application software. Actual formatted capacity may vary. 2. Small bright dots may appear on your TFT display when you turn on your PC. Your display contains an extremely large number of thin-film transistors (TFT) and is manufactured using high-precision technology. Any small bright dots that may appear on your display are an intrinsic characteristic of the TFT manufacturing technology. 3. Wireless connectivity and some features may require you to purchase additional software, services or external hardware. Availability of public wireless LAN access points limited. 4. Due to FCC limitations, speeds of 53Kbps are the maximum permissible transmission rates during download. Actual data transmission speeds will vary depending on line conditions. 5. For limited warranty terms see www.warranty.toshiba.com. 6. Three months of AOL membership included with the purchase of a Toshiba Satellite or Satellite Pro PC. Availability may be limited, especially during peak times. TO AVOID BEING CHARGED A MONTHLY MEMBERSHIP FEE, SIMPLY CANCEL BEFORE THREE MONTH PROMOTIONAL PERIOD ENDS. Premium services carry surcharges, and communication surcharges may apply, including in Alaska, even during promotional period. Members may incur telephone charges on their phone bill, depending on their location and calling plan, even during promotional period. Available to new AOL members in the United States, age 18 or older; a major credit card or checking account is required. 7. 30-month lease offer with fair market value end-of-term purchase option available through Toshiba America Information Systems, Inc. to qualified commercial business customers only. Each lease subject to credit approval, acceptable documentation, 10% soft cost limit and order of Toshiba computer products of \$1,500 up to



**Portégé® M200 Tablet PC**  
**Superior engineering.**  
**Superior versatility.**

Intel® Centrino™ Mobile Technology  
 – Intel® Pentium® M processor 1.50GHz  
 – Intel® 855 chipset  
 – Integrated Wireless LAN:  
 Intel® PRO/Wireless Network  
 Connection (802.11b/g)<sup>3</sup>  
 Microsoft® Windows® XP Tablet Edition  
 Microsoft® Office OneNote™ 2003  
 A \$199 value (MSRP)  
 512MB DDR SDRAM  
 60GB<sup>1</sup> hard drive  
 Optional USB DVD/CD-RW, only \$299  
 12.1" diagonal SXGA+ polysilicon TFT<sup>2</sup> display  
 NVIDIA® GeForce™ FX Go5200  
 with 32MB video memory  
 Integrated 10/100 Ethernet and  
 V.92/56K modem<sup>4</sup>  
 Limited warranty: 3-year parts and labor,  
 1-year battery<sup>5</sup>  
 Toshiba ConfigFree™ software  
 Part #: PPM20U-07UGR4

• **Quick-return UPS repair service**

**\$2,199** | Lease for as low as  
 \$73.30 per month<sup>7</sup>

Jump Code: JAGC-M200

**Popular Upgrades:**  
 Toshiba Tablet Multi Dock \$329

3-Year SystemGuard® Protection \$99



**Toshiba recommends Microsoft®  
 Windows® XP Professional for  
 Mobile Computing.**

**New Satellite® A60-S1662**  
**The features you need. The price you want.**

Intel® Celeron® D processor 325  
 (2.53GHz processor, 256K L2 cache, 533MHz FSB)  
 Microsoft® Windows® XP Home  
 Microsoft® Office OneNote™ 2003  
 A \$199 value (MSRP)  
 256MB DDR SDRAM  
 30GB<sup>1</sup> hard drive  
 DVD/CD-RW  
 15" diagonal XGA TFT<sup>2</sup> display  
 ATI® mobility Radeon™ 7000 IGP with  
 64MB shared video memory  
 Integrated Wi-Fi® (802.11b/g),<sup>3</sup> 10/100 Ethernet  
 and V.92/56K modem<sup>4</sup>  
 Limited warranty: 1-year parts and labor,  
 1-year battery<sup>5</sup>  
 Toshiba ConfigFree™ software  
 Three months AOL® membership<sup>6</sup>  
 Part #: PSA60U-01V01E

**\$999** | Lease for as low as  
 \$33.30 per month<sup>7</sup>

Jump Code: JAGC-A60S1662

**Popular Upgrades:**  
 Toshiba 12-Cell High Capacity Li-Ion Battery Pack \$169  
 3-Year SystemGuard® Protection + 2nd/3rd Year Warranty  
 Extension \$199

**Free shipping<sup>8</sup>**  
 if you order by phone or online using  
 offer code MAGC by August 31.  
**toshibadirect.com/pcmag804b**

**Call 877-850-2451.**

**Or visit a reseller  
 or retailer near you.**

**TOSHIBA**

\$100,000 (exclusive of taxes, fees and shipping). Rates quoted do not include taxes or shipping. Offer available in the United States only, valid only until 8/31/04 and may be withdrawn or changed at any time without notice or obligation. Other terms and conditions apply. For full description of terms and conditions call 1-800-207-8362 or go to www.augustzerolease.toshiba.com. 8. Free ground shipping on new notebook orders of \$999 or more via toshibadirect.com or by calling 877-850-2451. Enter code MAGC during online checkout or mention code MAGC when placing orders via phone. Offer valid from June 22, 2004 through August 31, 2004.

Portégé, Satellite, Tecra, Slim Select/Bay and SystemGuard are registered trademarks and ConfigFree is a trademark of Toshiba America Information Systems, Inc. and/or Toshiba Corporation. Intel, Celeron, Centrino, Intel Inside, Pentium, the Intel Centrino logo, and the Intel Inside logo are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks and OneNote is a trademark of Microsoft Corporation in the United States and/or other countries. Wi-Fi is a registered certification mark of the Wi-Fi Alliance. NVIDIA and GeForce are registered trademarks or trademarks of NVIDIA Corporation in the United States and/or other countries. All other trademarks are the property of their respective owners. Product specifications, configurations, prices, system/component/options availability are all subject to change without notice. Reseller/Retailer pricing may vary. © 2004 Toshiba America Information Systems, Inc. All rights reserved.

MPC recommends Microsoft® Windows® XP Professional for Business.



# The Reviews Are In

Introducing the ClientPro® All-in-One™ desktop PC.

## EDITORS CHOICE AWARD

*"Attractive, space-saving design; strong performer for an all-in-one."*

-CNET, Oct 10, 2003

*"...looks like an ordinary 17-in LCD monitor, but it's so much more."*

-PC MAGAZINE, Nov 25, 2003

*"The system measures 17.3-inches tall and 8-inches thick – compact indeed"*

-GOVERNMENT COMPUTER NEWS, Oct 27, 2003

*Top Business Products, 2003*

-ZDNET, Dec 22, 2003

*"This model is a sleek, space-saving alternative"*

-PCWORLD.COM, Nov 7, 2003

*"...the system components are packed into a sleek brushed-aluminum closure."*

-CRN, Oct 13, 2003

*"...stylish, indeed."*

-FEDERAL COMPUTER WEEK, SEPT 15, 2003



17" ALL-in-ONE  
STARTING AT

\$ **1649**

**m**pc  
COMPUTERS

CALL **1-888-208-2607** VISIT [www.mpccorp.com/pcmag412](http://www.mpccorp.com/pcmag412)

©2004 MPC Computers, LLC. All rights reserved. MPC Computers, LLC is not responsible for omissions or errors in typography or photography. All purchases are subject to availability. Prices and specifications may be changed without notice; prices do not include shipping and handling and any applicable taxes, unless specifically required to be included under applicable contract. Seller's return policy does not include return freight and original shipping/handling charges, and all return and warranty periods begin from the date a product is shipped, not when it arrived. A restocking fee may be charged upon the return of a product. All sales are controlled by seller's current terms and conditions of sale, and contract terms and conditions as applicable. Copies of seller's terms and conditions of sale and contract terms are available on seller's website or from its sales representatives. On-site service is provided at sole discretion of MPC Computers, LLC. A diagnostic determination for on-site service must be made by a MPC service technician prior to the provision of on-site service. On-site service is provided by a third-party service provider under a separate service contract between you and the service provider. Intel, Intel Inside, Intel Inside logo, Intel Centrino, Intel Centrino logo, Celeron, Intel Xeon, Intel Speedstep, Itanium, Pentium and Pentium III Xeon are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Microsoft and Windows are registered trademarks of Microsoft Corporation. Product names of MPC products are trademarks or registered trademarks of MPC Computers, LLC. Other product names used in this publication are for identification purposes only and may be trademarks of their respective companies. Note: Advertised configurations may differ from award-winning configurations. \*Reprinted from PC Magazine, November 25, 2003. ©2003 Ziff Davis Media, Inc. All Rights Reserved.



# Inside Track

**S**trange Bedfellows Dept.: Ever since Microsoft dropped \$1.6 to 1.95 billion (depending on whom you ask) into the coffers of Sun Microsystems, the business press has been mostly mum on the topic. Microsoft forked over the sum for a patent exchange and the prevention of further litigation and **harassment** by Sun regarding Microsoft business practices (as well as other considerations). Among the benignly uncritical media, the most egregious offender could well be CNET News.com, which hailed the deal with the ludicrous headline “Microsoft-Sun deal signals respect for patents.” Laughable.

Just because Microsoft lost some ground with the Justice Department and European Union rulings doesn't mean that the company has **suddenly become soft** when it comes to competition. Everything Microsoft does contains some element of highly competitive behavior to promote sales. Why would this be different? What's this deal really all about?

We know that **nearly \$2 billion is far too much money** to throw away only to swap some code and make friends. The Windows OS and Sun's StarOffice Suite are the only products generating money that dwarfs this settlement. The word on the message boards is that Sun will do Microsoft a favor and dump StarOffice. Sun will also pull all of its support from the less popular OpenOffice product.

Over the past year, Sun has made **big gains with this product** in Asia. China plans to take perhaps a million Linux/StarOffice systems. And in a heated battle in Thailand that pitted a Microsoft Windows/Office machine against a Linux/StarOffice machine, Linux and StarOffice won a huge bid—even though **Microsoft dropped the price** of its software to \$40. Since dumping is not allowed in the bidding, Microsoft had to show that it profited from selling its \$500-to-\$600 software package at \$40.

This event was not lost on the U.S. investment community, and it raised eyebrows. Microsoft knows that the price cut may have damaged its goal of keeping prices **artificially high** and banking the profits. And Microsoft doesn't need any more of this aggravation, so it made the deal with Sun.

**Everyone** in the Sun community knows that StarOffice **does not fit in** with anything else Sun does and that the product has always been used to harass Microsoft. For \$2 billion, Sun will gladly get out of the software game.

**The agreement may squash another possible deal.** Sun had been talking to Apple about porting StarOffice to the Mac. Apple CEO Steve Jobs is sick of dealing with Microsoft, and he still grinds his teeth over Microsoft's relentless **copying of Apple ideas**.



**With McNealy in bed with Microsoft, you can be certain that any super office suite on the Mac is finito.**

Apple was poised to make a deal with StarOffice whereby Apple could get the source code to develop a jazzy office suite using its world-class design team.

With OpenOffice, the company would be stifled by the open-licensing restrictions. Now with Scott McNealy in bed with Microsoft, you can be certain that any super office suite on the Mac is finito. And you can expect Microsoft to put Apple on the future-upgrades slow track **for even thinking about it**. Microsoft began hinting that it was already unhappy with Office's Mac sales. This is the warning that puts Apple in the penalty box. Microsoft will use this phony excuse to punish Apple.

**That leaves Linux.** Although Sun bundled Linux with StarOffice in its Asian deals, McNealy hates Linux. He thinks everyone should use Solaris. He used Linux only to attract the winning bid. Like anyone **mired in the minicomputer era**, he doesn't understand Linux, and accidentally showed how a Linux-centric bid would have easily beaten any Solaris option in competition. But if he didn't have to beat Microsoft, he'd put Solaris in the mix and stick with it. This **stupidity** is killing Sun, but it's fine with Microsoft.

The common thread is Java, which is part of the Microsoft licensing deal. Java is critical to the success of Linux. If Sun and Microsoft both hate Linux, how hard would it be to **pull a Microsoft** and de-optimize Java for Linux? You watch.

**The kicker.** Much of this may be moot, as recent events show Sun getting in bed with Fujitsu too. The Japanese companies are **hungry to buy out** American technology firms—or their large divisions, just as Hitachi did with the IBM disk drive business. Fujitsu has been independently developing SPARC technology and may have actually **surpassed** Sun in expertise.

At a recent Sun event in Shanghai, the company swooned over its future with Fujitsu on next-generation products (many Fujitsu-designed). Someone in the audience said that this sort of arrangement usually results in joint ventures and a new corporate entity. McNealy said that this was not the case here. Why not? The only reason I can think of is that the real work is a **full-blown merger, with Fujitsu** essentially taking over Sun. The \$2 billion in the bank from Microsoft is there partly to make Sun's books look better to Fujitsu shareholders.

Nobody gives the Sun board of directors much credit for being anything more than **McNealy's lap-dogs**, so unless this idea comes from him, it won't happen. McNealy has been reluctant to do a merger lest he lose his job. But it **would make sense** to take the money from Microsoft, spin off StarOffice and Java development, and leave Microsoft in bed with Fujitsu—\$2 billion short. Now that would be funny.

# TURBOCHARGE YOUR COMPUTER SPEED



## Get optimum performance from every server and workstation across your network - *automatically*

Your car needs routine maintenance to keep performing at peak operation—so does your computer. Just as you would never run your car without oil, you shouldn't even think about running your computers without an automatic defragmenter.

Fragmentation rapidly corrodes the performance of every single computer on your network. Without regularly scheduled disk defragmentation, even your most expensive system will slow down and eventually crash.

**Diskeeper® 8.0** Set It and Forget It® disk defragmenter restores computer speed to like-new and keeps it that way automatically, in the background, and unnoticed by users. With Diskeeper, your computers always run at optimum performance!

## Diskeeper Turbo-boosting features:

- Very fast defragmentation engine
- Quickly defragments very large server volumes
- Boot time defrag safely defragments critical system files
- Smart scheduling defragments disks when needed
- Set It and Forget It scheduling runs when you want it to
- Customizable priority settings

“Disk fragmentation can cause performance problems. You should consider running a defragmentation program on a regular basis.”

– Microsoft Windows NT Server Resource Guide\*



**Turbo boost your performance –  
Get Diskeeper today!**

**[www.diskeeper.com/pm89](http://www.diskeeper.com/pm89)  
or call 1-800-829-6468 x4283**  
for more info and free 30-day trialware.



©2004 Executive Software International. All Rights Reserved. DISKEEPER, SET IT AND FORGET IT, EXECUTIVE SOFTWARE and the Executive Software logo are registered trademarks or trademarks of Executive Software International, Inc. in the United States and/or other countries. All other trademarks and brand names are the property of their respective owners. \*Reproduced by permission of Microsoft Press. Executive Software International, Inc. • 7590 N. Glenoaks Blvd. Burbank, CA 91504 • 800-829-6468 • [www.executive.com](http://www.executive.com)

# Bill Howard



## Time for the Internet Boom Box

**W**hen you're listening to music at the beach with friends, odds are you're using the same device your parents and their friends did when they were young: a battery-powered radio. Maybe it's time for something new: the Internet boom box.

Ever since transistors first made battery-powered portable radios possible, people have taken to toting their music along with them. FM soon overtook AM in popularity; meanwhile radio was augmented by cassette tape and later by CD (both of which are sensitive to blowing sand). People have carried around headphones and stereo tape players since the advent of the Sony Walkman 25 years ago; they've toted portable CD players for nearly 20 years and portable MP3 players for the past 5.

Over the next year, expect to see the Internet boom box arrive as a product category for mid- to high-end music fans. A handful are already out, including products from Linksys and Philips.

At the heart of an Internet boom box is a wireless or wired Ethernet connection, so you can tune in to thousands of Internet radio stations, as well as music-for-hire services such as AOL Radio or Rhapsody. This is great for streaming music in the backyard, but not so good on, say, the beaches of Cape Cod (unless you can place a wireless access point atop the Truro lighthouse).

Maybe your apartment complex could lure new residents with wireless access points for poolside laptop users and music enthusiasts. I'm not saying it's right (in the involved-parent sense) to use your laptop by the pool, but sometimes it's necessary, as when the kids are dying to go swimming but you'll get in trouble at work if you don't keep up with your overflowing e-mail in-box.

There will be times when you can't connect to the Internet for music. The ideal device, therefore, will also have at least an AM/FM radio tuner. (Weather band is nice too; the weather is a lot more important at the beach or on the patio than in the office.) It ought to have a line-in jack to play music from an external MP3 player. It could have a player for MP3/WMA discs as well; such mechanisms don't cost much.

And the device should have decent speakers. The biggest speakers aren't always the best-sounding.

The first Internet boom box actually appeared prior to the high-tech meltdown of 2001. Remember

the Kerbango Internet Radio? That was a 4-pound, battery-powered, \$300 AM/FM/Internet radio boom box created by former Apple and Power Computing execs, then sold to 3Com; Kerbango folded without ever making any market impact. It was ahead of its time—before the widespread adoption of broadband Internet access, before wireless Ethernet—and giving up your phone line for dial-up Web access (Kerbango's fallback option) just wasn't realistic.

Currently there are a few Internet boom boxes but not a flood, and they require a wall outlet for power (no batteries except in the remotes). The most complete is the Philips MCi250 Wireless Broadband Internet Micro HiFi System (\$280 street). It streams Internet radio through the Live365 service, streams music off your PC's hard drive, and plays AM/FM radio, CDs, and MP3 CDs. This is another amazing product from one of the world's most technically savvy (if not U.S. market-savvy) companies.

Then there's the Linksys Wireless-B Music System WMLS1B (\$150 street), which plays Internet radio, offers the optional Rhapsody music service, and streams music off your hard drive. But the jumble of wires in back means this is more a unit for occasionally moving from room to room inside the house.

You might look into satellite radio boom boxes, which aren't constrained by proximity to access points. For Sirius, consider the Audiovox SIRBBI (\$100); for XM, try the Delphi SKYFi Audio System (\$100) or CD Audio System (\$200). The pricier Delphi SKYFi tunes AM/FM and plays MP3 CDs. All work off batteries, and each needs a plug-in satellite tuner module (\$100, plus \$10 to \$13 a month).

If you want to play digital music right outside your home, you should install a second wireless access point near the backyard or patio to improve the signal. Most houses benefit from two access points.

For a traditional radio/CD boom box, choose one that plays MP3 CDs (possibly WMAs too) and has line-in jacks for portable MP3 players. You have enough choices to be picky. Also see whether your MP3 player offers a dedicated speaker dock. There are several for the Apple iPod, and the Cambridge SoundWorks PlayDock PD200 (\$200) is available for the Creative Nomad Jukebox and Jukebox Zen players.

**Maybe your apartment complex could lure residents with wireless access points for poolside music enthusiasts.**

**MORE ON THE WEB:** You can contact Bill Howard directly at [bill\\_howard@ziffdavis.com](mailto:bill_howard@ziffdavis.com). For more On Technology columns, go to [www.pcmag.com/howard](http://www.pcmag.com/howard).

# SOLUTIONS

MAKING TECHNOLOGY WORK FOR YOU

## Digitize Your Home Movies

Transferring old 8-mm or Super 8 home movies to digital format can produce surprisingly good results. **BY JAN OZER**

**N**owadays, working with video on a computer, in the form of digital video, is relatively simple. That may not be much of a comfort, however, if you're staring at several hours of Super 8 film and contemplating digitizing your home movies. Nevertheless, we decided to give this a try, converting the analog footage ourselves, using a prosumer and a consumer DV camera. We also had two service bureaus convert the footage. We discuss the results online ([www.pcmag.com/footageconversion](http://www.pcmag.com/footageconversion)).

Let's walk through the process of digitizing video shot on 8-mm and Super 8 film to DV format. During the transfer, you'll use a film projector to display the footage and a DV camera to videotape it. Since most DV cameras can also output DV while shooting, you can transfer the output simultaneously to your computer, eliminating capture as a separate step. You'll need plenty of disk space, as each 50-foot film roll contains 3 to 4 minutes of video and requires about 750MB of storage space (about 13GB per hour of film). If you want to archive the unedited film directly on DV tape, as we did, you'll also need plenty of DV tapes; count on storing about 13 to 15 film rolls per 60-minute tape.

Other requirements include a tripod, a FireWire cable, and a large white posterboard to use as a projection screen. Pick up a power strip if you don't have one handy and a small paintbrush to clean dust from the projector lens. Consider buying



**FIGURE 1:** The change from old to new technology is apparent in this photo showing a film projector on the worktable and a DV camera on a tripod on the left.

a new bulb for your projector as well.

You can speed up the process by consolidating your 50-foot films onto 7-inch reels ahead of time. Each reel holds about 400 feet. At the least, get the film in chronological order, which will simplify editing later. And play one or two films to gauge their condition. If stored properly, even 50-year-old films should be in good condition, but if there is dirt, mildew, or other damage, you'll want to clean that off beforehand.

With the projector off, clean all optical components with glass cleaner sprayed on a soft, clean cloth, or pick up a lens brush at your local camera shop or drugstore. If there is dust or grime in the picture frame, brush it out with the paintbrush, something you'll do frequently during production. If you have to handle the bulb, use cotton gloves or a towel; finger oil can cause the bulb to explode.

Your workroom should be windowless or have drapes that can block all light. Because placement of the projector and camera must be very precise, a concrete floor is preferable to a wooden floor, which can vibrate. You'll need a flat section of a wall for the posterboard, and enough space between your worktable and the wall (about 7-feet in our tests) for the projected image to be about 13 by 10 inches.

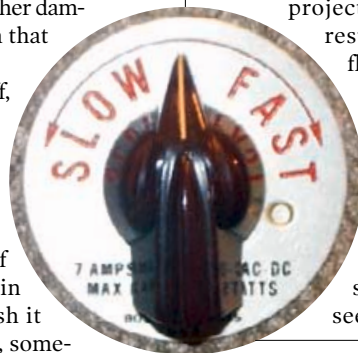
Set up the projector so it shoots directly onto the posterboard, and position the camera beneath the projector and as close to it as possible. (We set up the projector on the edge of the worktable and put the camera on a tripod just beneath the projector; see Figure 1.) Try to set up the projector so you have easy access to the film-loading side, because otherwise you might pull out your back leaning over to thread the film 80 times in 6 hours. Place your computer on the same table, with your mouse near the projector controls.

There are fundamental differences between film and video. Generally, 8-mm film was shot at about 16 frames per second (fps) and Super 8 at about 18 fps. Most home projectors use a three-shutter system, which displays each frame three times. This means 48 on-screen images per second for 8 mm film or 54 for Super 8.

Your DV camera, by contrast, uses two interlaced fields per frame, one containing the odd scan lines and the other containing the even lines. It captures images at 60 fields per second (30 frames per second  $\times$  2 fields). Unless you synchronize the film projector and the camera, the

resulting video is going to flicker, because some of the fields will catch one of the projector's shutters in operation, and those fields will be darker than the rest.

Even with the DV camera set at a slow shutter speed, you won't see the projector's shutter,



**FIGURE 2:** Most film projectors' variable-speed adjusters do not specify speeds on their dials, but it's easy enough to find the right setting to eliminate flicker.

**56** **OFFICE:**  
Protect  
document  
styles.

**58** **SECURITY  
WATCH:**  
School  
safety.

**60** **INTERNET  
PROFESSIONAL:**  
Macromedia  
Central.

**62** **INTERNET  
BUSINESS:**  
Inside the  
IMDb.

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



**FIGURE 3:** To ensure correct focus, it is useful to zoom in on sample text placed at the distance of the screen.

because it's moving faster than the camera can capture it, just as you can't see the individual blades in a fast-moving fan. But it will darken the field just enough to produce the flickering effect.

To minimize flicker, set your shutter speed to 1/60 second, and adjust the projector speed to either 20 fps, which produces 60 images per second, or 10 fps, which produces 30 images per second. Most projectors have variable-speed adjusters without defined speeds (Figure 2), so during conversion, you simply adjust the speed until the flicker disappears.

If you can't set the shutter speed of your camera manually, you may want to rent or borrow one with this capability. Otherwise, the conversion may not be worth doing, as the flicker will be too distracting.

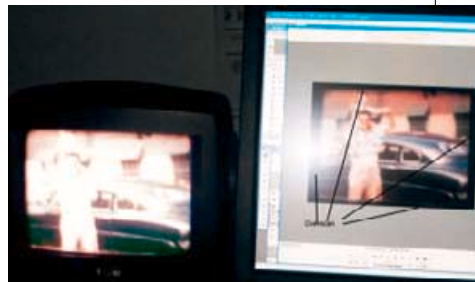
Setting white balance is critical. Different light sources have distinct color temperatures, which highlight certain colors when illuminating a scene. White-balance procedures vary from camera to camera but typically involve zooming in to a white object until it fills the screen and then pressing the appropriate control. This tells the camera that the object is white, allowing the camera to correct for the lighting.

If your camera has manual white-balance controls, set the white balance with the lights off and the projector running with no film, simply projecting a white image against the posterboard. If it doesn't, set the white balance to indoors or incandescent, even if the film you'll be converting was shot outdoors; even though the landscape in the film may have been sunlit, the predominant light in the image you're actually recording is produced by the tungsten incandescent bulb in the projector.

Exposure settings regulate the amount of light that enters the lens. Most camcorders have both manual and automatic controls. We tested manual mode but found it difficult to make the frequently required adjustments without shaking the camera, so we used automatic exposure for all conversions and got good results.

We used manual focus, since autofocus would have attempted to adjust for fuzzy images on-screen. To get set up for the best focus, we hung an image with text on the posterboard before shooting, then zoomed in tightly and focused on the text (Figure 3). Luckily, on most video cameras, zoom doesn't affect focus, so zooming out later to fit the projected image in the camera frame won't make it go out of focus.

Unless you move your camera or projector, the camcorder shouldn't lose focus. If the video you're capturing



**FIGURE 4:** If you plan to display your videos on a computer rather than a TV screen, you may want to zoom in to eliminate the black "overscan" band that appears on the monitor on the right.

appears out of focus, adjust the projector, not the camcorder. Once the projector is in focus, changes in the film won't affect focus unless machine vibration somehow shakes the lens out of place.

These tips are easy to forget when you start capturing fuzzy images and grab every focus adjustment within reach to attempt to correct the problem. Remember that older film cameras didn't have autofocus capabilities, and often the film itself was simply out of focus.

To frame the video, shut the lights off and start the projector with no film, displaying a white box on the posterboard. Adjust your camera on the tripod until the white box is centered in the LCD panel, and then zoom in until the projected image fills the LCD.

## MORE ON THE WEB

[www.pcmag.com/solutions](http://www.pcmag.com/solutions)

See Solutions online for an expanded version of this article.

Start your capture software and watch for black bands around the video, as in Figure 4. Note that while the television screen is completely full, the same video in Adobe Premiere's capture screen shows a black band on all four sides. These result from fundamental differences between how televisions and computers display video. When framing the video, if you zoom your camcorder in so the video just fills the LCD panel (which generally has some overscan), you'll leave the black band around the video.

This is fine if you're creating a DVD to display on a television set, since the black band won't be visible. If, however, you'll be watching the videos from your computer, the band will show. The only way to monitor the overscan is to capture the image to a computer while you're filming. Otherwise, you simply won't see the overscan.

Once the camera and projector are set up, it's time to run through the process and work out the kinks. Start with a small (50-foot) roll, because you'll likely have to run it several times to get everything right. Thread the film, but before turning on the projector, find the focus and speed adjustments. Then start the projector

and focus the video image. Once the image is sharp, watch the camcorder's LCD panel or the computer capture screen for flicker.

Be careful when handling the camera and projector as you start and stop playback and rewinding. Even modest jolts to either device can destroy your careful framing. Also watch for dust in the lens, and brush it out between reels when it starts to accumulate. Once you get through your first four or five rolls, you'll settle into a pleasantly efficient routine that will quickly carry you through to the end of the project. Grab some popcorn and a soda, and enjoy the show.

*Jan Ozer is a contributing editor of PC Magazine.*

## OFFICE

# Staying in Style

Don't let collaborators trash your document design.

BY M. DAVID STONE

Microsoft Word users fall into two basic groups: Those who appreciate and take advantage of styles, and those who don't. When people from both groups collaborate on a document, there are bound to be difficulties. If you happen to like using styles, you'll be happy to learn that Microsoft Word 2003 gives you a way to work more easily with those who tend to ignore them.

Styles can be really useful if you regularly create long, complex documents. You can use them to format documents on a global basis and maintain consistency throughout. Suppose, for example, you've defined your headings to be italic and bold, and then decided you want headings to be bold only. If you formatted each heading manually, you'd have to find each one and change it. But if you formatted using styles, you could redefine the style once, and the headings would change throughout your document. If you define the styles as part of a template, you can easily maintain the same sort of consistency across documents.

Word doesn't care whether you take ad-

vantage of styles or not. If you want, you can ignore them and make any formatting changes manually. That flexibility has often caused problems for those who create documents or templates using styles. Your careful crafting of a document can be trashed if a collaborator tries to redefine the styles or otherwise adjust the formatting. Manual formatting changes override the formatting defined in the styles.

At least that was true in earlier versions of Word. Word 2003 adds a new Protect Document feature that limits formatting to styles only. Even better, it limits the styles to the ones you specify. This is particularly useful if you're creating a template for company-wide use, since you can ensure that the formatting will conform to any standards you define.

To take advantage of this feature, first create a document or template and define the styles you want to use. Then choose *Tools | Protect Document* to open the *Protect Document* pane. In the *Protect Document* pane, choose *Limit formatting to a selection of styles*, and then choose *Settings* to open the *Formatting Restrictions* dialog box.

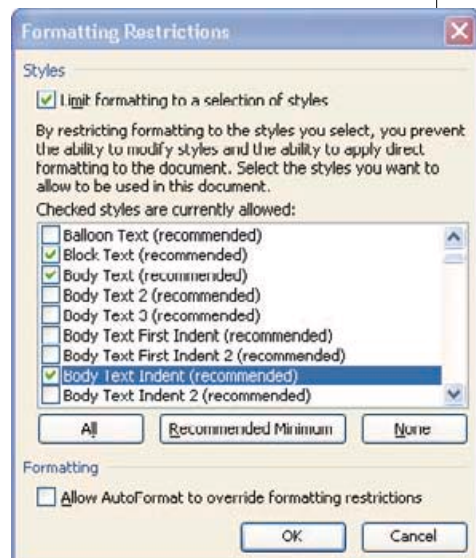
This dialog will show a list of all styles in the document or template. Initially, most of the styles will be checked. Go through the list, removing the checks from any styles you don't want used. (It might be easier to choose *None* at first, then add checks back as appropriate). At the bottom of the box, you'll see another check box labeled *Allow Autoformat to override formatting restrictions*. In most cases, you'll want to leave that box unchecked.

Choose *OK* to close the *Formatting Restrictions* dialog box. Word will respond

with a message that the document may contain formatting or styles that are not allowed and ask if you want to remove them. Choose *Yes* or *No* as appropriate. Then, in the *Protect Document* pane, under *Start Enforcement*, choose the *Yes, Start Enforcing Protection* button. Word will respond with a dialog box that will let you define a password for removing the protection. It's generally a good idea to take advantage of the password protection, since without it anyone can remove the protection for using styles only. Don't for-



**PASSWORD-PROTECT** your document for added security.



**YOU CAN PREVENT** others from modifying the formatting in your documents.

get to save the document or template when you're done.

That's pretty much all you have to do. Once you've protected a document or template like this, no one will be able to use any manual formatting or any style you haven't approved. And whether you're collaborating with someone or trying to enforce a company-wide style, you won't get any unpleasant surprises in the resulting documents.

There is one other point to remember: When you send the document or template to others, be sure to warn them that they won't be able to apply any manual formatting, including such common changes as bold or italics. Without the warning, they're likely to be confused and frustrated. You might want to define some character styles with common formats such as bold or italics, so your collaborators or other users can still apply some formatting. They'll just have to use styles rather than the manual formatting that could leave your document design in tatters.

*M. David Stone is a contributing editor of PC Magazine.*

# SUMMER SPECIAL!

HURRY! OFFER ENDS SOON ON  
AMERICA'S DOMAIN NAME

.US  
DOMAIN FOR

**\$2.99**  
PER YEAR

LIMITED TIME  
OFFER!

|              |                        |
|--------------|------------------------|
| <b>.US</b>   | <b>\$2.99</b> per year |
| <b>.COM</b>  | <b>\$5.99</b> per year |
| <b>.NET</b>  | <b>\$5.99</b> per year |
| <b>.INFO</b> | <b>\$5.99</b> per year |
| <b>.NAME</b> | <b>\$5.99</b> per year |
| <b>.ORG</b>  | <b>\$5.99</b> per year |

Is your perfect domain name unavailable in .com? 1&1 has your solution... a .us domain! 1&1 makes the .us domain affordable for everyone at just **\$2.99 per year**. Most other Registrars charge more than four times that amount! But hurry, this incredible offer ends soon.

3 MILLION CUSTOMERS HAVE ALREADY JOINED THE WORLD'S #1 WEB HOST



1.877.GO1AND1  
1AND1.COM

1&1

## SECURITY WATCH

# Online Safety at School

Bullies and other school predators have entered cyberspace, but you can help thwart them. **BY PARRY AFTAB**

Is it enough to supervise your children's online activities at home, by setting and enforcing rules such as *no chatting, no instant-messaging people you don't know, no filling out registration forms, and no putting personal information on your Web site*? Should you also worry about their online safety at school?

Statistically, kids are safer online at school than at home. They are often better supervised at school, as someone usually oversees all their online activities by watching the PCs or using monitoring technology. Also, most children have limited school Internet access; the less time they spend online, the less likely they are to be drawn into something harmful.

Another key factor is the expertise of school librarians and media specialists. One of them told me that

you can always tell when students are surfing where they shouldn't be: Other kids gather around to see what's on the screen. It's rarely pornography; more often it's a gory site, or one that targets a student. Librarians can usually

find sites that threaten specific children, by watching for high traffic to little-known sites (which kids find by word of mouth).

Many schools block instant messaging and chat. Since most Internet sexual predators entice children through these means, this alone makes your child much safer. Still, make sure that the school and its board have effective policies in place to deal with a variety of cyberrisks.

Ask if the school has an acceptable-use policy. It should be signed both by students and parents, and clearly state the rules, the consequences of violating them, and how to report problems. Find out what happens if a parent refuses to sign; too many schools let the student go online anyway,

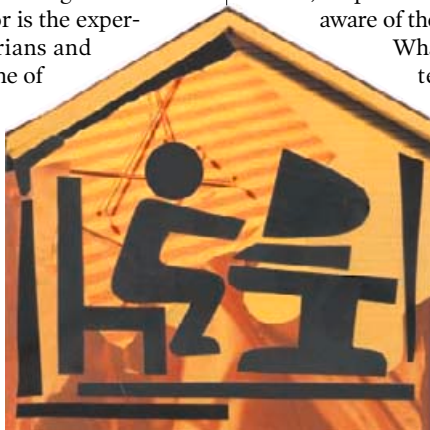
feeling it's needed for their education.

Ask about privacy. Does the school have a Web site? Does it include the school directory or students' personal information? Student photos? (Pictures should show groups of four or more students and not give their names.) Does the school let students fill out forms online or register at Web sites? COPPA (the Children's Online Privacy Protection Act) bars Web sites from letting preteens use interactive communications (chat, IM, discussion boards, e-mail) or from collecting personally identifiable information from them without parental permission. In cases when a school acts in lieu of a parent in giving consent, are parents informed? Are teachers aware of the regulations?

What sort of Web site content filtering does the school provide? (As federal technology funding is tied to its use, some filtering is in effect mandated.) How effective is it? What happens when an innocent site is blocked? (Can someone unblock it, permanently or session by session?) Does the school rely only

on a software solution, or is a wider approach applied to teach children how to navigate the Web safely? Are kids taught to use the "filter between their ears"? What rules for Web surfing have been set up, and how are they communicated and enforced?

What if students cyberbully others? Often schools try to discipline students for Web sites and online communications originating from home, but whenever the discipline is challenged, the school loses. Schools have had to pay substantial damages in lawsuits that civil-liberties groups brought on students' behalf. When cyberbullying occurs, a school should call students and parents in and try to resolve the problem consensually.



## THE LOOKOUT

## FIRST 64-BIT MALWARE FOR WINDOWS

Symantec Security Response in late May revealed that it has analyzed the first 64-bit Windows attack code. The attack is a proof-of-concept virus with no payload, and Symantec has named it W64.Rugrat.3344 ([www.sarc.com/avcenter/venc/data/w64.rugrat.3344.html](http://www.sarc.com/avcenter/venc/data/w64.rugrat.3344.html)). The virus is very old-fashioned in technique. When an infected file runs, it infects other 64-bit executable files. The virus is not memory resident.

**Rugrat will not execute on conventional 32-bit Windows systems, nor will it infect 32-bit Windows executables. The virus is written in Intel 64-bit assembly language.**

**"Currently, there isn't a broad penetration of 64-bit systems," says Vincent Weafer, senior director of Symantec Security Response. "Most home and business systems deployed today are running on 32-bit platforms and are not affected by this threat."—Larry Seltzer**

When a student reports receiving a serious threat (as of death, serious bodily harm, or a bomb), law enforcement must be called immediately. The Columbine attack was foretold online. Many other attacks have been avoided by swift action by schools and police. Ask whether the school has a safety officer and how it would respond to something serious.

Does the school know how to save online evidence and retain logs? Ask the police to send a cyberdetective to visit the school; if they don't have one, they can ask the nearest ICAC (Internet Crimes Against Children) task force unit for help ([www.ncjrs.org/html/ojjdp/jjbul2001\\_12\\_5/contents.html](http://www.ncjrs.org/html/ojjdp/jjbul2001_12_5/contents.html)). The school may want to install a product such as Spector Pro to collect and store a record of all online activity. This and other monitoring products are reviewed on page 103. (Make sure the school notifies parents and students of such monitoring in the acceptable-use policy.)

Children can be inventive in finding ways to abuse the Internet and each other. But if parents, teachers, students, library personnel, safety officers, and school officials and boards work together, we'll keep making progress in ensuring that students' online experience is as safe as possible.

*Parry Aftab is an Internet privacy and security lawyer. She runs WiredKids.org, the world's largest online safety and help group. To join, drop by [www.wiredsafety.org](http://www.wiredsafety.org). To contact her, e-mail her at [parry@aftab.com](mailto:parry@aftab.com).*



# SUMMER SPECIAL!

## PROFESSIONAL ALL-INCLUSIVE HOSTING SMALL PRICE, BIG PERFORMANCE

**\$4<sup>99</sup>**  
PER  
MONTH

**NO SETUP FEE!**

### HOME PACKAGE

Perfect for Small Businesses

#### INCLUDES 1 DOMAIN

##### PACKAGE FEATURES

- 500 MB of Web space
- 1 FTP account
- 5,000 MB monthly transfer volume
- 1&1 Control Panel
- Optional Dedicated SSL Certificate
- Hosted on 1&1 Linux platform

##### MARKETING TOOLS

- 1&1 Chat - 1 channel
- 1&1 WebStatistics

##### SITE-BUILDING TOOLS

- WebsiteCreator for 12 pages
- Full version software worth \$550
- FrontPage 2002 extensions
- CGI library

##### DOMAIN NAMES

- Includes 1 domain (.com .net .org only)
- Handling of unlimited domain names
- DNS Management
- Point 50 external domains to 1&1
- 5 subdomains

##### E-MAIL

- 50 POP3 e-mail accounts
- Aliases, auto-responders, forwarding
- 1&1 WebMail
- Virus scanner for 1 POP3 account

**\$9<sup>99</sup>**  
PER  
MONTH

**NO SETUP FEE!**

### BUSINESS PACKAGE

Sophisticated Business Solution

#### INCLUDES 3 DOMAINS

##### PACKAGE FEATURES

- 1,000 MB of Web space
- 5 FTP accounts
- 15,000 MB monthly transfer volume
- 1&1 Control Panel
- SSH Secure Shell Access
- SSI (Server side includes)
- SSL Secure Server
- Optional Dedicated SSL Certificate
- Hosted on 1&1 Linux platform

##### MARKETING TOOLS

- 1&1 Chat - 5 channels
- 1&1 WebStatistics
- In2site Live Dialogue
- 1&1 Newsletter Tool
- 1&1 WebElements

##### SITE-BUILDING TOOLS

- WebsiteCreator for 18 pages
- Full version software worth \$550
- FrontPage 2002 extensions
- CGI library & Free CGI programming
- Perl, PHP3 and PHP4
- 1&1 WebDatabase
- 1x MySQL database (100MB)
- Cron Jobs

##### DOMAIN NAMES

- Includes 3 domains (.com .net .org only)
- Handling of unlimited domain names
- DNS Management
- Point 100 external domains to 1&1
- 50 subdomains

##### E-MAIL

- 150 POP3 e-mail accounts
- Aliases, auto-responders, forwarding
- 1&1 WebMail
- Virus scanner for 3 POP3 accounts

**\$19<sup>99</sup>**  
PER  
MONTH

**NO SETUP FEE!**

### DEVELOPER PACKAGE

Delivering Superior Performance

#### INCLUDES 5 DOMAINS

##### PACKAGE FEATURES

- 2,000 MB of Web space
- 25 FTP accounts
- 30,000 MB monthly transfer volume
- 1&1 Control Panel
- SSH Secure Shell Access
- SSI (Server side includes)
- SSL Secure Server
- Includes Dedicated SSL Certificate
- Server priority
- Hosted on 1&1 Linux platform

##### MARKETING TOOLS

- 1&1 Chat - 10 channels
- 1&1 WebStatistics
- In2site Live Dialogue
- 1&1 Newsletter Tool
- 1&1 WebElements

##### SITE-BUILDING TOOLS

- WebsiteCreator for 25 pages
- Full version software worth \$550
- FrontPage 2002 extensions
- CGI library & Free CGI programming
- Perl, PHP3 and PHP4
- 1&1 WebDatabase
- 3x MySQL database (100MB)
- Cron Jobs
- Advanced Developer Tools

##### DOMAIN NAMES

- Includes 5 domains (.com .net .org only)
- Handling of unlimited domain names
- DNS Management
- Point 200 external domains to 1&1
- 200 subdomains

##### E-MAIL

- 300 POP3 e-mail accounts
- Aliases, auto-responders, forwarding
- 1&1 WebMail
- Virus scanner for 6 POP3 accounts

■ 90-DAY MONEY BACK GUARANTEE ■ 24/7 PHONE & E-MAIL SUPPORT



1.877.GO1AND1  
1AND1.COM

1&1

## INTERNET BUSINESS

## The Flick Files

Inside the making of the Internet Movie Database.

BY CADE METZ

Scott Dacko recently completed a screenplay based on the life of H.H. Holmes, a onetime pharmacist who admitted to killing 27 people in late-19th-century Chicago. Unfortunately, as Dacko started shopping the script, he discovered that movies about Holmes were already under development at both Cruise-Wagner Productions, the company run by film star Tom Cruise, and Appian Way, run by Leonardo DiCaprio.

But Dacko didn't give up on his screenplay. He turned to the Internet Movie Database. With the IMDb ([www.imdb.com](http://www.imdb.com)), he can closely track the progress of these rival productions from the comfort of his New York apartment. The site's pay service, IMDb Pro, lists production schedules for both Cruise and DiCaprio, and as long as it indicates that their Holmes films are still years away from production, Dacko will continue to shop his own script.

"IMDb is a great equalizer," says Dacko. "It lets someone like me, who's in New York, who's outside L.A., have some insight into the L.A. process in a way that wasn't previously possible."

The IMDb is the 41st-most-popular site on the Web, according to Internet traffic numbers compiled by Alexa; it receives more than 18 million unique visitors a month. To most visitors, it's no more than a toy—a place where they can peruse the film credits of their favorite actors and actresses, bone up on movie trivia, or download celebrity snapshots. Little do they know that over the years the site has evolved into a thriving Internet business.

Purchased by Amazon.com in 1998, it drives traffic to the retailer's movie and music stores. It generates regular ad revenue. And its Pro service, priced at \$12.95 per month, has quickly become an indispensable tool for film professionals like Scott Dacko.

The IMDb began life in 1990, when Col Needham, an HP researcher from Manchester, England, decided to post a list of films on a Usenet newsgroup called *rec.arts.movies*. "I started this list of all the

movies I'd ever seen," says Needham, now the IMDb's managing director. "It certainly seems a bit of a geeky thing to do, but it turned out all right in the end." Other users began posting lists of their favorite actors, actresses, and directors, and eventually Needham brought the many lists together, creating a searchable database of movie credits.

Over the years, using nothing more than ordinary e-mail, this ragtag group of movie fans gradually expanded this database, adding everything from writers, composers, and cinematographers to running times, plot summaries, and trivia. "We brought to-

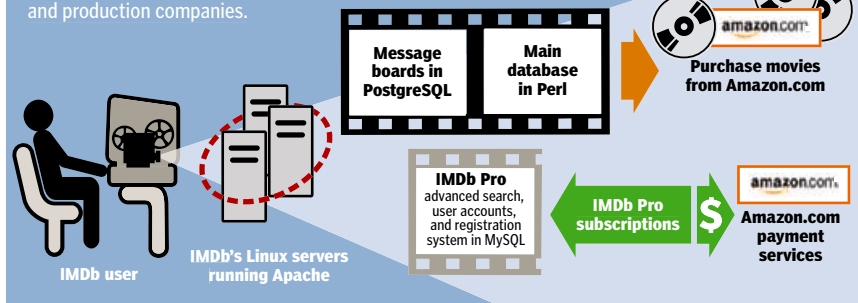
pendence Day." Then in 1997, when it was still little more than an online bookseller, Amazon.com came calling, and a year later, the IMDb was used to promote Amazon's new online movie store.

IMDb Pro arrived in 2002, offering additional information for movie professionals, including production charts for over 1,500 unfinished film and television projects; agent listings for over 40,000 actors, writers, producers, and directors; and contact information for leading agencies, studios, and production companies.

As you might expect, the site is now co-located with other Amazon.com sites, served up from machines running Linux and Apache, but ironically, most of the IMDb does not use a traditional database back end. Its message boards are built on PostgreSQL, and certain parts of IMDb Pro—including its advanced search—use MySQL, but most of the site is built with good old Perl script.

## Behind the Scenes at the IMDb

The Internet Movie Database, owned by Amazon.com, has evolved into much more than a collection of film trivia. The Pro subscription offers production charts for over 1,500 unfinished film and television projects; agent listings for over 40,000 actors, writers, producers, and directors; and even contact information for leading agencies, studios, and production companies.



gether film experts from around the world," says Needham, "each working on a different part of the data." In those days, you couldn't search the text-based database without first downloading it to a Unix workstation, but in the summer of 1993, someone suggested moving it to a fledgling network called the World Wide Web.

By 1995 the site's traffic was doubling every two weeks, and in January 1996 Needham incorporated Internet Movie Database Ltd., aiming to generate revenue by selling Web-based advertising. "A week later we sold our first ad," says Needham, "and that summer we did our first campaign for a theatrical release: Fox's *Inde-*

Of course, the genius of the IMDb lies not in its architecture but in the idea behind the hardware and software. The site lets you navigate the world of movies in ways never before possible. Yes, you can research film history with unprecedented speed, bouncing from David O. Selznick to Alfred Hitchcock to Grace Kelly with just a few mouse clicks, but if you're a professional, you also get newfound access to the industry's movers and shakers. "You can look up agents and find out who they represent," says Scott Dacko. "Information like that was once jealously guarded."

Forget *Variety*. All you need is the IMDb.

## INTERNET PROFESSIONAL

# A Better Flash

Macromedia's new Central platform should ease developing and selling custom software. **BY RICHARD V. DRAGAN**

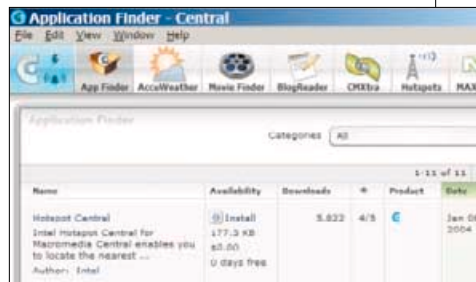
Selling software today is not easy, especially if you're a small developer with limited resources. But the new Macromedia Central, based on Flash, aims to simplify the way developers distribute applications and customers acquire them. Central is both a platform for creating applications and a marketplace where they can be bought and sold. It's also a control center for users, with a Flash-powered interface for launching apps.

To try Central, you'll need to download the client (available for Windows and Mac) from [www.macromedia.com/software/central](http://www.macromedia.com/software/central). Central actually piggybacks on Flash Player with extra components, including a new desktop shell.

Central is focused on helping developers build small, lightweight components. As examples, the company has supplied small applications for weather information and for movie reviews, as well as a wireless hot spot locator. To facilitate selling Central software, Macromedia provides a service called Application Finder, which

If you're intrigued, you'll want to download the free Central SDK from Macromedia. Besides over 800 pages of PDF help to get you started, there are several helpful utilities and add-ons for the development tool Flash MX 2004 Professional. We took a look at a Central application to get a sense of what goes into creating software for this new platform.

The good news is that if you already know how to build SWF files, you're well on your way. Central requires Flash Player on clients and adds some new classes as well—mainly for *widgets*, which allow Flash applications to interact with the desktop. With traditional Flash development, programmers worked in a single window devoted to Flash Player. The new Central environment means controlling multiple windows (includ-



**FIGURE 1:** Users can find and install Central apps with the Application Finder.

lets individual developers post and sell their software online (Figure 1).

One thing you'll have to consider: Macromedia takes a cut of the profits when you sell in its marketplace, and though it negotiates fees with individual developers, several developers who spoke with us said that fees can run as high as 20 percent of the price of software sold. But this platform's potential to reach more customers is arguably better than going it alone.

ing mini-windows called *Pods*, which can appear almost anywhere on the desktop.

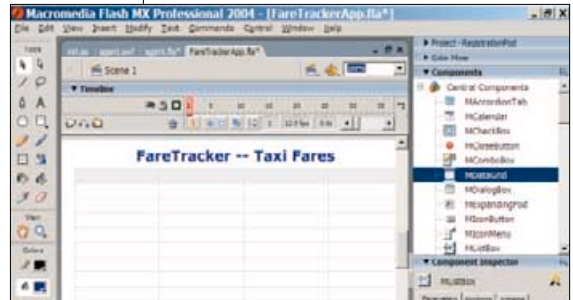
Every Central app uses the *Application* class, which presents a window with content, forms, or both. Flash has supported form controls for some time, but the controls in Central are different. There are about 20 new components, including an excellent grid control (*MDataGrid*), a powerful calendar (*MCalendar*) and plenty of options for creating polished interfaces (Figure 2).

Most significantly for developers, this is still Flash, and you can use all types of rich multimedia content—images, movies, or sound—within your Central applications. Better yet, this content can now be cached and consumed off-line, so Central software doesn't have to be connected to the Internet all the time to let users work. Although Macromedia has no specific plans to roll out mobile versions of its Central player, the capability to use con-

tent both online and off-line easily is a natural fit for today's intermittently connected laptops.

Data sharing is also strong. Controls can make use of the *Central.LCDataProvider* class, which greatly simplifies getting live data to controls. Flash developers benefit from a flexible syntax for defining XML data (using brackets), which makes working with XML a notch easier than in platforms like Java and Microsoft .NET.

Central also simplifies consuming XML-based Web services. By using the *WebService* object, you can make Web-service calls very easily. The syntactical ease beats Java hands down and even rivals Microsoft .NET Framework for simplicity. One caveat: In Central, Web-service calls



**FIGURE 2:** Macromedia Central offers support for creating sophisticated user interfaces.

are always treated *asynchronously* (requiring a callback function); other platforms offer synchronous and asynchronous calls.

Different Central windows can also communicate with each other using the *LCService* class, which allows data to be sent back and forth in a client service fashion. There's even a feature called *Blast*, based on XML, that lets apps from different vendors exchange data. And a mechanism to display alerts, called *notices*, updates users as new data becomes available within different pods and windows of Central applications.

With all these data-sharing mechanisms, the beauty of Central isn't just cosmetic. After mastering just a few new conventions, developers can bring their knowledge of multimedia, games, and rich content in Flash to the new Central platform, with potentially impressive and profitable results.

*Richard V. Dragan is a contributing editor of PC Magazine.*

**Microsoft**

*Your potential. Our passion.™*

NAME

Mr. 5,000 Desktops  
Updated with the  
Latest Engineering  
App in 10 Minutes



**MOTOROLA**



"We performed over 807,000 successful software deployments to 65,000 desktops in 2002 alone and saved over 247,000 administration hours."

**Steven Bramson**  
Senior Systems Architect, *Motorola*

**Make a name for yourself with Windows Server System.**

Microsoft Windows Server System makes Motorola's infrastructure easier to manage. Here's how: using Microsoft Systems Management Server and SQL Server, powered by Windows Server, Motorola conducts system inventory of their 65,000 desktops from one location, identifies necessary system updates, then deploys those applications across the enterprise automatically. It's software that helps you do more with less. Get the full Motorola story and a hands-on management tool at [microsoft.com/wssystem](http://microsoft.com/wssystem)



Windows Server System™ includes these products:

|                                 |                                         |
|---------------------------------|-----------------------------------------|
| Server OS                       | Windows Server™                         |
| Operations Infrastructure       | Systems Management Server               |
|                                 | Application Center                      |
|                                 | Operations Manager                      |
|                                 | Internet Security & Acceleration Server |
|                                 | Windows® Storage Server                 |
| Application Infrastructure      | SQL Server™                             |
|                                 | BizTalk® Server™                        |
|                                 | Commerce Server                         |
|                                 | Content Management Server               |
|                                 | Host Integration Server                 |
| Information Work Infrastructure | Exchange Server                         |
|                                 | Office SharePoint™ Portal Server        |
|                                 | Office Live Communications Server       |

# Playing It Safe with R-Guard

IN TODAY'S WORLD, YOU CAN'T BE TOO SAFE. THIS MAXIM CERTAINLY APPLIES to business-critical computing resources where access rights to sensitive data and files must be judiciously managed.

To extend access right control as well as encryption and audit beyond the limited scope of standard Microsoft Windows security services, **R-Guard** from R-tools technology Inc. ([www.r-tt.com](http://www.r-tt.com)) allows users to set access rights not only for users but for applications and system processes as well.

As a result, **R-Guard** gives businesses the protection they want and need from unauthorized disclosure, theft, illicit modification, corruption, and inadvertent or deliberate deletion by unauthorized users. R-Guard also protects your files against viruses, spyware, Trojan horses, and other unwanted and potentially disastrous intruders.

**R-Guard** users can quickly and easily track down information about actions taken on file objects, including edits, deletes and executions.

For robust and rapid encryption, **R-Guard** uses the industry standard AES encryption algorithm with the 256-bit key and True-On-The-Fly-Encryption technology.

**R-Guard** 30-day FREE FULLY FUNCTIONAL version is AVAILABLE to anyone!

Also, R-tools technology, the leading vendor of data recovery and undelete solutions for the Microsoft Windows world, provides the perfect antidotes to data loss and files corruption:



- ▶ **R-Studio**, a family of data recovery utilities that rescues data both on local logical and physical disks, and on remote disks over networks, regardless of whether their partition structures are damaged or deleted. **R-Studio** includes support for RAID, dynamic disk and for recovering encrypted files, compressed files and alternative data streams. And flexible parameters give users absolute control over data recovery.
- ▶ **R-Drive Image** - drive image creation and back-up software. Without stopping Windows and therefore without interrupting business, **R-Drive Image** creates drive image files and restores them on the fly. What's more, these images can then be stored in a variety of places, including various removable media. **R-Drive Image** also compresses image data with variable compression level to save free space.
- ▶ **R-Mail**, a tool designed to recover inadvertently deleted email messages and to rebuild damaged \*.dbx files where MS Outlook Express stores folders with email messages.
- ▶ **R-Word**, utility that recovers and reconstructs damaged Microsoft Word document.

For users wanting to keep their disks free and clear of unwanted data, R-tt offers **R-Wipe&Clean**. This highly useful tool irretrievably deletes private records of online and offline activities, including temporary Internet files, history, cookies, auto-complete forms and passwords and other disk-clogging material.

■ For more information point your browser to [www.r-tt.com](http://www.r-tt.com) now.

# USER TO USER

PC MAGAZINE'S COMMUNITY OF EXPERTS AND READERS

## Automatic Login to Windows XP

Regarding the item "Start Windows XP Without Waiting for Welcome" ([www.pcmag.com/article2/0,1759,1538426,00.asp](http://www.pcmag.com/article2/0,1759,1538426,00.asp)), as long as your computer is not a domain member, you don't have to limit the number of user accounts, and you don't need TweakUI.

At a command prompt, enter *control userpasswords2*. This will launch the User Accounts application. On the Users tab, clear the check box for "Users must enter a user name and password to use this computer" and click OK. (If your computer is part of a domain, this box does not appear). The Automatically Log On dialog box appears. Type your user name and password, and click OK.

BERWYN FIELD

If you didn't know to look for it, you'd never find this handy dialog, which is available in both XP Professional and XP Home. And it's effective—two readers who found TweakUI didn't work for them were able to bypass the welcome screen using this technique. This dialog also lets you define a particular user account as a Standard user, a status in between the Limited user and Administrator user categories available in the Control Panel's normal User Accounts applet. —Neil J. Rubenking



**AFTER CLEARING** the check box in the User Accounts dialog, you can bypass the Windows XP welcome screen.

## Remove Items from Add/Remove Programs

I share a computer with others in my family. At times, people have used the Add/Remove Programs applet to delete whatever

they don't recognize. This is a major hassle for me because I lose all of the preferences and data associated with the program. Is there any way to take a program off the Add/Remove Programs list without actually uninstalling the program? I am running Windows XP Home with Service Pack 1. Any help would be greatly appreciated.

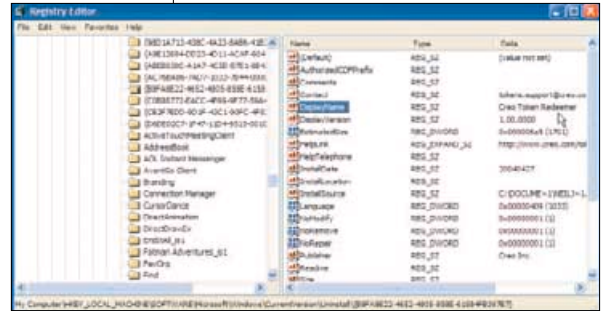
ANDREW BRADY

It's not hard to remove the uninstall information. The real trick is keeping it available in case you actually want to uninstall the program at some point. Launch Regedit from the *Start* menu's *Run* dialog and navigate to this key: HKEY\_LOCAL\_MACHINE\SOFTWARE\Microsoft\Windows\CurrentVersion\Uninstall. Each subkey of this key represents an Add/Remove Programs item. Some have sensible names, like *AvantGo Client*. Others have GUIDs for names—strings of letters and numbers in curly braces, like "{D6DE02C7-1F47-11D4-9515-00105AE4B89A}." First check the legible names. If you don't find the desired item, select the GUID-names one at a time and scan the values in the right-hand pane for information that would link this entry to the program you're seeking.

Highlight the subkey below *Uninstall* that contains the item you want removed. Select *Export* from the *File* menu and export it to a .REG file. Then just delete the subkey. It will no longer appear in Add/Remove Programs. If at some future time you wish to uninstall the program, double-click on the .REG file to restore the uninstall data and then launch Add/Remove Programs.

If you happen to have the passwords that will allow you to log on as each user of the system, you can take a different approach

and disable Add/Remove Programs entirely for those users. Log on as your daughter, for example, and launch REGEDIT. Navigate to HKEY\_CURRENT\_USER\Software\Microsoft\Windows\CurrentVersion\Policies\Uninstall.



**YOU CAN MAKE** a program disappear from Add/Remove Programs by deleting its Registry key.

If the *Uninstall* subkey below *Policies* does not exist, create it. In the right-hand pane, find or create a DWORD value named *NoAddRemovePrograms*. Double-click on it and set its data to 1. Now this user will not have access to Add/Remove Programs. Repeat for the other users. On an XP Pro system, a user with full administrator rights can lock other users out of Add/Remove Programs by using the Group Policy Editor. This tool is not present in Windows XP Home.—NJR

## Divide and Contact in Outlook Express

In Microsoft Outlook Express I have a big contact list (about 150 members) that I need to divide into smaller lists. Can this be done? Some of the contacts are typed directly into the group folder, and some are taken from the general list I have. If I can't divide the list, is it possible to duplicate the group contact list, rename it, and then manipulate it?

MICHAEL YAKIR

First, you'll need to get all of the contacts into the main address book. (For future reference, it's generally not a good idea to add e-mail contacts to a group without adding them to the address book as a whole.) Start by scanning your "Sent Items" folder for a message you sent to the group.

If you didn't know to look for it, you'd never find the handy Automatically Log On dialog.

# There is no reason why you can't put a high-resolution panel in a desktop enclosure.

If you can't find one, send a message to the group and then find it in "Sent Items." Double-click on the message to open it. In the message header, right-click on each recipient in turn and choose "Add to Address Book." Most will be rejected with a warning that they are already in the address book, but those that aren't will be added.

With that task out of the way, here's how you can duplicate and then divide your group. Open the address book. If you don't see folders and groups at left, choose **Folders and Groups** from the **View** menu. Create a new group, but don't add any members. In the list at left, click on the existing group. You'll see its members in the right-hand pane. Press **Ctrl+A** to select them all, then **Ctrl+C** to copy them to the clipboard. Switch to the new group and press **Ctrl+V** to paste them in. You now have a working copy of the entire group, with the original group as a backup in case you make a mistake.

Create another empty new group, then switch to the working copy. Click on one address that you want to move to the new group, then hold **Ctrl** while clicking on all the others that you want to move. Press **Ctrl+C** to copy them to the clipboard, then **Del** to delete them. Now click on the new group and press **Ctrl+V** to paste them. Repeat as many times as needed. When you've verified that everybody is in exactly one of the new groups, you can go back and delete the original.—*NJR*

## Counting Unique Names in Excel, Reloaded

In the article "Count Unique Names in Excel" ([www.pcmag.com/article2/0,1759,1537551,00.asp](http://www.pcmag.com/article2/0,1759,1537551,00.asp)) a reader asked about finding unique names in a list of 900,000 names. You suggested that the number may have been exaggerated, given Excel's limit of 65,536 rows. But what if the names were in multiple columns? As long as there aren't more than 65,530 unique names, you can still use a pivot table,

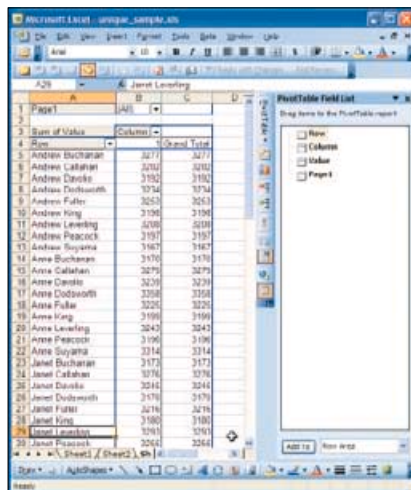
## HOW TO CONTACT US

**E-MAIL** ▶ [pcmsolutions@ziffdavis.com](mailto:pcmsolutions@ziffdavis.com)

**FAX** ▶ 212-503-5799

**MAIL** ▶ User to User, PC Magazine, 28 East 28 Street, New York, NY 10016-7940

If we print your tip, you'll receive a PC Magazine T-shirt. We regret that we cannot answer letters individually.



**BY USING** Excel's Multiple Consolidation Range feature with a pivot table, we quickly listed and counted the unique items in a collection of 900,000 names.

**employing a rarely mentioned feature. I have tested the approach with 232,140 (4\*65,535) names and it only takes a minute or two to set up, and then only seconds to generate the pivot table (I'm running on a 3.2GHz machine with 1GB of RAM). Here's how to proceed:**

1. Starting with the second column, click on the column letter and hold down the **Ctrl** key, then one at a time click on each column to the right, selecting all columns except **A** once each. Then press **Shift+Ctrl+Plus** (the plus in the top row, not the numeric keypad). This will insert blank columns to the right of each set of names.
2. Click on the column letters for each of the blank columns while holding down the control key. Then type **1** and press **Ctrl+Enter**, to enter **1**'s in all the cells adjacent to the names. (I am assuming that the names extend all the way down the columns. If they don't, use another method to select the appropriate cells.)
3. Choose the menu command **Data | Pivot Table...** and check **Multiple consolidation range** (a command I've never had a use for before!). Click on **Next**, and click on **Next** again, accepting the default. In the **Range** box of Step 2b, select the range **A1:B65536** and click on **Add**. Continue this process for each pair of columns containing names and adjacent **1**'s. Click on **Finish** and use your count command on the pivot table output.

SHANE DEVENSHIRE

As noted, the *Multiple consolidation ranges* option in the Pivot Table wizard allows consolidation of more than the 65,536 items that can fit in a single column. The reader with the original question may indeed have been dealing with 900,000 names. We repeated the process described above using 14 columns rather than four, for a total of over 900,000 names, and the Pivot Table processed the results in under 15 seconds.

On the way to exercising the Pivot Table feature, this tip employs several useful Excel features that might not be familiar. Holding **Shift+Ctrl** while pressing the top-row plus key will insert cells in relation to the highlighted selection. If a whole row or column is selected, it will insert a new row or column. But, as we've seen here, if multiple rows or columns are selected, it will insert new blank ones before each. Also, if you select multiple cells, enter some data, and press **Ctrl+Enter**, the data will be copied into all of the cells. Not everyone needs to perform pivot-table consolidation of huge quantities of data, but everyone can benefit from these handy tips to work smarter in Excel.—*NJR*

## Resolution Limitation

Some notebook computers have displays with resolutions as high as 1,600 by 1,200 pixels on a 15-inch panel, yet 17-inch LCD monitors are limited to 1,280-by-1,024. I like the higher resolution because more pixels per inch look better, just as output from a printer with more dots per inch looks better. Why can't manufacturers make desktop monitors with higher resolutions?

BARRY SMITH

The answer is economic, not technical. There are few significant differences between notebook and desktop panels, and there is no reason why you can't put a high-resolution panel in a desktop enclosure. The problem is that the higher-resolution panels cost significantly more. According to iSupply/Stanford Resources, the component price of a 15-inch UXGA (1,600 by 1,200 pixels) notebook display was \$250 last fall, while a 15-inch XGA (1,024 by 768 pixels) panel cost \$197.

This price difference is less of a problem for notebook makers, as the extra cost gets folded in with all the other components, such as CPU, battery, memory, and storage devices. Notebook buyers are also willing to pay a premium for some fea-



# 100% additive-free natural tobacco

tures. In contrast, the desktop monitor market is extremely price-sensitive, and manufacturers have no place to “hide” the extra cost of a high-resolution panel because there’s not much else in the monitor’s bill of materials aside from the plastic case.—*Alfred Poor*

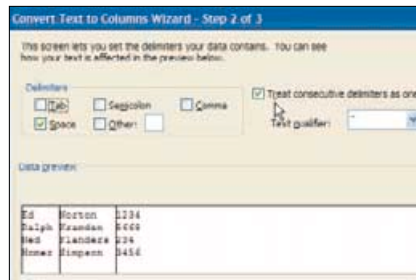
## Convert a Tabular Word Document to Excel

Is it possible to convert a Word document to an Excel spreadsheet when the Word document has columns of numbers?

MARGARET COONS

It’s surprisingly easy to move tabular data from Word to Excel. If the columns in the Word document are in a table, click in the table, choose *Table | Select | Table* from the menu, press Ctrl+C to copy to the clipboard, switch to Excel, and press Ctrl+V to paste it in. If items in the columns are separated by single tabs, again you can simply copy the lines representing the table to the clipboard and paste them into Excel.

If the columns in the Word document are aligned using spaces, a bit more effort is required. Highlight the columnar data in



**WHEN YOU MOVE TEXT** from Word to Excel, the Text to Columns wizard helps place it properly in columns.

Word and copy it to the clipboard. Click in cell A1 of a blank worksheet in Excel and paste the data—you’ll find that it all winds up in column A. With the data still selected, choose *Text to Columns* from the *Data* menu. On the first page, select *Delimited* and click on *Next*. On the second page, check only *Space* in the set of available delimiters. Make sure the *Treat consecutive delimiters as one* box is checked. Click on the *Finish* button and you’re done.—*NJR*

See more tips online at [www.pcmag.com/usertouser](http://www.pcmag.com/usertouser).



**premium whole leaf tobacco  
no processed stems  
no scrap tobacco**

**For a sample carton offer  
call 1-800-872-6460 ext 33006.**

No additives in our tobacco  
does **NOT** mean a safer cigarette.

SURGEON GENERAL'S WARNING: Cigarette  
Smoke Contains Carbon Monoxide.



IBM ThinkPad X Series

## GO with IBM Think Express Program

IBM ThinkExpress models are designed, configured and priced with small to medium-size businesses in mind.

*CNET* Editors Choice Award, March, 2004  
IBM ThinkPad X40

**\*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) **Mobile Processor:** Power management reduces processor speed when in battery mode. (2) **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. (3) **Included software:** may differ from its retail version (if available) and may not include user manuals or all program functionality. License agreements may apply. (4) **Hard drive:** GB = billion bytes. Accessible capacity is less; up to 4GB is service partition. (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) **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges. (7) **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



Protect your data against accidents when you're on the road. Accidents definitely do happen. Especially when you're working wirelessly. Which is why you should have an IBM ThinkPad® notebook with Intel® Centrino™ Mobile Technology. Select ThinkPad notebooks are the only PCs designed to sense a fall and, within 500 milliseconds, park the hard drive's read/write head. Kind of like an airbag for your data. To view a demo, visit [ibm.com/shop/m441](http://ibm.com/shop/m441). You'll see why select IBM ThinkPad notebooks with Intel Centrino Mobile Technology give wireless users the confidence to tackle almost anything – networking, presentations, even the occasional meeting with the pavement. **And go from “oh, #@\*^!” to “phew” in less than a second.**

Klutz-proof wireless. [Only on a ThinkPad.](http://ibm.com/shop/m441)

1 866 426-0060 | [ibm.com/shop/m441](http://ibm.com/shop/m441)



## NEW! IBM ThinkPad R51

Ultimate Value

### Distinctive IBM Innovations:

- IBM Active Protection System – Helps protect your hard-drive from falls

### System Features:

- Intel® Centrino™ Mobile Technology
  - Intel Pentium® M Processor 1.50GHz<sup>2</sup>
  - Intel PRO/Wireless Network Connection 802.11b/g<sup>2</sup>
- Microsoft Windows XP Professional<sup>3</sup>
- 14.1" XGA TFT display (1024x768)
- 256MB DDR SDRAM<sup>5</sup>
- 20GB hard drive<sup>4</sup>
- Ultrabay™ Enhanced CD-RW/DVD-ROM combo
- IBM UltraConnect™ Antenna for increased signal strength<sup>2</sup>
- 1-yr system/battery limited warranty<sup>6</sup>

NavCode 28832XU-M419

THINK EXPRESS MODEL PRICED AT: **\$1,299\***

ServicePac® Service Upgrade:<sup>7</sup>

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

## IBM ThinkPad X40

Our thinnest and lightest

### Distinctive IBM Innovations:

- IBM Active Protection System – Helps protect your hard-drive from falls
- NEW! IBM Rescue and Recovery™ with Rapid Restore™ – One-button recovery and restore solution

### System Features:

- Intel Centrino Mobile Technology
  - Intel Pentium M Processor ULV 1GHz
  - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- 256MB DDR SDRAM
- 20GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM full-size keyboard<sup>8</sup>
- Only .94" thin<sup>11</sup>
- 2.7-lb travel weight<sup>10</sup>
- 1-yr system/battery limited warranty<sup>6</sup>

NavCode 23861CU-M419

THINK EXPRESS MODEL PRICED AT: **\$1,499**

# Take a look at our latest models. And get something nice to shout about.



## Why IBM ThinkPad Notebooks?

To make IBM ThinkPad® notebooks even more valuable, each one featured here comes with all the following ThinkVantage™ Technologies:

### IBM Active Protection System:

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

### 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:<sup>1</sup>

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.

## NEW! IBM ThinkPad R51

### System Features:

- Intel® Centrino™ Mobile Technology
  - Intel Pentium® M Processor 1.50GHz<sup>2</sup>
  - Intel PRO/Wireless Network Connection 802.11b/g<sup>3</sup>
- Microsoft Windows XP Professional<sup>4</sup>
- 15" SXGA+ TFT display (1400x1050)<sup>5</sup>
- 256MB DDR SDRAM<sup>6</sup>
- 40GB hard drive<sup>6</sup>
- Integrated Ethernet and modem
- IBM Ultrabay™ Enhanced CD-RW/DVD-ROM combo
- IBM UltraConnect™ Antenna for increased signal strength<sup>6</sup>
- 1-yr system/battery limited warranty<sup>7</sup>

NavCode 1836BDU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$1,499\***

With Microsoft Office Small Business Edition 2003:<sup>8</sup> \$1,739

## NEW! IBM ThinkPad T42

### System Features:

- Intel Centrino Mobile Technology
  - Intel Pentium M Processor 1.50GHz
  - Intel PRO/Wireless Network Connection 802.11b/g
- Microsoft Windows XP Professional
- 14.1" XGA TFT display (1024x768)
- 32MB ATI Mobility RADEON 7500
- 256MB DDR SDRAM
- 30GB hard drive
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim DVD-ROM
- IBM UltraConnect Antenna for increased signal strength
- Only 1" thin,<sup>10</sup> 4.5-lb travel weight<sup>9</sup>
- 1-yr system/battery limited warranty<sup>7</sup>

NavCode 2378DTU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$1,629**

With Microsoft Office Small Business Edition 2003: \$1,869

ServicePac Service Upgrade:  
3-yr Depot Repair #30L9192 **\$132**

## NEW! IBM ThinkPad T42

### System Features:

- Intel Centrino Mobile Technology
  - Intel Pentium M Processor 735 (1.70GHz, 400MHz FSB)
  - Intel PRO/Wireless Network Connection 802.11b/g
- Microsoft Windows XP Professional
- 15" SXGA+ TFT display (1400x1050)
- 512MB DDR SDRAM
- 64MB ATI Mobility RADEON 9600 graphics
- 60GB hard drive (7200 RPM)
- Integrated Gigabit Ethernet and modem
- IBM Ultrabay Slim CD-RW/DVD-ROM combo
- IBM UltraConnect Antenna for increased signal strength
- 3-yr system/1-yr battery limited warranty<sup>7</sup>

NavCode 2379DXU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$2,529**

With Microsoft Office Small Business Edition 2003: \$2,769

ServicePac Service Upgrade:  
4-yr Onsite Repair/9x5/Next Business Day Response #69P9198 **\$299**

## IBM ThinkPad X40

### System Features:

- Intel Centrino Mobile Technology
  - Intel Pentium M Processor ULV 1GHz
  - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- Intel Extreme Graphics 2
- 256MB DDR SDRAM
- 20GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM full-size keyboard<sup>12</sup>
- Only .94" thin
- 2.7-lb travel weight
- 1-yr system/battery limited warranty<sup>7</sup>

NavCode 23861CU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$1,499**

With Microsoft Office Small Business Edition 2003: \$1,739

ServicePac® Service Upgrade:<sup>11</sup>  
2-yr Onsite Repair/9x5/Next Business Day Response #30L9189 **\$197**

## IBM ThinkPad X40

### Distinctive IBM Innovations:

- Longest standard battery life of any leading-brand notebook<sup>13</sup>

### 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)
- Intel Extreme Graphics 2
- 256MB DDR SDRAM
- 40GB hard drive
- Integrated Gigabit Ethernet and modem
- Legendary IBM full-size keyboard
- 7.5-hr Li-Ion battery<sup>17</sup>
- 1-yr system/battery limited warranty<sup>7</sup>

NavCode 23866GU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$1,749**

ServicePac Service Upgrade:  
3-yr Onsite Repair/9x5/Next Business Day Response #30L9195 **\$243**

## IBM ThinkPad X40 Solution Pack

### System Features:

- Intel Centrino Mobile Technology
  - Intel Pentium M Processor ULV 1GHz
  - Intel PRO/Wireless Network Connection 802.11b
- Microsoft Windows XP Professional
- 12.1" XGA TFT display (1024x768)
- 256MB DDR SDRAM
- 20GB hard drive
- Only .94" thin
- 2.7-lb travel weight
- 1-yr system/battery limited warranty<sup>7</sup>

### Accessories Included:

- ThinkPad X4 UltraBase™ Dock
- IBM Ultrabay Slim CD-RW/DVD-ROM combo

NavCode 23861ZU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$1,799**

ServicePac Service Upgrade:  
3-yr Onsite Repair/9x5/Next Business Day Response #30L9195 **\$243**

## IBM ThinkPad X40 Solution Pack

### Distinctive IBM Innovations:

- 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<sup>7</sup>

### Accessories Included:

- ThinkPad X4 UltraBase Dock
- IBM Ultrabay Slim CD-RW/DVD-ROM combo

NavCode 23826UU-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$2,199**

ServicePac Service Upgrade:  
5-yr Onsite Repair/9x5/Next Business Day Response #69P9200 **\$449**

NavCode® Get the latest pricing and information fast. Use NavCode on the phone or on the Web.

**\*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 DJJA/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) **Limited warranty:** Support unrelated to a warranty issue may be subject to additional charges. (8) **Microsoft Office XP:** Certain Microsoft software product(s) included with this computer may use technological measures for copy protection. IN SUCH EVENT, YOU WILL NOT BE ABLE TO USE THE PRODUCT IF YOU DO NOT FULLY COMPLY WITH THE PRODUCT ACTIVATION PROCEDURES. Product activation procedures and Microsoft's privacy policy will be detailed during initial launch of the product, or upon certain reinstallations of the software product(s) or reconfigurations of the computer, and may be completed by Internet or telephone (toll charges may apply). (9) **Travel weight:** includes battery and optional travel bezel instead of standard optical drive in



(Monitor not included)



(Monitor not included)



(Monitor not included)

### Why IBM ThinkCentre PCs?

Only IBM offers these features to protect you, connect you, and keep you working. Each ThinkCentre™ desktop featured here can give you the efficiency, productivity and edge you need with the following ThinkVantage Technologies:

### IBM Rapid Restore Ultra:

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 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 A50P

#### System Features:

- Intel® Pentium® 4 Processor 520 with HT Technology
  - Processor speed 2.80GHz
  - 800MHz FSB
- Microsoft Windows XP Professional
- 256MB DDR PC2700<sup>5</sup>
- 40GB hard drive • CD-RW
- Integrated 10/100 Ethernet
- Norton AntiVirus™ with 90 days of virus definition updates
- Lotus® SmartSuite® Millennium license
- 1-yr parts/1-yr limited onsite service limited warranty<sup>14</sup>

NavCode 843398U-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$699**

### IBM ThinkCentre A50

#### Distinctive IBM Innovations:

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

#### System Features:

- Intel Pentium 4 Processor 520 with HT Technology
  - Processor speed 2.80GHz
  - 800MHz FSB
- Microsoft Windows XP Professional
- 256MB DDR PC2700
- 40GB hard drive • CD-ROM
- Integrated 10/100 Ethernet
- Norton AntiVirus with 90 days of virus definition updates
- Lotus SmartSuite Millennium license
- 3-yr parts/1-yr limited onsite service limited warranty<sup>14</sup>

NavCode 841933U-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$749**

ServicePac Service Upgrade:  
4-yr Onsite Repair/9x5/Next Business Day Response #69P9158 **\$198**

### IBM ThinkCentre A50P

#### System Features:

- Intel Pentium 4 Processor 520 with HT Technology
  - Processor speed 2.80GHz
  - 800MHz FSB
- Microsoft Windows XP Professional
- 256MB DDR PC2700
- 40GB hard drive • CD-RW
- Norton AntiVirus with 90 days of virus definition updates
- Integrated 10/100 Ethernet
- Lotus SmartSuite Millennium license
- 3-yr parts/1-yr limited onsite service limited warranty<sup>14</sup>

NavCode 843298U-M419

THINK EXPRESS MODEL  
PRICED AT:

**\$799**

### IBM ThinkCentre S50

#### Distinctive IBM Innovations:

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

#### System Features:

- Intel Pentium 4 Processor 520 with HT Technology
  - Processor speed 2.80GHz
  - 800MHz FSB
- Microsoft Windows XP Professional
- 512MB DDR PC2700
- 40GB hard drive • CD-ROM
- Norton AntiVirus with 90 days of virus definition updates
- Gigabit Ethernet-integrated
- 3-yr limited warranty with limited onsite service<sup>14</sup>

NavCode 818336U-M419

**\$1,079**

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

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

### IBM ThinkCentre M50

#### System Features:

- Intel Pentium 4 Processor 520 with HT Technology
  - Processor speed 2.80GHz
  - 800MHz FSB
- Microsoft Windows XP Professional
- 512MB DDR PC2700
- 40GB hard drive • CD-ROM
- Intel Extreme Graphics 2
- Gigabit Ethernet-integrated
- 3-yr limited warranty with limited onsite service<sup>14</sup>

NavCode 8187EJU-M419

**\$1,049**

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

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



IBM recommends Microsoft® Windows® XP Professional for Business.

### IBM ThinkExpress 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 #22P7127 **\$20**
- Targus Deluxe Mobile Essentials Kit #22P7437 **\$60**
- ThinkPad Premiere Leather Carrying Case<sup>15</sup> #10K0209 **\$99**
- ThinkPad 72W AC/DC Combo Adapter #22P9010 **\$99**
- ThinkPad Port Replicator II #74P6733 **\$179**

### IBM ThinkCentre Accessories

- IBM 128MB USB 2.0 High-Speed Memory Key #22P9229 **\$59**
- Lexmark X5270 All-in-One Printer #22P8808 **\$140**
- IBM ThinkVision™ L170 17" Flat Panel Monitor with system purchase #W9SPAB0 **\$449**



1 866 426-0060 | [ibm.com/shop/m441](http://ibm.com/shop/m441)

Ultrabay bay, if applicable; weight may vary due to vendor components, manufacturing process and options. (10) **Thinness:** may vary at certain points on the system. (11) **ServicePac services:** are available for machines normally used for business, professional or trade purposes, rather than personal, family or household purposes. Service period begins with the equipment date of purchase. Service levels are response-time objectives and are not guarantees. If the machine problem turns out to be a Customer Replaceable Unit (CRU), IBM will express ship the part to you for quick replacement. Onsite 24x7x2-hour service is not available in all locations. For ThinkPad notebooks requiring LCD or other component replacement, IBM may choose to perform service at the depot repair center. Calls must be received by 5pm local time in order to qualify for Next Business Day Service. (12) **Full-size keyboard:** As defined by ISO/IEC 15412. (13) **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. (14) **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. (15) **Certain IBM logo products:** are not manufactured, warranted or supported by IBM; IBM logos and trademarks used under license. Contact IBM for details. (16) **Wireless capability:** requires compatible wireless-enabled options, sold separately. (17) **Battery:** These model numbers achieved the Ziff Davis Media, Inc.'s Business Winstone™ 2002 BatteryMark™ Version 1.0 Battery Runtime Time of at least the time shown. This test was performed without independent verification by the VeriTest testing division of Lionbridge Technologies, Inc. ("VeriTest") or Ziff Davis Media, Inc.; neither Ziff Davis Media, Inc., nor VeriTest makes any representations or warranties as to these test results. Winstone is a registered trademark and BatteryMark is a trademark of Ziff Davis Publishing Holdings, Inc., in the U.S. and other countries. A description of the environment under which the test was performed is available at [ibm.com/pc/www/thinkpad/batterylife](http://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. **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](http://www.ibm.com/pc/safecomputing) periodically for the latest information on safe and effective computing.





# IS MICROSOFT TO BLAME?

**Windows PCs are under endless attack.  
Did Gates & Co. build too easy a target?  
Are they doing enough to fix the problem?**

**E**arly on the morning of May 14, Beth Zboan sat down at a PC in the Platt Springs Animal Clinic and dialed into the Internet. The South Carolina clinic handles scheduling, billing, and record-keeping through a PC application called AVImark. As on any other morning, Zboan was going online so the app could send its daily e-mail appointment reminders to clients. But this time, the very moment she connected, a window filled her display, saying that because of a catastrophic error the system would shut down in 60 seconds.

The system stayed down for more than 8 hours, crippling the Platt Springs clinic for the better part of a working day. "Our entire business is on that system," says Beth Zboan's husband, Mike, the clinic's veterinarian. The Zboans were victims of Sasser, a malicious Internet worm that burrows through a security hole in Microsoft Windows.

Microsoft had published a patch for the hole more than a month earlier, and every antivirus vendor had issued an update to identify and stop the virus, but the Zboans didn't know that Microsoft provides regular security patches, nor that their antivirus program is all but useless without regular updates. They didn't know they needed to reconfigure their PC so it could automatically download these fixes and updates. They didn't know that for ensuring their computer's security, the onus is on them.

## CONTAGIOUS COMPUTING

The Zboans are not alone. Sasser infected somewhere between 200,000 and 1 million Windows machines worldwide—and it's merely the latest in a long line of Internet worms that have successfully exploited vulnerabilities in a Microsoft operating system. In 2003, according to leading antivirus vendor Sophos, six of the top ten most destructive viruses were aimed specifically at holes in Windows. That includes last summer's Blaster worm, which, by most accounts, infected more than 10 million machines.

Sasser won't be the last worm to squeeze through a hole in the OS. "We've only seen the smallest percentage of the holes in Windows," says Bruce Schneier, founder and chief technology officer of California consultancy Counterpane Internet Security and author of *Secrets & Lies: Digital Security in a Networked World*. "My guess is that for every [hole] we've seen, there are hundreds more we haven't," he says.

As more and more malicious code weasels its way onto Windows desktops, people are beginning to wonder where to point their fingers. Yes, the primary culprits are the virus writers. But is Microsoft providing too easy a target? Can't the world's largest software maker cut down on the number of security holes *before* it



BY CADE METZ ILLUSTRATIONS BY CALEF BROWN

ships an operating system? After the OS ships, shouldn't the company plug any remaining holes on its own?

### AN IMPERFECT WINDOWS IN AN IMPERFECT WORLD

All modern software has bugs—lots of them. That goes for Windows, Linux, Mac OS, and any other operating system or application you can think of. Part of the problem is that regardless of how many developers are working on a software tool, and no matter how clever they are, they can't possibly anticipate each and every way someone could attack it.

"Just as you can't stop all bank robberies, you can't stop all software attacks,"

Second, today's code is built atop yesterday's code, because everybody wants compatibility with old apps and old OSs. When those old apps were written, before the rise of the Internet, when viruses spread like molasses, on floppy disks handed from person to person, the average PC wasn't exposed to outside threats. It didn't have the same need for secure software.

Clearly, Microsoft has a difficult task on its hands. But so do its competitors, and their software isn't attacked nearly as often. Does this mean that Windows is somehow less secure? Maybe, maybe not.

If you ask Bill Gates, he'll tell you that Windows actually contains fewer security flaws than competing OSs. "Our technol-

Naturally, if you talk to Linux and Macintosh users, they'll tell you Windows has far more security flaws. You'll hear the same from Counterpane's Schneier: "Microsoft makes dumb security decisions again and again and again," he says, "and Linux and Mac developers tend not to make those decisions." Linux users are particularly adamant, insisting that their OS is less vulnerable because "more eyes" review the code. Since Linux is an open-source project, they say, more developers are looking for security holes, which means a greater likelihood of someone finding them before they're exploited.

According to McGraw, the open-source argument doesn't hold up. "Linux is a col-

# 10 minutes | TIME ELAPSED FROM THE FIRST REPORTED ATTACK OF THE SQL SLAMMER VIRUS TO ITS SPREAD TO THE OTHER END OF THE GLOBE.

SOURCE: COOPERATIVE ASSOCIATION FOR INTERNET DATA ANALYSIS.

says Gary McGraw, coauthor of *Building Secure Software* and chief technology officer at Cigital, a firm that helps improve software security at several Fortune 500 companies. "In any field," he adds, "security is about risk management."

In the software business, however, there are two additional problems: First, modern software is often so complex that developers have trouble understanding exactly how it works, much less how someone could attack it. "Software is the most complicated artifact that we build as a species," posits McGraw. "Something like Window XP includes 40 million lines of code. How many people do you need in the room before they understand all that?"

ogy, at this point, is way better in terms of how few defects we have," Microsoft's chairman and chief software architect told *PC Magazine* last November. "Compare, say, with Linux—how many defects we have, how quickly we fix those defects, how our system is for getting the updates out for those defects. Take those objective criteria and we are better." Gates claims Windows is attacked more often simply because it's running on more machines. According to research firm IDC, Windows runs on 95 percent of the world's PCs. Virus writers target it, Gates says, not only because their malware needs a large audience to survive but also because they resent Microsoft's popularity.

Security experts like Cigital's McGraw agree that Microsoft's ubiquity accounts for at least part of the problem. "If you're a bad guy and you want to go after somebody, chances are they're running a Microsoft operating system," says McGraw. "If you're some kid in Germany who just wants to raise hell, you're more likely to write a worm for Windows." But is Gates right in saying that Windows has fewer security flaws than competing OSs, and that Microsoft plugs them faster? That's debatable.

lection of 5,000 independent things, and no one is ever quite sure who wrote them or what they do," he says. He insists that Linux and Mac OS are no more secure than anything else on the market, including Windows.

Who's right? Proponents of the different operating systems will probably never agree, but a recent Forrester Research study seems to support Gates's claims. Between June 1, 2002, and May 31, 2003, the study says, security experts found more flaws in each of the four major Linux offerings than in Windows. In that time, for example, 286 flaws were found in Debian Linux, and only 128 were found in Windows. Forrester didn't track flaws in Mac OS or other operating systems, but at least when compared with Linux, Windows seems to be more secure. (See the sidebar "Should You Switch?" on page 76.)

The fact remains, however, that Windows is attacked—successfully—more often than other OSs. "In terms of security vulnerabilities, there's not much difference between Windows and other OSs," says Vincent Weafer, senior director of security response at Symantec, a leading security software vendor. "But because Windows is attacked more often by automated tools such as worms, it's penetrated more often."

Regardless of how many security holes show up in other systems, Windows is less secure than it needs to be. Tens of millions of Windows machines are compromised



WHEN USERS install Windows XP SP2, they have to choose whether to download critical security updates.



each year. Microsoft must work harder. Cutting down on the number of holes in Windows is only the beginning. After it ships an OS, the company has to do a better job of plugging any holes it has missed—and offer better self-defense tools than the weak firewall that ships with Windows XP.

Forrester's report also indicates that Microsoft is getting better and better at responding to vulnerabilities, quickly building patches and posting them to the Web.

But these patches don't always make it onto users' systems. Like the Zboans, many users are unaware that such patches exist. And many other users fail to download new patches. Some don't realize that Windows can install new patches automatically. "It's too much work," says David Singer, whose home computer in Albany was hit by both Blaster and Sasser. "I basically wait until a virus hits, and then I download a patch."

Others assume new patches cause problems. "I looked at the patches," says Benjamin Burge, a Blaster victim from Fairfax, Virginia. "But one of the things I kept hearing in the press is that people would download the patches and there would be new instabilities on their machine."

Still others refuse to download patches because they're running dial-up connections, saying it would take too long. Addressing the dial-up difficulty, Microsoft will provide, on request, a free CD with all patches up to when the CD was created, so only the most recent patches will need to be downloaded. (You can request the CD at [www.microsoft.com/security/protect/cd/order.asp](http://www.microsoft.com/security/protect/cd/order.asp).) And we haven't seen much of the infamous Windows patch instabilities in the past few years.

Of course, in the case of worms like Blaster and Sasser, many users would have been protected if they'd simply turned on a firewall or kept their antivirus software up to date. But again, like the Zboans, many users don't know to do so. Windows XP has a built-in firewall, but it's turned off by default. Nearly all new PCs ship with third-party antivirus software, but not all users realize that they're required to sign up for—and pay for—regular signature updates.

#### MICROSOFT'S RX

The good news is that improvements are on the way. Under the aegis of its Trustworthy Computing Initiative, Microsoft is working to reduce the number of Windows vulnerabilities, putting each new version of the OS through an intense security review, or "push." This started with Windows Server 2003, and it has already proved

# Q&A MIKE NASH

**W**ill Windows always be this vulnerable to viruses, worms, and malicious spyware? What is the world's largest software maker doing to improve PC security? To find out, *PC Magazine* editor-in-chief Michael J. Miller spoke to Mike Nash, head of Microsoft's security business and technology unit.

**MJM:** *There's a perception in the marketplace that Microsoft is somehow to blame for our recent security woes, for the ever-growing number of virus and spyware attacks. How do you react to that?*

**MN:** If you look at the relative security of Microsoft versus anything else that's out there, the evidence shows that there are fewer vulnerabilities in Windows than in other platforms. But customers are very clear with us: Because Windows is used so broadly, they need us to do an even better job. We certainly take that very seriously, and as a result, we've focused on a number of different initiatives to make sure that since our systems are going to be the ones the bad guys try to attack, we spend more effort and really show leadership in the industry.



**MJM:** *This summer, you plan to release Service Pack 2 (SP2), an update to Windows XP. That will fix a lot of these problems, making it easier, for instance, to turn on Win XP's firewall and automatically download vulnerability patches from the Microsoft Web site. What's another good example?*

**MN:** I also think that from a quality perspective a lot of progress has been made. Thanks to our Trustworthy Computing process, the number of times we've had to issue operating-system updates in response to someone finding a vulnerability has gone down. In the first year after we shipped Windows 2000, we issued 42 patches for issues that were either critical or important in nature, and if

you track that with Windows Server 2003, we issued only 13.

**MJM:** *One of the strengths of Windows is that it's quite easy to build new applications for the platform. Does that also make life easier for the virus writers?*

**MN:** I would disagree with that a little bit. It's more about motivation. One of the [main purposes of] a worm is to target a large number of machines. It'll hit some but not others, and the only way to get a good one going is to aim at a very large base.

**MJM:** *What about people unknowingly downloading malicious code onto their systems? Will SP2 help with that?*

**MN:** SP2 will go a long way toward stopping that stuff. When you're trying to download software from a Web site, [SP2 will be] much clearer about what's going on, telling you what's being downloaded, where it's coming from, what you should do about it.

**MJM:** *Will SP2 put an end to our problems?*

**MN:** Do I think it will fix all vulnerabilities in Windows? No. Do I think it will have a broad impact on the customer experience? Absolutely.

## MORE ON THE WEB

To read this interview in its entirety, visit [www.pcmag.com/security](http://www.pcmag.com/security).

# SHOULD YOU SWITCH?

You hear it so often: “Don’t run Windows. It’s a security nightmare. You’re much better off with Linux.” Or “I don’t have all these problems on my Mac.” Last October, in *The Wall Street Journal*, technology guru Walter Mossberg published a column called “If You’re Getting Tired of Fighting Viruses, Consider a Mac,” claiming that Windows is “riddled with security holes.” *The Economist* has published stories echoing the claims of many die-hard Linux users, insisting that the open-source OS is more secure because more people review its source code. But are competing operating systems really more secure than Windows, the OS that runs 95 percent of the world’s PCs? Define *secure*.

A recent Forrester Research study indicates that Windows actually has fewer security flaws than the leading Linux offerings, and that Windows users receive security patches much quicker than Linux users.

What about Macs? Forrester didn’t track Apple’s OS, but security experts generally agree that in terms of security flaws, it’s at least as safe as Windows—which may be damning it with faint praise. “The Mac OS is built on the BSD Unix kernel, which is in a little better shape than Linux,” says Gary McGraw, coauthor of *Building Secure Software* and chief technology officer at Cigital, a leading software security consultant.

Recently a Mac OS X security flaw involving the operating system’s URI handler made headlines. Apple reported the problem on May 17 and had a complete fix available by June 7. This 21-day period compares well with Microsoft’s 25-day average fix time reported by Forrester, although according to some users Apple heard about the error as early as February.

And yet it’s true that if you’re running Linux or Mac OS, you’re far safer than if you’re running Windows. Regardless of which OS has the fewest security flaws, Windows is attacked more often than its competitors. Because Windows dominates the market, virus writers are more likely to target Microsoft’s OS so they can do more damage.

This is particularly true when a hacker builds an automated *worm*—a virus that can bounce from machine to machine on its own. A worm spreads much faster and farther if it’s aimed at Windows, because so many more machines run Windows. “If a worm manages to exploit a single vulnerability in Windows, as in the case of Blaster or SQLSlammer or Sasser, it tends to have a global impact,” says Vincent Weafer, senior director of security response at antivirus vendor Symantec. “Linux machines are more likely to be directly compromised by an individual attacker. This happens less often, but such attacks are much more sophisticated, and they can do a lot more damage,” he says.

Maybe Mossberg is right. If you’re anxious about viruses, worms, and hackers, using a Mac isn’t a bad idea. It may not be vastly more secure than a Windows system, but fewer attacks are aimed at it. Linux, too, gets fewer automated attacks, but we can’t justify saying that Linux is intrinsically more secure than Windows.

Ultimately, arguing Mac or Linux versus Windows misses the point. If you want to minimize your exposure to automated attacks, using less popular software might be a good idea. This is true not only for the OS but also for productivity software, browsers, and mail clients. Yet simply switching is not an effective security solution. Only if you use the proper security tools and remain vigilant about staying up to date and cautious about what you do online should you start to feel some sense of comfort.—CM



quite effective, according to Mike Nash, Microsoft vice president in charge of the company’s security business and technology unit. Nash says that security experts found 13 vulnerabilities in Windows Server 2003 during its first year in release, compared with the 42 found in Windows 2000 in its first year. Windows XP, which debuted before these security pushes were put into place, had 31, a small improvement.

Sometime this summer (Microsoft can’t yet say when) the company will release an update that should ameliorate some of the OS’s security problems. With Windows XP Service Pack 2, the built-in firewall will be turned on by default. The OS will let you know when your antivirus program needs updating. And according to Microsoft, it will be less susceptible to buffer overflows, the bug that caused so many systems to crash when infected by Blaster and Sasser. Thanks to a recent German court ruling, SP2 will not default to automatic patch updates, but during installation, it will force the user to choose whether this feature should be on or off—and will practically beg users to turn it on.

Microsoft has also been working to ensure that more people download security patches, and to make them easier to download and generally more stable. As a result, the company claims, an estimated three times as many people downloaded the patch that protected against Sasser as the one that prevented Blaster.

Most important, the company is working to reeducate its developers, so that as they design future OSs (including the next major Windows upgrade, code-named Longhorn), they’ll be less likely to introduce vulnerabilities. To this day, not many developers appreciate that true security begins and ends when you’re actually building an operating system or application, not after you’re finished.

Sure, you can throw a firewall in front of a PC—or even an individual application—but at some point you’ll have to poke holes in that firewall to communicate with other machines and apps. The trick is in making sure that once something comes through the firewall, the software still won’t be able to do anything untoward. “Thinking just about firewalls or application-level firewalls or traffic on port 80 isn’t right,” says McGraw. “It’s about the software itself. You have to make the software secure.”

Microsoft’s Nash says that many software developers are still graduating from university programs without knowing



## Don't get burned by Instant Messaging.

The dangers of IM are glaring — unmanaged IM attachments will lead to security hazards. Shield yourself with Websense Enterprise<sup>®</sup>. By managing IM usage as well as file attachments, Websense helps you keep the productivity benefits of IM, while eliminating the liabilities. It's the kind of intelligent IT protection you need.

For more information and a **free white paper** on managing instant messaging, please visit [www.websense.com/IM](http://www.websense.com/IM).



FILTER | PROTECT | OPTIMIZE

15 seconds

# A YEAR AGO, IF YOU PUT AN UNPROTECTED MACHINE ON THE INTERNET, IT WOULD BE ATTACKED WITHIN 15 MINUTES. NOW IT'S 15 SECONDS.

SOURCE: SYMANTEC.

how to design secure applications. But Microsoft is slowly working to correct this problem. Michael Howard, a security program manager on the Microsoft Windows XP team, and David LeBlanc, a senior security technologist at the company, wrote a book called *Writing Secure Code*. According to Nash, this book is now required reading for Windows developers.

"In the course of putting together Longhorn," says Nash, "rather than just having an event like the security push, where

unless Microsoft is held liable for security flaws in Windows, the company won't have enough incentive to make the OS as secure as it needs to be. "Software liability is the way to solve this problem," he says. "The reason Microsoft's operating system is insecure is that [the company] doesn't bear the brunt of the virus attacks. Virus attacks don't cost [Microsoft] anything. If someone would successfully sue Microsoft for \$30 billion, it would make its software simpler and more secure."

According to most technology lawyers, this isn't likely to happen anytime soon. Windows and its security patches are accompanied by a license agreement that disowns all liability; Microsoft could be held liable only if new laws were passed or if the company claimed—in the press or ads, for example—that the operating system is more secure than it actually is.

"The fact that dedicated hackers working around the world are able to find security holes in Windows does not mean Microsoft is at fault," says Ian Ballon, cochair of the intellectual property and In-

ternet practice group at international law firm Manatt, Phelps & Phillips and also the executive director of Stanford University's Center for E-Commerce. "It's like suing the New York City fire department for injuries arising out of 9/11."

There may not be legal pressures on Microsoft at the moment, but in the eyes of people like McGraw, there are certainly other reasons for Microsoft to improve security. "Microsoft is doing Trustworthy Computing because they're smart business-people, and they understand that their customers want better stuff, and they understand that their customers are getting really tired of all these security problems."

#### MICROSOFT'S RESPONSIBILITY

In truth, there are a few places where Microsoft's security strategy breaks down. Many current Windows users won't even

know that Service Pack 2 exists. Many dial-up users will balk at downloading the huge file—the current build is 273MB—although when it's released, Microsoft says, it will be a roughly 90MB download for users who are up to date with security patches. And even if they do adopt SP2, or later Longhorn, many users will continue to run insecure legacy applications.

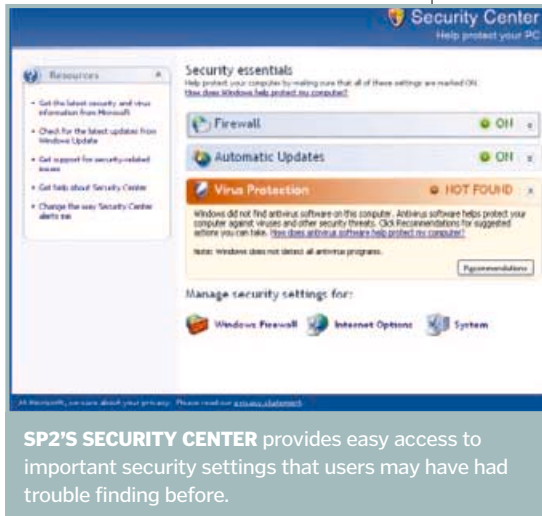
Microsoft must go to greater lengths than ever before to ensure existing users download SP2. Advertising and public-service announcements would be a good start. The company may distribute SP2 on disc; distribution details have yet to be finalized. A suggestion: If America Online can afford to mail a CD (several, in fact) to everyone in the country, so can Microsoft.

Preventing legacy apps from running on a new OS like Longhorn might be a step too far, but Microsoft could at least give users the option to prohibit running DOS and older Windows apps on their machines.

Some might even argue that by now Microsoft should equip Windows with its own antivirus engine, letting people easily download regular updates. This, however, may be a bad idea. The company has already been accused of using its dominance in the OS business to monopolize application markets. The company recently purchased part of GeCAD, a Romanian antivirus company, but won't say whether the technology will be added to Windows. The GeCAD team has built Microsoft's cleaners for recent viruses and has been involved in developing SP2.

With SP2, its Trustworthy Computing Initiative, and new coding techniques, Microsoft has certainly taken a few steps in the right direction. Time will tell whether these measures will put so much of a dent in our virus and spyware problems. But one way or another, primary responsibility must shift away from people like the Zboans and back to where it belongs: with Microsoft. ■

**OUR CONTRIBUTORS:** Cade Metz is a senior writer at *PC Magazine*, and Michael J. Miller is editor-in-chief. Associate editor Sarah Pike and PC Magazine Labs lead analyst Neil J. Rubenking were in charge of this story.



we're going through and reviewing all the code at the end, we're making sure that in the design phase, the implementation phase, as we build the product, we're looking for security and quality issues." The company is also using design tools that are far more conducive to building secure code. It has discarded notoriously insecure languages like C and C++ in favor of C# and the new Microsoft .NET platform. When forced to run older applications, Longhorn will still be vulnerable, but according to Microsoft, it shouldn't be nearly as vulnerable as Windows XP.

#### LEGAL AID?

Of course, some pundits are still skeptical. Schneier believes that although Microsoft has spent a great deal of time talking to the press about its new security measures, it isn't doing everything it could. He feels that

# Record Everything Your Employees Do On The Internet.

With Spector CNE on your network, you will easily prevent or eliminate problems associated with Internet and PC abuse.

Spector CNE provides an immediate and accurate record of every employee's:



Emails Sent & Received



Chats/Instant Messages



Keystrokes Typed



Web Sites Visited



Programs Launched



VCR-like Snapshot Recording

To learn more about Spector CNE and receive a **FREE** cost savings analysis for your business call **1-888-598-2788** or visit **www.SpectorCNE.com**

A few minutes a day of personal surfing, online shopping and chatting may seem harmless, but consider this...

A recent study concluded that employees spend an average of 75 minutes per day using office computers for non-business related activity (surfing porn, gambling, shopping or even searching for sex online). That translates into an annual loss of \$6250 per employee or more than \$300,000 per year down the drain for a company of just 50 employees.

So how do you catch guilty employees who won't admit they are stealing company time?

## Introducing Spector CNE – Corporate Network Edition

At the touch of a button, you can monitor any employee, any time, anywhere on the network. Spector CNE secretly records and archives chat conversations, instant messages (AOL, MSN and Yahoo), emails (including Outlook, Exchange, AOL and web-based mail like Hotmail), web sites visited, keystrokes typed, files downloaded, programs run and more.

And unlike many filtering and blocking tools, Spector CNE records everything they do in exact visual detail. So, you have absolute proof that goes way beyond just knowing they visited porn.com.

Take control of employee PC and Internet abuse with Spector CNE. It'll be the best software investment you make this year.

I pass  
company secrets  
via the web

I surf porn websites  
from behind  
my cubicle walls

I shop online  
after closing  
my office door



# OUTSTANDING VIRUS PROTECTION

## FOR SMALL & MIDSIZE BUSINESSES

When the virulent MyDoom virus burst upon the world this past February, it did so during the worst month ever in terms of virus and worm-related vandalism. During this single month, there was some *\$83 billion* in damage from these Internet attacks, according to consultancy mi2g. And things weren't much better in January—previously the worst month on record.

This kind of chaotic environment creates a dire threat to the long-term viability of small and midsize businesses (SMBs), many of whom operate on tight budgets and may lack the resources to defend themselves properly. These firms want fast, accurate virus and worm detection that will not tie up their precious CPU cycles, and they want it *now*.

What does this specifically entail? To meet the needs of all departments and users, SMBs require:

- **Outstanding detection**
- **Software that's easy to install** and runs on a variety of operating systems
- **Automated, transparent virus update capabilities** that work without increasing workloads on IT staff or users
- **Accurate and efficient performance** that doesn't slow down or even stop user operations
- **Free support** via e-mail and telephone

Accepting anything less puts the business user at a significant disadvantage, and may open the door to a potentially catastrophic attack.

### >PAYING THE PENALTY

So what's wrong with the majority of anti-virus "solutions" out there today? First, they're slow—both in terms of the time it takes to update definition files, as well as perform actual scans. Such slow performing anti-virus software can cause even newer computer equipment to operate inefficiently, and thus result in a loss of productivity for users and IT departments alike. And that costs money.

Also, many SMBs maintain environments that may include older hardware. Most of today's anti-virus programs run especially inefficiently on these computers, and indeed, may even grind them to a halt. This may force SMBs to purchase expensive new equipment in order to maintain acceptable productivity levels.

### >THE ANSWER: ESET NOD32

For SMBs that refuse to compromise when it comes to virus protection, the solution is NOD32 from ESET Software. Based on its unique Advanced Heuristics and its efficient, rapid code, ESET NOD32 is a proven anti-virus solution that has amassed an unparalleled competitive record. In fact, for more than six years, NOD32 has not missed a single "In the Wild" (ITW) virus on tests conducted by Virus Bulletin. NOD32

is the only anti-virus program that can make this claim. Additionally, NOD32's efficient code used much less system resources, resulting in operating speeds of 2 to 50 times faster than its competitors!

### >AWARD-WINNING SOFTWARE

Advanced Heuristics work on two levels. On level one, algorithms seek out worms and viruses via code analysis. On level two, NOD32's "Virtual Machine" capability seeks out suspicious files, isolates and runs them *outside* production environments. Advanced Heuristics have caught about 89% of all new ITW worms and viruses without the need for the signature code used by other products. This is a primary reason that NOD32 has won more "100% Awards" given by Virus Bulletin than any other anti-virus product!

NOD32 supports a wide range of OSs, including Microsoft Windows 95, 98, NT, 2000 and XP; as well as Linux, Novell NetWare and Lotus Domino. Of particular note to SMBs, NOD32 supports Microsoft Small Business Server 2003 and Exchange Server, and it's the first product to receive CheckMark certification on Windows 2003. ESET has also just released version 2.0 of NOD32 for Microsoft Exchange Server, so SMBs can protect their business-critical mail servers and gateways from attack as well.

### >RAVE REVIEWS

Jim Butler of JHB Consulting in Lake Zurich, Ill., is a very satisfied NOD32 user.

"As a professional consulting firm, we have used NOD32 for many of our clients," he explains, "including a large medical practice where Internet access and resulting viruses could compromise patient records. NOD32 has kept the system up and running without a flaw. At all of our clients, we have had fewer problems with the interaction between NOD32 and the various Microsoft Operating Systems that our firm supports, than with any other virus protection product."

No longer must SMB users hobble themselves with compromise solutions. Driven by Advanced Heuristics, ESET NOD32 provides superior detection and high-speed processing. Its efficient code extends the life of hardware and helps IT departments and users be more productive.

Based on its superior technology and proven track record, ESET NOD32 is the logical anti-virus choice for SMBs. ■

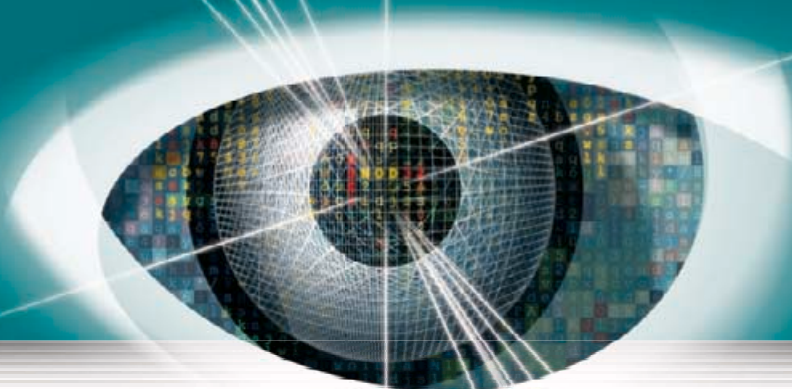
Your business deserves the superior detection capabilities of ESET NOD32. For more information and to download free trial versions, visit [www.nod32.com](http://www.nod32.com)

**NOD 32**  
antivirus system

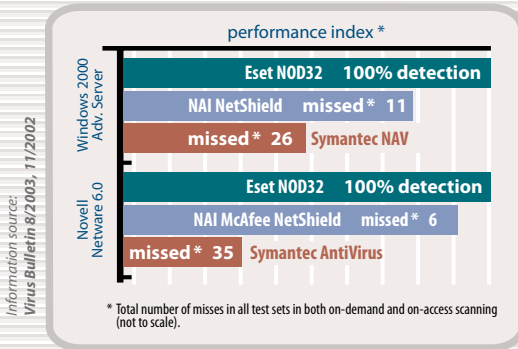


Record winner of Virus Bulletin 100% Awards

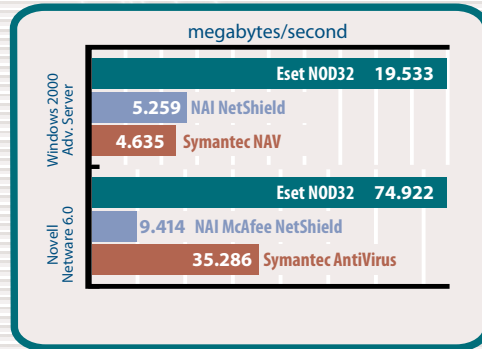
# only one antivirus product in the world...



## detection rate



## scanning rate



**There can only be one #1... Why settle for second best?**

How does your antivirus compare? The results may surprise you... go to [www.eset.us/compare](http://www.eset.us/compare)



# NOD 32<sup>®</sup>

antivirus system



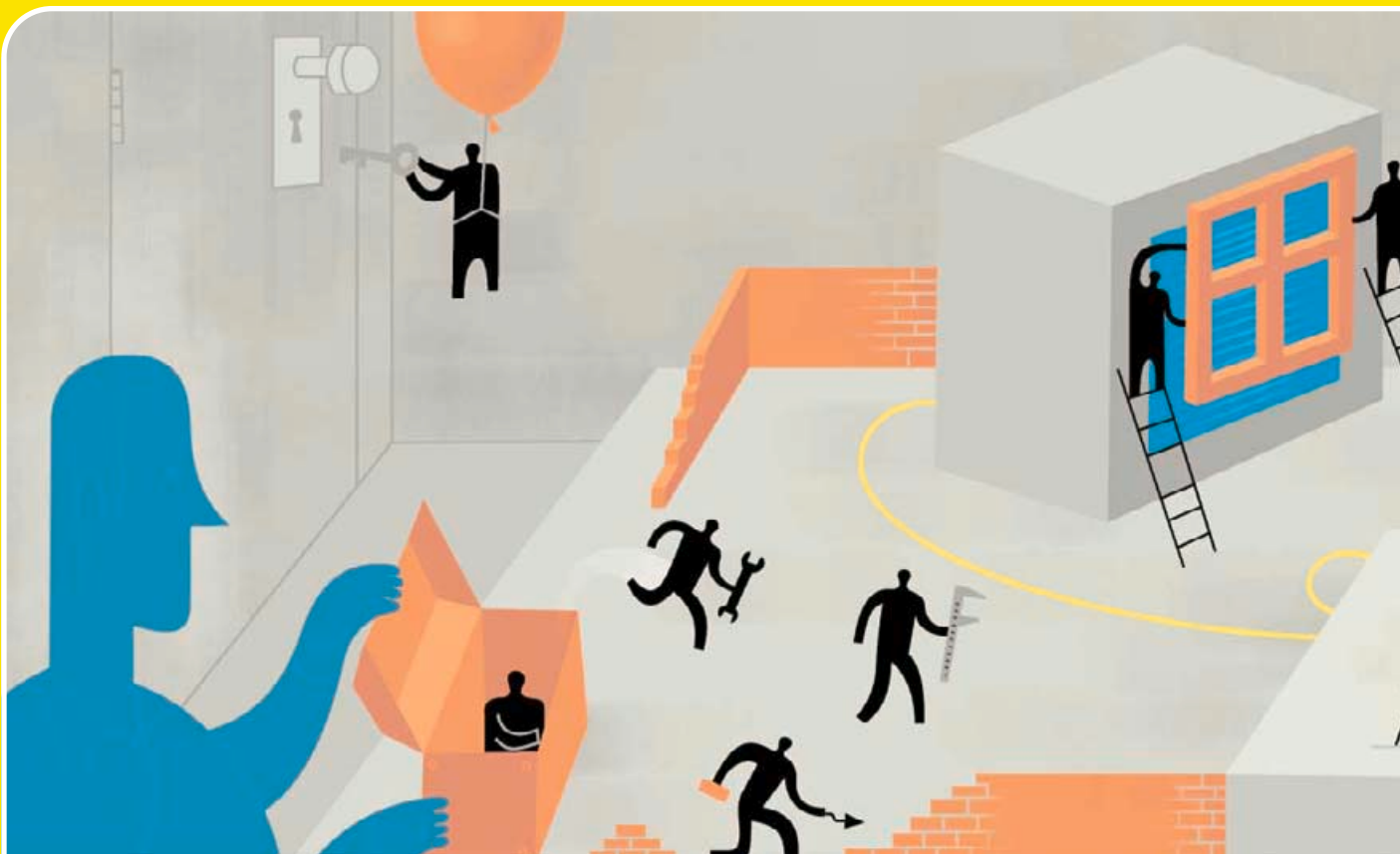
**NOD32 supports:** Windows 95, 98, ME, NT, 2000, XP, 2003 | MS-DOS | Unix | Novell Netware | Kerio MailServer | MS-Exchange server | Lotus Domino Server | Linux Mail Servers | Remote Administrator

Windows is registered trademark of Microsoft Corporation. Symantec is registered trademark of Symantec Corporation. NetShield is registered trademark of Network Associates Technology, Inc.



**For further information, pricing and FREE TRIAL version contact:**  
**Eset Software** | Phone: (619) 437-7037 |  
sales@eset.com | www.eset.com

we protect your digital worlds



# KEEP YOUR PC

Learn to wield your firewall, antivirus, and anti-spyware tools expertly; don't give up your PC without a fight.

Illustration by Doug Ross

# safe

IN THIS  
STORY

84 FIREWALLS:  
SOFTWARE

86 FIREWALLS:  
HARDWARE

88 ANTIVIRUS





## SECURITY CHECKLIST

Here are some healthy habits for keeping your system running right.

- [ ] **Keep Windows up to date** by installing all critical updates.
- [ ] **Check start-up processes.** Launch Msconfig from the Start menu's Run dialog and click the *Startup* tab. Look up unfamiliar entries on a site like Answers-ThatWork.com to find out what they are and if you can safely disable them.
- [ ] **Keep all security programs up to date.** This includes antivirus, firewall, and antispyware programs. If possible, set them to update automatically.
- [ ] **Back up regularly.** See our most recent Utility Guide ([www.pcmag.com/utilityguide](http://www.pcmag.com/utilityguide)) for various methods and programs for backing up your files.
- [ ] **Surf safely.** Set Internet Explorer's Security and Privacy levels to at least Medium, disable third-party cookies, and never click on a button or pop-up dialog without reading it carefully. Never allow a download that you didn't specifically request.

[ ] **Be wary of attachments.** Viruses often arrive in e-mail messages with spoofed return addresses, so open only expected attachments from sources you trust.

[ ] **Don't swallow the spam.** Tricky social engineering makes clicking on the links in some spam almost irresistible.

Check sites like Hoaxbusters (<http://hoaxbusters.ciac.org>) as well as those of major AV vendors for lists of Internet scams.

[ ] **Set up your IM properly.**

Allow connections only from users on your buddy list. Disable file sharing, file transfer, and other advanced (but dangerous) features.

[ ] **Check for vulnerabilities via assessment sites.** One of our favorites for this is Gibson Research ([www.grc.com](http://www.grc.com)), home of ShieldsUP! and many other vulnerability assessment tools.

[ ] **Keep an eye on those icons.**

Antivirus, firewall, and other types of security software place status icons in the system tray. Glance at them every day to make sure they're active and not flashing any alerts.

**No matter where you really live,** when you connect your computer to the Internet, you're in the big city. So you outfit your PC with the virtual locks that *PC Magazine* has been recommending for years: antivirus protection, a software firewall, a router with a hardware firewall, and a shiny new antispyware utility. Your PC is now impenetrable, right? Well, maybe not.

Just *having* locks on your door isn't enough. You've actually got to *lock* them, too, and let only the right people in. If your security apps aren't configured correctly, your computer isn't locked down, and anyone could get in.

In the following pages, we'll show you how to set up for appropriate protection. No matter which brands or versions you've chosen—whether you find menus called Options, Settings, or Preferences—you'll benefit from this universal advice.

Be warned, though: Once you've become your own security expert, friends and family will come crawling out of the woodwork. "My computer's acting funny—there are weird links on my desktop, and my home page has a naked lady on it. And I got a cable modem, but my connection is so slow. And I get all these pop-ups that know my name. And, and, and...."

The culprit is nearly always spyware, Trojan horses, or other malware that props a PC's doors wide open and parties on the hard drive. So we'll also tell you how to put together a portable toolkit filled with free antivirus software, firewall, antispyware, and more, for you to take along when you're helping the helpless.



89 ANTISPYWARE

90 KEEP YOUR FRIENDS SAFE

# Firewalls: SOFTWARE

BY BEN Z. GOTTESMAN

For years we've told you that every PC should be running up-to-date antivirus software, but now personal firewalls are equally important. These utilities can warn you about, or automatically stop, any inappropriate network activity. They've been able to prevent many viruses from spreading before AV companies had signatures available, and they can stop threats like Sasser and Blaster from even getting onto your PC. In addition to the recommended firewalls below, we also like the same companies' full security offerings, Norton Internet Security 2004 and ZoneAlarm Security Suite, both of which add antivirus software as well as other security and privacy tools.

**Know your network.** Most personal firewalls create a trusted zone of IP addresses from which they allow traffic without question, so you need to know your IP address and the address range or subnet used by your network. This will help you avoid a bevy of pop-up firewall alerts and make sure that you don't have

## Choose Your Network Access

Choose what kind of access you wish to give to computers on your network.

Do Not Trust My Local Network  
Choose this if you are not connected to a Home or Office Network, or otherwise do not trust your Network's traffic.

Completely Trust My Local Network  
Choose this if you want to allow other computers on your Network to access your computer. Recommended

Manage Each Network Separately  
If your computer is on multiple networks, each will be managed separately. By default, only private Local Networks will be Trusted.

problems accessing network drives and printers. To get the necessary information, type *ipconfig* at the command prompt. The IP address that *ipconfig* returns is the address of your own system. The default gateway address is the address of the router. The subnet mask is too complicated for this space, but on most home routers, it will be set to 255.255.255.0, which is an indication that if, for instance, your gateway address is 192.168.1.1, all of the systems on your network will have 192.168.1.x addresses.

But also consider how much you trust

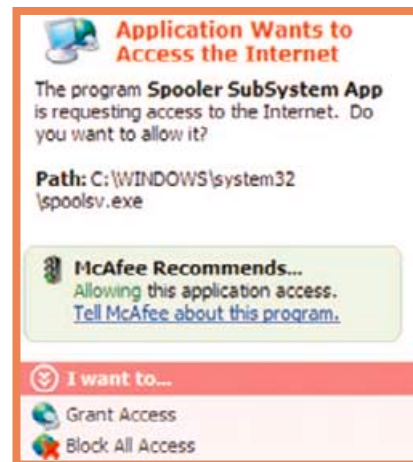
the other people on your network. Are you sure that your children's computer is as well protected as your own? Viruses can spread easily once inside a trusted network.

**Set up alerts.** Early firewall programs inundated users with alerts, most of which were either unnecessary or presented choices that most users were unable to understand well enough to make appropriate decisions. If your program offers to show you only warnings that need immediate attention, you should select that option.

◀ **Choose your network.** If your program prompts you to describe what type of network you're on, such as a home, corporate, or public network (at an Internet café, for example), be sure to choose the appropriate setting. A good firewall will use your IP address and the type of network that you indicate to configure itself. If you use a notebook PC, the firewall should be able to change its settings based on your location.

**Set up trust.** Some firewalls make assumptions about which IP addresses can be trusted, but others ask you. Decide whether the other PCs on your network are safe. One influencing factor is whether you have control over those other systems. If not, they could be infected with a virus or worm and try to attack you from the inside.

**Trust known programs.** If your firewall offers to use preset controls for known programs, let it. This should cut down significantly on the number of program alerts you receive in the first few days of use.



▲ **Answer program alerts.** A firewall is a lock on your PC's connection to the Internet. When you receive an alert asking whether to let an application access the Internet, you're really being asked whether or not you're willing to give that application a key to the lock, so it's critical that you answer correctly. There is almost always an event that you initiated that coincides with an alert, such as launching a program or issuing a command like *Check for Updates*.

The alert may give you an explanation of the program if the firewall recognizes it. If not, the alert should still at least tell you the filename and path of the program that's trying to access the Internet. This should give you a clue to what the program is. If your firewall doesn't tell you the path, use Windows' Search tool to find it. If you don't recognize the program, go to Google and search on the filename for more information before granting permission.

If you're still unsure, refuse the connection this one time and see what happens. If you think it's probably safe, allow the connection for one time and see what happens. If you can't tell what it's doing, consider doing a one-time block on the app the next time you get a request and see if

## RECOMMENDED PRODUCTS

- >> Norton Personal Firewall 2004
- >> ZoneAlarm Pro 5.0

**MORE ON THE WEB** Read this story online at [www.pcmag.com/security](http://www.pcmag.com/security), where you'll also find ongoing security coverage—and the items you need to make your own portable security toolkit.

**OUR CONTRIBUTORS:** Ben Z. Gottesman is an executive editor of *PC Magazine*. Craig Ellison is director of operations for PC Magazine Labs. John Clyman is a contributing editor of *PC Magazine*. Associate editor Sarah Pike and PC Magazine Labs lead analyst Neil J. Rubenking were in charge of this story.

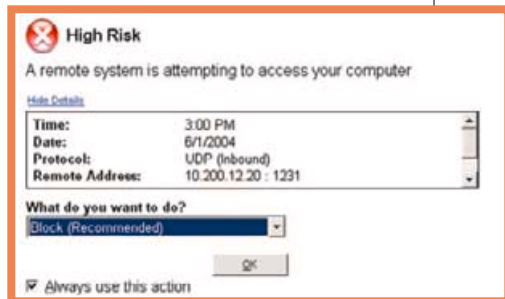
any familiar program barks at you that it can't get to the Internet. If your personal firewall doesn't show you the path or let you grant one-time permission, consider getting a better firewall.

### ► Allow or deny ICMP ping requests.

A ping utility verifies that an IP address exists and is accessible. Ping uses the ICMP (Internet Control Message Protocol). If you need to use ping to test that other PCs can see your system, you have to make sure that your firewall is set to allow ICMP traffic. But bear in mind that this protocol can be used against you in a denial-of-service attack. If your firewall's log shows excessive ICMP traffic, set the program to deny ICMP requests.

### ▼ Respond to connection alerts.

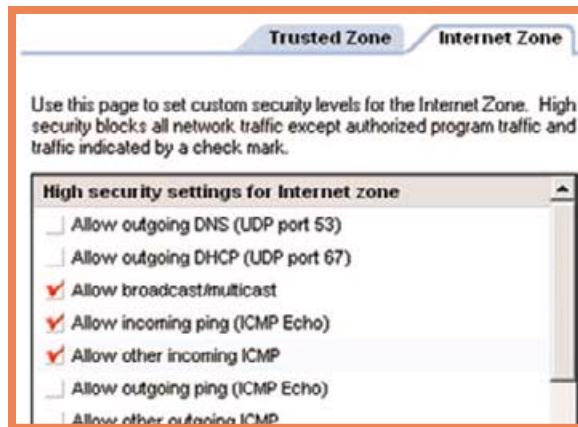
Although this may not always seem to be the case, nearly all incoming traffic on your PC should be a response to a request



that you sent out. For example, when you visit a Web site, the pages download because you asked for them. An instant message comes in because you're broadcasting your availability. So if you receive an alert from your firewall that another computer is trying to connect to yours, it's very likely to be an attack and you'll want to refuse it. An exception might be if you asked someone to ping you to try and diagnose a network problem. Hardware and software firewalls both attempt to match each incoming packet with the outgoing packet that requested it: This is called *stateful packet inspection* (SPI). If there's no match, the incoming packet is blocked.

### ► Note the destination address.

When you receive an alert that tells you a program is trying to access the Internet, take a close look at the IP address that it's pointing to. If it belongs to your local network (see "Know your network" on the previous page), it's probably a system such as a shared printer or hard drive, and you'll want to let it connect. The address may be 127.0.0.1, which is a special IP address used



to talk to your own machine. Often, local programs that have a Web-based interface will run as a local Web server, so if this message comes up just after you launched an application, it's probably okay. For any other address, your system is probably trying to talk to the Internet, and you'll want to be extra careful about whether or not to grant access.

**Stop traffic.** Your firewall should have a setting that stops all Internet traffic. Make sure you know where it is; typically it will be from the firewall's system tray icon. If strange PC behavior, such as excessive network traffic, makes you think your PC is under attack, block traffic until you can

resolve the problem. With your traffic locked up, you'll have to investigate from a PC on another network—a friend's, neighbor's, school's, or library's—to research the problem online.



### Set up parental controls.

Some firewalls now see filtering inappropriate content as part of their mandate. In a business, this is typically called *content filtering*. At home, it's referred to as *parental controls* (see our feature "Keep Your Kids Safe" on page 101 for reviews of standalone parental-control applications). There are three main aspects of parental controls: You

what sites a user can visit and what programs the person can use to access the Internet, and you want the ability to define this on a user-by-user basis. Some sites appropriate for your teenager are probably out-of-bounds for your 6-year-old.

Look for the ability to define default settings based on age. If it's not there, you'll probably have to dig through categories of Web sites to permit or block. Most programs will let you add sites to the exception list. Some filtering programs will let users contact you for permission to view a site.

Don't forget to password-protect the parental-control settings to prevent users from overriding the filter settings.

**Protect your personal data.** You've probably got a lot of sensitive data on your PC, such as bank account numbers stored in personal finance software. Some firewalls let you tell them specific text strings that should never be sent out from your PC, at least not without your express knowledge. This can prevent Trojan horses from stealing data, but even more important, you can use this to make sure children don't share information like their phone number or address.

**One firewall is enough.** Windows XP's Internet Connection Firewall (ICF) is better than nothing, and the updated version in the soon-to-be-released Service Pack 2 is improved, but we recommend that you use it only for as long as it takes to get a full-featured firewall. Once you do, make sure to disable ICF; multiple firewalls on a PC can cause conflicts. To turn ICF on or off, go to *Network Connections* in the Control Panel, right-click on each adapter, choose *Properties*, and select or deselect ICF on the *Advanced* tab as appropriate. Or, if you're running SP2, just open the Security Center, click on *Windows Firewall*, check the *Off* box, and click on OK.

# Firewalls: HARDWARE

BY CRAIG ELLISON

It takes just a few seconds with a broadband connection to get hooked on speed and constant availability. It can also take about that long to get attacked over your broadband connection—or any connection. When you're on the Internet, you're exposed to numerous attacks, and probably the most confusing weapon in your security arsenal—your router—is the one you can least afford to screw up. Configure your router properly and you can take your head out of the sand, knowing your PC really is locked up tight.

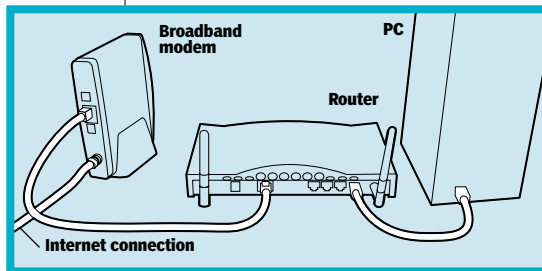
Basically, any system that connects to the Internet must have an IP address. This address is provided to you by your ISP. The problem is that with your computer connected directly to your broadband modem, you almost always will receive a public IP address—one that's directly accessible to everyone. When you plug your computer directly into your broadband modem, your PC is exposed for the whole world to see. This is why *PC Magazine* has recommended for quite some time that even if you have only one computer connected by broadband to the Internet, you should deploy a router.

A router is fairly simple hardware appliance that routes data between networks. These days, you can find a simple, wired router for as little as \$20. The most common use for a router is to share your Internet connection with multiple computers.

The mechanism used to share your single public IP address with multiple computers is called NAT, or network address translation. In a typical installation using a router, the WAN (wide area network) port of your router is connected to your broadband modem, and your computer or multiple computers are connected to the LAN (local area network) ports of the router. Instead of your computer receiving a public IP address from your service provider, your router now gets the public IP address. The router then passes out "private" IP addresses to the computers on your LAN, which are valid only on your local network. Thus, your router is exposed to the Internet, and your

computers are safely hidden behind what is often referred to as a *NAT firewall*.

Most routers targeted for homes and small offices perform multiple functions. In addition to receiving a public IP address from your ISP and providing private IP addresses to your local computers, many



provide a firewall to protect your network. Wireless routers, which constitute a large portion of the router market, include an access point for sharing your broadband connection with wireless-enabled computers. Each of these features may require some configuration to ensure that you've secured your network against some of the dangers on the Internet.

The firewall component of your router is your first line of defense to protect your network. It forms a barrier between your LAN and the Internet. By default, most firewalls are set to allow all outgoing traffic from the local network to the Internet and block all incoming traffic from the Internet to the local network, unless the

packet is a response packet that was sent as a reply to a request made from the network or if you've specifically configured an open port.

## Set up your router and firewall.

First, turn off the power to your cable or DSL modem and shut down your computer. Unplug the modem end of the Ethernet cable that connects to your PC and plug it into one of the LAN ports on your router. Connect another cable from the modem to the WAN port on the router.

Then, turn on your modem, wait about 30 seconds, and plug in the router. Now power your computer back on.

If your router came with an installation CD (not all do), use it to set up the appliance. If not, open your browser and type in the IP address, which you'll find in the quick-start guide. At the initial configuration screen, type in the router's default user name and password (also found in the quick-start guide) and follow the configuration wizard.

## Change the administrator password

of your router to a strong password that's not easily guessed—at least seven characters long and containing letters, numbers, and punctuation.

## Perform basic configuration.

Be prepared with the following configuration information, which you can get from your ISP: IP address, gateway address, subnet mask, and two DNS (Domain Name Server) addresses. Depending on your ISP, you may need this information to complete the initial router setup wizard.

## Configure for maximum safety.

These settings should be available within the router's configuration options:

**Disable the ping response on your WAN port.** Hackers often ping every IP address within a range of addresses, and if they get a response, they'll launch a more intensive vulnerability scan on your system.

**▼ Disable UPnP (Universal Plug and Play) on your router.** Though UPnP may facilitate setup of other devices, viruses could ex-

### RECOMMENDED PRODUCTS

- >>> Linksys Wireless-G WRT54GS
- >>> Netgear ProSafe FWAG114
- >>> D-Link DI-604

### UPnP (Universal Plug and Play) Setting

The Universal Plug and Play architecture offers pervasive peer-to-peer network connectivity of PCs of all form factors, appliances, and wireless devices. UPnP enables seamless proximity networking in addition to control and data transfer between networked devices in the home, office and everywhere in between.

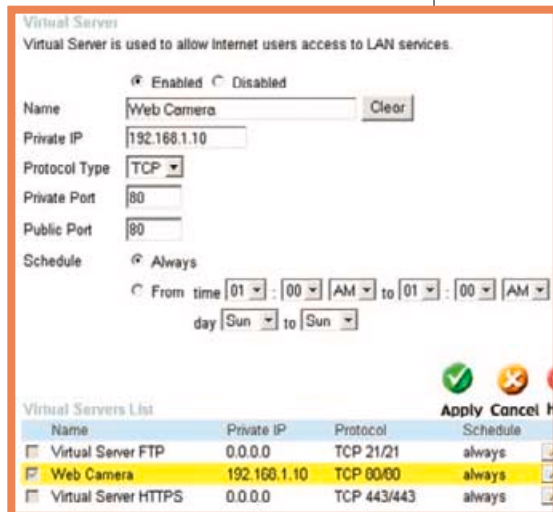
UPnP  ON  OFF

exploit UPnP to reconfigure your router without your knowledge.

► **Make sure that remote management of your router is disabled.** This feature is designed to let you administer your router while you're away from your network, such as when you're at work. Very few people ever need to do this, and a better way is to use secure remote-control tools like GoToMyPC to get you on the inside from the outside. If remote management is enabled, it will appear as an open port to hackers and could be subject to attack.

If your router supports it, enable event logging and have the router e-mail the log files to you. Some routers produce very detailed log reports that show you the attacks your router has fended off. The log files for most products are fairly self-explanatory. They list the IP addresses of computers that were used to try to get into your network and in some cases the type of attack used. Generally no action is required, as your firewall has blocked access.

▼ **Open a specific port.** Some applications (such as certain Web servers—if you're hosting a Web site on your PC, which generally isn't a good idea—as well as video- and photo-sharing programs) require specific ports to be open so that requests made from the Internet will not be blocked by the firewall.



These applications often use port 80 by default. Here's how to make them accessible to the outside world.

Configure the PC hosting the application with a *static* IP address on the same subnet as your LAN. A static address is a permanent one that is not passed out by your router. For example, if your router has an IP



address of 192.168.1.1, the computers on your LAN would receive addresses like 192.168.1.2, 192.168.1.3, and so on. You could configure your PC with a unique static address of, say, 192.168.1.10. This address is in the same IP range as the rest of your LAN. In Windows XP, you do this by going to the Network Connections control panel, right-clicking on your LAN connection, and selecting *Properties*. Choose the *Internet Protocol (TCP/IP)* and select *Properties* again. Select *Use the following IP address* and set the IP address to the desired static address. If you don't know your subnet mask (typically it's 255.255.255.0 on a home router) and gateway, you can find this out by typing *ipconfig* at a command prompt on another PC on the network, or by checking the router's status screen.

Next, you need to open port 80 on your router and

forward port 80 traffic to the address you assigned to your camera. To do this, look for a *port forwarding* or a *virtual server* section in the router's configuration menus. Fill in the screen so that public traffic on port 80 routes to the destination port 80 of the static IP address that you have just set up. Now when people on the outside send requests to your public IP address on port 80, the response will come from the appropriate system and application.

Go wireless—or not. If you have a router with wire-

less capabilities, you also need to secure the wireless portion of your router, even if you don't intend to use the wireless feature. To ensure a good user experience, most manufacturers ship wireless routers with all wireless security features disabled. While this makes the routers very easy to get up and running, an unsecured

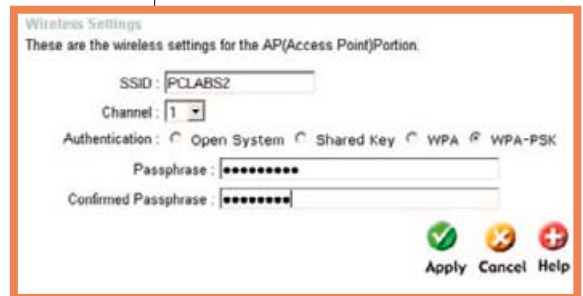
wireless network is nearly as open as a connection with no firewall at all, because other people with wireless capability can connect to your network from up to 300 feet away (or even farther)—and you'll never know.

Take the following steps to secure your wireless-enabled router.

If you don't plan to use the wireless capabilities of your router, disable them. If your router supports this, there will be a tab in the configuration screen for wireless settings.

If you are using the wireless capabilities of your router:

▼ **Change the SSID**—the name of your wireless network—from the manufacturer's default name. Then disable SSID broadcasting, if your router offers that op-



tion. This will make detecting your wireless network more difficult for drive-by hackers.

Enable the strongest security that all of the devices on your network support. For most new equipment, you can enable WPA (Wi-Fi Protected Access). For older equipment, you may have to use the older, less secure WEP. (See [www.pcmag.com/wpa](http://www.pcmag.com/wpa) for step-by-step instructions for setting up WPA.)

Enable MAC filtering and limit wireless access to known wireless network cards.

Every wireless adapter has a unique address. You can find the MAC address of each card from the command prompt on each machine. Type *ipconfig/all* and copy down the physical address.

By limiting access to your wireless network to only those wireless devices you specify, you can prevent neighbors from mooching your broadband connection. More important, since everyone on your wireless network shares the public IP address assigned to your router, you could be liable for any illegal activities that occur on your network, such as downloading copyrighted material.

# Antivirus

BY SARAH PIKE

Unlike with some other types of security products, simply installing a good anti-virus program is half the battle—against virus infiltration, at least. Consumer AV products tend to have fairly effective default configurations. Nonetheless, they require some user input and do need to be set properly for the best protection.

**Install.** If you have the option, create a rescue disk. If a virus renders Windows unbootable, this disk will let you start up and clean your system. Then go ahead and set your other installation options, which may include checking for program and virus definition updates. Do this right

away, since by then new virus signatures have probably been released.

You also want antivirus protection available right away—set it to

start with Windows—and to alert you if program or virus definitions are out of date. We've found that an antivirus program may occasionally stop updating for some nebulous reason. If you get an alert that it's out of date, keep an eye on the program for a week or two to make sure that automatic update resumes working properly.

Now perform a full system scan.

▼ **Set scanning options.** The most important option here is *on-access scanning*. Enable it. Your AV program will check each file as the system accesses it: when you open the file and when it's used by another process. You can't rely just on scheduled and on-demand scanning of your system.

Now specify which files the AV checks in its scheduled and on-demand scans. Make sure all local drives—including removable ones—are selected. There may be several options for e-mail scanning. Scan outgoing as well as incoming mail to avoid spreading a virus; and while you're at it, enable worm blocking, if it's available.

Have your AV program scan compressed

data rather than uncompressing files and hoping that real-time scanning will pick up any infected items as they're expanded. This will also prevent you from inadvertently passing on an infected archive.

Your AV tool may offer even finer control. Scan subfolders and all executable file types. Also scan for new, unknown viruses; heuristic scanning isn't 100 percent effective (see "Why Your AV Won't Catch the Next Attack," June 8, page 114), but it doesn't hurt to try. You should be aware, however, that an overaggressive heuristic scan may flag innocuous files. And if your AV program offers to scan for spyware, adware, and other malicious software, by all means let it.

**Schedule scans.** Schedule a full system scan for at least once a week. Make sure your system is on at the scheduled time so it won't miss a scan.

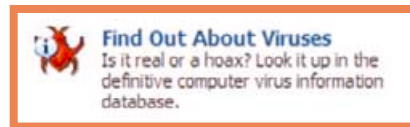
► **Use the system tray.** If you have the option to display a system tray icon, do so. The icon should indicate that your AV is running and give you access to options. Frankly, however, it could be even more useful. Note to vendors: The system

tray should tell you when the last update was performed and whether the AV tool is enabled, at minimum. Suggestions for better settings, your subscription expiration date, and the date of the most recent full system scan would also be valuable.

**Take action when your AV tool detects a virus.** You have several options here. Most viruses today don't actually *infect* files; they just copy themselves onto your system. Therefore, there are no infected files to be repaired. So, select the option to attempt to repair infected files, but don't panic if this doesn't work.

Next, choose to put files that can't be repaired into a quarantine folder. This is a secure area, set up by the AV program, in

which files can't do any damage. The program will tell you if it places a file here. If a file you need is quarantined, your options are somewhat limited. You might try rescanning it, but if that doesn't work, try sending it to the virus company. Most AV products have a button that lets you do so.

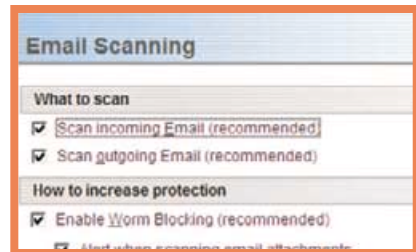
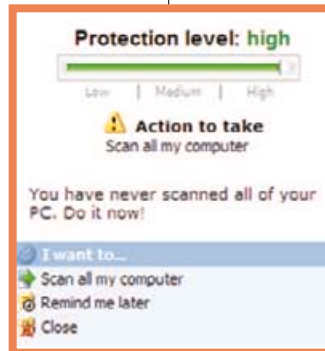


▲ **Use your resources.** Any AV program worth its salt should give you several educational virus resources, as well as access to the full weight of the company's virus-cleaning power. If you have a file that's been flagged but not cleaned or repaired, send it to the company or go vigilante on it: A Web search on the virus name may turn up a specialized removal tool. Sometimes these virus-specific tools are available before antivirus companies have provided a patch for their programs.

Antivirus companies also provide access to extra information online, such as virus names and relevant details about them (for example, what kind of damage they can do). This may help when you're trying to determine what to do about a quarantined file. (Vendors, take note again: a nasty infection may leave a PC unable to get online. Include a thorough virus library *with* the program. Update it at the same time as the virus signatures.)

**Stay up to date.** All the major AV products can check for updates automatically. Make sure this feature is active—although if you hear about a new outbreak, you'll want to force an update immediately.

**Don't let the software age into oblivion.** Why bother buying the latest version, when you can just update virus signatures? Several reasons: OS support is an obvious one. More important, viruses are evolving: Five years ago, they targeted system files to bring individual systems down. Now we see threats that drop remote-access tools or create masses of zombies for denial-of-service attacks. Today, all major AV programs scan your outbound mail because worms propagate themselves by sending mail without anyone having to hit *Send*. Several versions ago, there was no need.



# Antispyware

BY JOHN CLYMAN

Adware and spyware are a growing nuisance and threat. They hijack your browser, pop up undesired ads, redirect you to unsavory sites, and even monitor your behavior for potentially malicious purposes. So it's no surprise that antispyware utilities are becoming essential components of desktop security arsenals. Though no antispyware utility provides an impenetrable defense, the following tips can help you get the most out of them.

We have one piece of general advice: When you install a new application, read the end user license agreement (EULA) carefully. We know it's boring. But shareware and freeware often pack a spyware payload, which should appear in the EULA. Don't click on that *Agree* button without understanding exactly what you're agreeing to.

► **Install and configure the software.** Installing most antispyware programs is straightforward, but some won't download their newest spyware detection signature files until you manually instruct them to. Make that your first task, then set the software to download updates automatically, if it gives you that option.

It's also a good idea to turn on any real-time monitoring and blocking the program offers. But don't consider that a panacea; we've found that real-time monitors don't always detect spyware before it finds its way onto your machine. If you drill into the configuration options of many antispyware products, you'll find dozens of detailed settings that you can tweak to your liking. We recommend that you start with the default settings and explore other options as you learn more about spyware.

► **Run full scans regularly.** Set your antispyware software to scan on a scheduled basis—at least once a week—and every time the system boots, if these options are available.

► **Understand scan results.** Antispyware software works by trying to detect distinctive signs that spyware places on your system. These spyware traces consist of running processes, Registry entries,

files (including shortcuts placed in your Start menu or on your desktop), and tracking cookies.

Running processes indicate that suspected spyware is active in memory. Registry entries and files are signs that spyware is or has been resident on your hard drive. Although antispyware utilities often display details of exactly which

processes, Registry entries, and files appear suspect, you can usually gloss over the detailed trace list and just look for names of suspected spyware.

Tracking cookies are a special case. By themselves, cookies are benign snippets of data. But because they can be tied to an individual IP address, they can be used to track a user's activity over multiple Web sites, representing a potential privacy risk.

► **Review the threats and take action.** Deciding what to do about spyware can take some thought. Unlike viruses and worms, which you absolutely don't want on your system, there may be cases where you're willing to accept certain types of spyware or adware. Some programs, utili-

ties, games, and browser add-ons may include adware or spyware and will break if you remove these components.

If you deem the benefit sufficient and the nuisance or threat insignificant enough, you might be willing to accept that trade-off. (Most antispyware tools will let you restore a removed item if the program it rode in on no longer works after the spyware removal.)

So how can you get the information you need to make that judgment call? Ideally, your antispyware utility will present informative explanations of the nature and severity of the threat posed by the spyware it detects.

You can also search the Web for the application name and visit spyware information sites like Spyware-Guide.com and PestPatrol's Center for Pest Research ([www.pestpatrol.com/pestinfo](http://www.pestpatrol.com/pestinfo)).

After you remove spyware, scan again. Spyware can be surprisingly resilient. After you've scanned and eliminated spyware, reboot your machine and scan once again immediately. You may find that some of the spyware has reinstalled itself and needs to be removed anew.

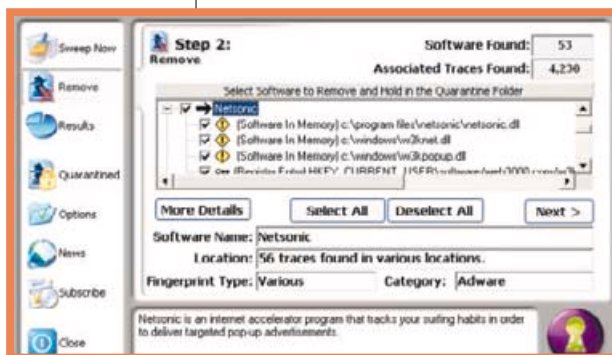
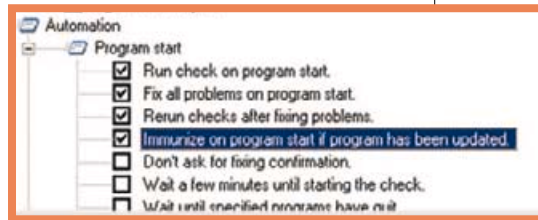
► **Double up for safety:** Use a second antispyware tool. No antispyware tool is foolproof, and often a second one will find something the first missed.

If repeating the cycle again with a second utility doesn't solve the problem, search the Web for further help; removing some particularly sticky spyware may require specialized tools. You can also try an online-only free scan like Spy Audit, from Webroot ([www.webroot.com](http://www.webroot.com)), or Pest Scan, from PestPatrol ([www.pestpatrol.com](http://www.pestpatrol.com)). As a last resort, you might try following instructions for manual removal, but be sure to back up any affected files or Registry keys first.

► **Respond to real-time alerts.** If you're using antispyware software with real-time monitoring and blocking, you'll eventually get an alert that new spyware has been detected on the system. If these alerts occur when you're in the middle of a software installation process, try to learn about potential threats from the application before you elect to complete the installation.

## RECOMMENDED PRODUCTS

>> Spybot Search & Destroy  
>> Spy Sweeper



# Keep Your Friends Safe

BY NEIL J. RUBENKING

If you've followed the steps outlined in this article, your computer is now a veritable Fort Knox. But yours isn't the only computer in the world. What can you do when a friend phones and says "You know, my computer's been acting kind of slow and strange, with these weird pop-ups. Oh, and my Internet is broken."? If you want to help (or can't get out of helping) a security-challenged friend or relative, be prepared!

## >>BEFORE YOU GO...

**Get a toolbox.** The victim may no longer have Internet access or may have a painfully slow dial-up connection, so you need to bring your own tools. Get a pocket-size USB key and keep it on your key-chain: 64MB is big enough for our suggested tools.

**Fill your toolbox.** The victim may not have installed any security products, so be ready to install and use antivirus, antispymware, and personal firewall software (for our recommendations, see below).

**Keep your tools sharp.** Be sure to keep the products on your USB key up to date. Download the latest signature files for antivirus and antispymware programs, if available separately, since it may not be possible to update automatically after installation.

**Bring the paperwork.** *PC Magazine* has created a special downloadable version of this article. Download it at [www.pcmag.com/security](http://www.pcmag.com/security), where you'll also find installation files for our suggested toolkit apps, and copy it to your USB key.

**Secure the scene.** If you're not already on-site, tell the victim to disconnect the affected system physically from the Internet (and from the home network, if applicable) and to turn it off and leave it off until you arrive. Determine which operating system the computer is running and whether it has USB ports; if not, you'll have to burn your up-to-date toolkit to a CD.

## >>AT THE SCENE...

**Clean up.** Install the antivirus product from your toolbox and perform a complete scan. Set it to continue protecting the system. Install each of the antispymware products and run their scan

functions as well. For products that include real-time spyware blocking, turn this feature on.

**Raise shields.** Install and configure the personal firewall from your toolbox. Allow the victim's browser and e-mail client access to the Internet.

**Hook up.** Reconnect the system to the Internet. Manually update the products you installed. Then perform another full scan with the antivirus and antispymware programs.

**Get patched.** Go to [www.windowsupdate.com](http://www.windowsupdate.com) and install all the critical patches. Chances are good there will be quite a few.

**Get a second opinion.** By now you have restored the victim's computer to a reasonably safe and functional state, so you can take advantage of other resources on the Internet. Get a free antivirus scan at <http://housecall.trendmicro.com> or [www.pandasoftware.com/activescan](http://www.pandasoftware.com/activescan). Scan for spyware using the Spy Audit link at [www.webroot.com](http://www.webroot.com) or PestScan at [www.pestpatrol.com](http://www.pestpatrol.com). Make sure the firewall is secure by using the ShieldsUP! test at Gibson Research ([www.grc.com](http://www.grc.com)).

## >>BEFORE YOU LEAVE...

**Train the firewall.** Personal firewalls are useful, but they'll often stun the new user with a barrage of prompts. If possible, get the victim to launch all frequently used programs to train the firewall to accept them.

**Train the victim.** Now that the computer is secure, sit the victim down and explain what you did, in as much detail as is reasonable. Bring up each of the programs you installed and show their basic abilities. Work with the victim to set up a schedule and demonstrate what the various protective programs look like in action. If you don't do this, the victim may ignore them or turn them off.

**Upgrade for ongoing protection.** The free programs and program trials won't cut it forever, and you may not always be free to go over and fix the same problems. For a more robust solution, we recommend Norton Internet Security or ZoneAlarm Security Suite, plus Webroot's Spy Sweeper.

## SECURITY TOOLKIT



Select your own favorite free security programs or try these suggestions.

### Antivirus

> Grisoft offers a free version of its AVG Anti-Virus for personal use. Don't forget to record the serial number, as you'll need it for installation.  
[www.grisoft.com/us/us\\_dwn\\_free.php](http://www.grisoft.com/us/us_dwn_free.php)

### Antispymware

> Spybot Search & Destroy has

won our Editors' Choice award in the past and remains an excellent tool for eliminating spyware.

[www.safer-networking.org](http://www.safer-networking.org)

> Spybot won't catch everything, so you'll also want to bring Lavasoft's Ad-aware.

[www.lavasoftusa.com](http://www.lavasoftusa.com)

> Since these two may miss a particularly virulent search bar or home page hijacker, add HijackThis from SpywareInfo.  
[www.spywareinfo.com](http://www.spywareinfo.com)

> Finally, if the protean Cool-

WebSearch hijacker is present, only the latest version of SpywareInfo's CWShredder has a chance of eliminating it.  
[www.spywareinfo.com](http://www.spywareinfo.com)

### Personal firewall

Windows XP has a built-in firewall of sorts, but the firewall doesn't offer the protection against the misuse of your Internet connection by rogue programs that a standalone personal firewall would.

> The free version of ZoneAlarm is a perennial favorite.  
[www.zonelabs.com](http://www.zonelabs.com)

> Sygate Personal Firewall also offers a free edition.  
[http://smb.sygate.com/products/spf\\_standard.htm](http://smb.sygate.com/products/spf_standard.htm)

### Browser

On the chance that the user's browser is damaged or unusable, bring a copy of a free browser (one that's a smaller download than IE).

> Mozilla is free.

[www.mozilla.org](http://www.mozilla.org)

> Opera has a free 14-day trial version. [www.opera.com](http://www.opera.com)



# VersaLASER™ The Material Transformation Printer™

*"The VersaLaser is an enabler."*

- Bill Machrone, *PC Magazine*

*"The etching's detail was amazing."*

- Marc Spiwak, *CRN*

*"This is definitely high on my cool products for specialty printing applications."*

- Ira Gold, *Electronic Publishing*



**Harness a laser up to 10,000 times more powerful than the one in your laser printer**

Imagine a desktop computer peripheral for laser cutting, scribing, permanent marking and etching that works with almost any solid material. Cut through plastic, wood, paper, rubber and fabric with the precision only provided by computer controlled, non-contact laser power. Permanently mark, etch or scribe metal, glass, ceramic, stone and other hard materials.

Now, imagine controlling this device as easily as an inkjet printer with your computer, Windows® XP and your favorite software including Microsoft® Word, CorelDRAW!®, Adobe Photoshop®, Adobe Illustrator®, AutoCAD® and more. You can also use input devices such as digital cameras, desktop scanners, drawing tablets and keyboards. VersaLaser does all of this with its unique, patented laser technology.

See materials transformed by VersaLaser at [www.versalaser.com](http://www.versalaser.com).

**UNIVERSAL**  
LASER SYSTEMS INC.

16008 North 81st Street  
Scottsdale, AZ 85260

877-866-9802 or 480-315-3600 • fax: 480-483-5620

Manufactured and protected under one or more of U.S. Patents 5,051,558; 5,661,746; 5,754,575; 5,867,517; 5,881,087; 5,894,493; 5,901,167; 5,982,803; 6,181,719; 6,313,433; 6,342,687; 6,423,925; 6,424,670. Other U.S. and International patents pending. Microsoft and Windows XP are registered trademarks of Microsoft Corporation. Adobe Illustrator and Photoshop are registered trademarks of Adobe Systems, Inc. CorelDRAW is a registered trademark of Corel Corporation. AutoCAD is a registered trademark of Autodesk, Inc.

WIRELESS-G

# DUAL WAN ROUTER

# 2X

- BROADBAND CONNECTIONS
- RELIABILITY
- BANDWIDTH



H2WR54G

## HI-SPEED 54G SERIES

- Accepts Two ISP Connections (Cable/DSL)—Double the Bandwidth
- Traffic Management Feature Reduces Overall Network Traffic for Faster Connections
- Back up Feature Doubles the Reliability of Your Network by Switching ISPs When One Fails
- Ideal for Small Offices/Home Offices with High Demand for Speed and Reliability
- Great for Running Servers
- Compatible with Hawking Hi-Gain Antennas for Increasing Wireless Coverage
- Hi-Speed Wireless-G Networking—54Mbps
- Supports the Latest Wireless Security: WPA

### HOW IT WORKS



#### WHERE TO BUY:

amazon.com

Fry's

COMPUSA

MICRO CENTER

COMPUTERS  
4sure

ICMall

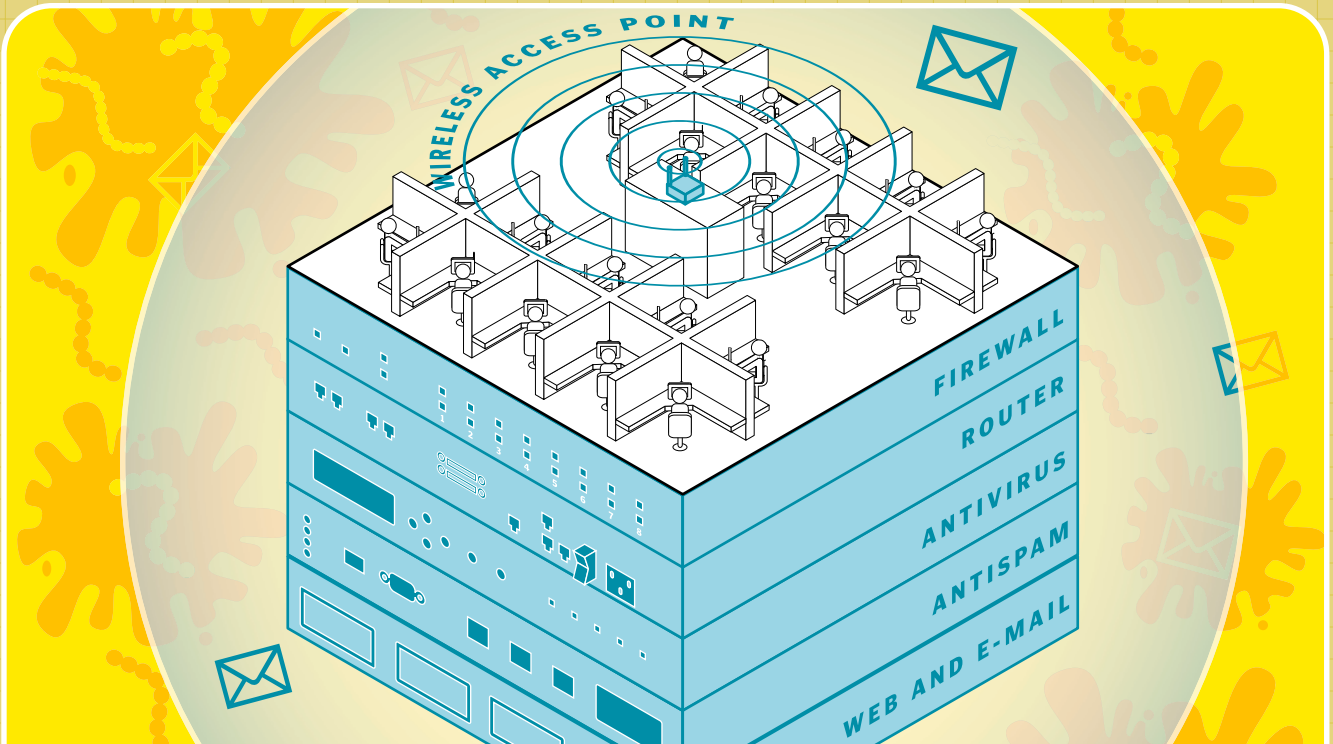
buy.com

CDW

Insight

CONTACT: [WWW.HAWKINGTECH.COM](http://WWW.HAWKINGTECH.COM) • 1.888.662.8828

 **HAWKING**  
TECHNOLOGY



# KEEP YOUR OFFICE **Safe**

By Oliver Kaven

Although securing a single PC or small home network can be a complicated and often tedious task for the average user, securing a networked office—even a small one—is tougher.

Modern modes of communication, especially e-mail and the Web, have made it possible for whole new types of small business to blossom. But along with the many advantages of these technologies come an ever-increasing number of e-mail- and Internet-related threats.

Ideally, smaller businesses and organizations would be able to afford dedicated IT professionals who can keep pace with security needs. But that's just not the case in reality—which means the buck stops with small-business owners or the people they've tapped to handle security. If you're in one of these groups, cheer up. In the following pages, we provide you with the advice you'll need to purchase the right equipment, software, or services and get the most out of them.



## IN THIS STORY

# 94

FIREWALLS

# 96

ANTIVIRUS & ANTISPAM

# 98

PATCH MANAGEMENT

# 99

WIRELESS NETWORKING

# 99

VULNERABILITY PREVENTION

## SECURITY CHECKLIST >>

[ ] **Run a business-class hardware firewall.** We recommend hardware firewalls for businesses because of their simplicity. But if you choose a software firewall, make sure you install it on a dedicated server.

[ ] **Choose a firewall that offers SPI.** With SPI, your firewall can analyze network traffic to weed out unwanted packets as well as close ports to hackers and untrusted sources.

[ ] **Use a spam-filtering solution.** Hosted solutions are a good choice for businesses with meager IT resources but limit your control and configurability. At the very least, you should use whitelists and blacklists to keep spam out.

[ ] **Protect your business with a perimeter security solution and a desktop antivirus program.** Using both will secure your gateway and the PCs of employees (including mobile workers). An AV appliance should be scalable to meet future needs, and a desktop AV solution should include scheduling and signature update features.

[ ] **Simplify patch management by tracking your company's assets.** Keeping an inventory of your OS type, release version, installation date, patch level at installation, existing fixes, business-critical apps, and existing hardware will save time and ensure that you can quickly protect your network.

[ ] **Enable WPA on your wireless network.** WEP is not enough to keep your business safe anymore. Also, make sure you change the default passwords and SSID on your access points and use MAC address filtering.

[ ] **Make sure your wireless signal stays in your office.** Place your access points in central locations in your office and limit their broadcast range so as little of your signal as possible leaks outside your building.

[ ] **Lock down your equipment.** Keep your servers in a locked room and limit access to necessary personnel. Lock down your employees' PCs, and encourage mobile workers to keep their laptops safe.

[ ] **Don't let snoopers or thieves infiltrate your office.** Train your workers to lock their desktops when away from their desks and not to leave passwords on sticky notes. Place an employee at the entrance of your office, have visitors sign in and out, and don't let them wander around unattended. Also, check the IDs of all utility workers, repairpeople, and cleaning staff.—*Erik Rhey*

# Firewalls

Your firewall is usually the first rampart defending your Internet router and connection devices against outside intruders. A firewall's key functions are enforcing security policies and deciding who is accessing your network from the outside—and when, where, and how—as well as enforcing how those within your network access outside resources.

### Assess your needs before buying.

The first step in deciding which firewall is right for your business is assessing your needs. Consider such factors as the size of your business, the type of data traffic going in and out of your network, your expectations for rapid growth, the number of mobile workers you have, and your IT budget. Such an evaluation will save you money down the road and possibly prevent a successful attack on your network. If, for example, you expect your business to grow quickly, go with a firewall that is highly scalable, to handle the additional clients and network traffic. Also, the IT staff's size and capability are important in determining the level of complexity you want in your firewall.

### Decide between a hardware and a software firewall.

Although there are advantages to both types, we recommend hardware firewalls for most businesses. They are typically easier to set up and quicker to deploy than software firewalls.

are not very capable software firewalls on the market too. One advantage of software-based platforms is that they are easier to upgrade. If you have a complex network and need multiple interfaces, you might want to go with a software solution. But you should run it only on a dedicated server that's powerful enough to handle your network traffic. After all, you don't want your firewall—your network's chief intermediary and central gateway—to fail because of faulty hardware.

**Choose a firewall with SPI.** Whichever firewall you choose should include technologies such as port filtering and stateful packet inspection (SPI). If you have a firewall that relies solely on NAT—as many older models do—it is time to upgrade.

▼ **Set up port-filtering rules.** This process is usually straightforward and involves configuring inbound or outbound traffic, interface, and port range. If you

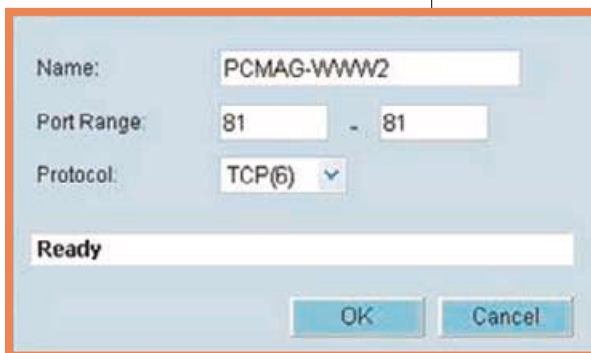
want to control a single protocol, the port range will be the same number for both the start and end ports. To allow Web access for clients to reach your Web server, you should permit inbound traffic starting and ending at port 80.

### Know your history.

You will also want to choose a firewall that gives you a history of your data traffic. Although not everyone needs detailed forensic analysis, it's worthwhile to have good logs, just in case something goes wrong. In addition, effective alerting capabilities, which can page you when something out of the ordinary happens, can help you ward off an attack.

#### RECOMMENDED PRODUCTS

- >> Check Point Safe@Office 225U
- >> Netgear ProSafe VPN Firewall FVS328NA
- >> SonicWall PRO 2040



Hardware firewalls usually have embedded code built into an *application-specific integrated circuit* (ASIC). The main advantages of such firewalls are that the system is hardened against outside attacks and the dedicated ASIC usually processes traffic faster.

That is not to say, however, that there

If you think your network could be a prime target for hacker attacks, you might want to consider a firewall that includes some form of intrusion detection.

▼ **Consider buying a firewall with ALF.** If you host extremely sensitive data on your network and your risk analysis calls for even more stringent security, you might want to consider a firewall that uses *application-layer filtering* (ALF). Also called *application-layer proxy*, ALF will add considerably to the initial cost of your firewall. Such proxies stand between a client (on the untrusted network) and a server (on the trusted network), examining all aspects of their communication to verify protocol compliance. Application-layer proxies can filter malicious content or malformed e-mail headers in SMTP traffic.

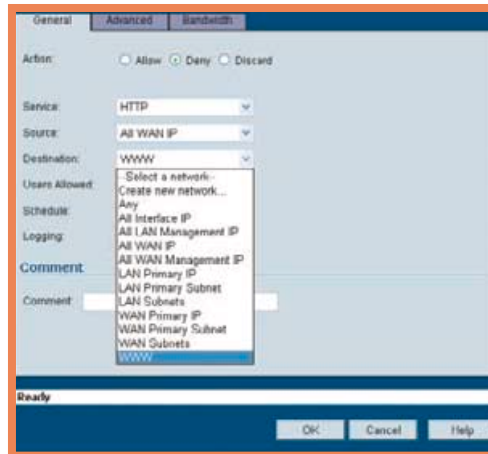
Configuring application-layer proxies is far more complicated than merely es-



tablishing a packet-based filter or NAT proxy. But most ALF firewalls include preconfigured filters for every protocol they support.

Manufacturers' default configurations can be very stringent. For example, the SMTP proxy configuration of many firewalls rejects common document types by default; it's up to you to reconfigure this. If you do not feel comfortable configuring these proxies yourself, you should definitely get help from a consultant.

**OUR CONTRIBUTORS:** Erik Rhey is a staff editor of *PC Magazine*. Associate editor Davis D. Janowski and lead analyst Oliver Kaven were in charge of this story.



### ▲ Create your SPI rule set carefully.

SPI offers a higher level of security than NAT, and we recommend that all businesses use SPI-enabled firewalls. Rather than merely looking at the source or destination port address within each packet, SPI uses information about a packet and monitors its connection status.

This connection-aware type of filtering can better protect against denial-of-service (DoS) attacks. In addition, because SPI firewalls open ports only on request, they reduce the threat of successful port scans by hackers.

You should take great care configuring your SPI rule set. Make absolutely sure that your configuration is based on a rule set that explicitly denies all incoming packets by default. Outgoing packets are usually allowed by default, and response packets to these outgoing requests are passed through to the trusted network as well. Building on this default, you should open ports only for services that are crucial to your needs.

We also strongly suggest that you maintain a security policy that outlines procedures for changes to your firewall rule set and designates a systems administrator for enforcement. You don't want unauthorized personnel accessing your security device and changing policies, which effectively opens security holes on your network.

▲ **Configure your NAT filter.** Most current firewalls deploy a combination of port filtering and NAT. NAT works as a kind of proxy server, hiding machines on your trusted network behind a single IP address that is exposed to the public, untrusted network. The advantage of NAT is that your Web server is never directly exposed to the untrusted side of the network.

To configure NAT on your firewall, you must specify both the port to let protocol traffic pass through and the IP addresses on your trusted and public networks. Once you know your Web server's IP address (192.168.1.50, for example), go into the management interface and create a new rule for incoming traffic. The source is the WAN or untrusted network interface (depending on your manufacturer's terminology), and the destination is your Web server, attached to the trusted network interface.

### ▼ Use a VPN for mobile workers.

A hardware firewall cannot protect your company's data if it is being accessed by mobile workers outside your office. Most current hardware firewalls come standard with virtual private network (VPN) capabilities. When mobile workers log on to your network through a VPN, it places them behind your firewall and protects your data using the same rules and configurations you've set in the office. Although VPN software is an added expense, it is necessary to protect your data while your workers are in the field or on the road.

### ▼ Use your firewall's features.

Make sure that you take advantage of some of the integrated security features your firewall may offer. For example, many devices today can be configured by selecting *stealth mode* in the management interface or *Don't respond to ICMP requests*. By hiding your presence on the Internet, these options make your firewall somewhat less susceptible to scans performed by hackers. Also, do not enable remote-management features unless you absolutely need them. A remote log-on to the configuration portion of a firewall is the perfect opportunity for hungry hackers.



# Antivirus

Offices should use a two-pronged approach to fighting viruses: a network AV solution that scans all incoming e-mail at your office's gateway and desktop antivirus protection running on all workstations.

**Appliance or software?** These days, network antivirus solutions are available as either hardware appliances or traditional software packages you install on your own equipment, such as SMTP gateways or stand-alone servers.

Appliances range from inexpensive multifunction devices that are not very configurable to high-end appliances that are highly configurable for complex networks.

**Small businesses should go with multifunction appliances,** because they offer good protection for the money and can be installed, configured, and maintained with ease. Keep in mind, though, that they are neither as scalable nor as flexible as software solutions.

**Growing businesses or those with complex networks should go with high-end appliances or a**

network AV software solution. Software solutions tend to be almost infinitely configurable. Although that makes them more complex and time-consuming to set up, they can also more easily adjust to the changing infrastructure and additional applications of a growing organization.

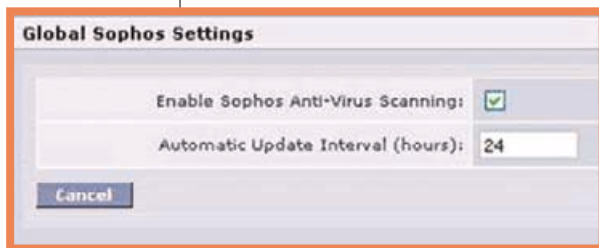
**Costs must be derived on a case-by-case basis.** When purchasing a high-end solution, you need to know more than just generalities. There are several factors to weigh, including how powerful the hardware is (be it an appliance or a server), whether the device or software solution is single-function or multi-function, what the licensing costs are, and whether you need to hire outside expertise for setup and ongoing maintenance.

Most of the major AV companies offer

products that are tailored to fit your specific SMTP mailer or plug directly into your *message transfer agent* (MTA). (SMTP mailers and MTAs are responsible for transferring e-mail between systems.) Appliances need only a network connection; they reside right behind your firewall on the same subnet as your LAN.

If you decide to go with network AV software, purchase reliable hardware for it with the fastest processors you can afford. And plan on having someone with a lot of IT experience set it up and maintain it.

**Set your network AV scanner to update every hour or as often as possible.** Because of the propagation speed of new viruses, it is imperative that you maintain the latest possible virus updates on the internal signature database of your network AV scanner.



**Enable real-time scanning on desktop clients.** This will ensure that all files get examined before they hit your employees' hard drives.

**Monitor scheduled or automatic signature updates on your desktops.** Your antivirus protection is only as good as the latest update. If your network bandwidth is limited, consider a solution that can update from a local server on your network.

**Centrally manage your clients.** If you have the IT expertise and the people power, consider remote installation and management. They save time and can prevent end users from altering or uninstalling the AV configuration on their desktop machines.

**Scan everything.** At a minimum, image files, streaming video clips and audio snippets, and all executables should be scanned. If you can, set your firewall or scanner to strip executable attachments automatically. Also make sure your gateway scans both inbound and outbound mail. Your product should support scanning for viruses in compressed file types, such as ARJ, LHA, LZH, ZIP, and Microsoft Compressed format. Most an-



virus appliance gateways have application-specific switches or configurations for the most popular types of traffic. These usually include protocols such as FTP, HTTP, IMAP, POP, and SMTP. Make sure to enable all the corresponding scanners for services on your LAN.

**Set your gateway to block double-extension attachments.** E-mail attachments with filenames ending in double extensions (like *.txt.vbs*) are a good hiding place for viruses and malicious content.

**Select a solution with a quarantine queue.** If your employees receive a lot of business documents as attachments, a quarantine queue lets you safely hold infected or suspicious attachments until a user can determine whether a file should be rescued, repaired, or deleted.

**Configure AV scan alerting.** This feature can send you an e-mail or page if a virus or worm is caught. Although viruses and worms are still relatively rare (and are actually destructive, unlike spam), you will want to know if you have a problem on your network and whether the issue was resolved.

**Prevent DDoS attacks that employ oversized files.** Attackers send large files to keep your scanner constantly busy in these types of attacks. Because of this, some antivirus scanners let you set time-outs for file or attachment scans. Use them.

# Antispam

**W**hat to buy? Like antivirus solutions, antispam products can be purchased either as standalone software products you install and run on your server or as appliances. The more mature AV industry's products have coalesced into stable, very similar product lines. The antispam industry is a whole other animal: Its products remain somewhat disparate and require a lot of configuration and management.

Whichever approach you take, it's best to go with an antispam solution that incorporates several filtering-engine technologies, such as Bayesian, heuristics, and sieve filters.

## If you're a small business, seriously consider outsourcing your solution.

Smaller organizations that don't mind relinquishing total control over their e-mail, and especially those lacking in IT support, can avoid many headaches by going with a service. Configuration of an antispam device, management of spam queues, and restoration of employee mail mistakenly caught by such a device can all be left to someone else.

Managed-service offerings from companies such as FrontBridge and Message-Labs provide solutions for \$1.50 to \$3.75 per user per month, depending on both the number of services (each offers single services or AV/antispam bundles) and the number of users.

Such services are transparent to your network and require only that you redirect your MX (mail exchange) record to one of the service providers, which in turn forwards all cleaned mail to your destination mail server.

Make certain when negotiating a contract that you get the highest level of uptime you can afford and that provisions are in place for delivery of your mail despite any glitches on the service provider's end.

## For total control of your e-mail, choose an appliance.

If you want control and have the expertise, we recommend running your own gateway-based filtering device, which is designed to catch spam before it hits your LAN. The filter functions as an SMTP gateway to receive spam before it reaches your MTA. As we mentioned in the AV section, there are single-function appliances as well as those that combine AV, antispam, and other services

geared for small to mid-size businesses.

## Encourage your employees not to use their work e-mail addresses

when signing up for newsletters or filling out registration forms. Don't publish your employees' e-mail addresses on your Web site.

## ▼ Enable blacklists.

Real-time blacklist services (RBLs) maintain large databases of known spam domains and senders. Most spam-filtering products support blacklists, and some let you manually enter additional blacklists for your system to check against.



## Rely on whitelists only to ensure that good mail is allowed through.

Although usually effective, whitelists—which are basically “allow lists”—are the most restrictive and tedious way of filtering spam. With them, you can single out e-mail addresses or entire domains. Entering \*.ziffdavis.com, for example, would allow incoming mail from anyone whose e-mail address ends in ziffdavis.com.

## Implement as many levels of spam control as possible.

If you filter at your gateway, encourage your users to enable filters in their mail clients as well.

## Enable available custom HTML filters in your anti-spam product.

Many spam messages are designed to bypass word-based filters and use embedded images instead. Advanced configurations also let you strip Visual Basic scripts or isolate attached multimedia files or other formats, such as Multipurpose Internet Mail Extensions (MIME), before forwarding mail to users.

## Further categorize or customize your filters.

You might want to customize your filter to identify sexually explicit words, for instance, or spam that includes any get-rich-quick schemes or mortgage offerings. Conversely, you can customize some filters to allow words, such as *mortgage*, that might be legitimate in the context of your business.

### RECOMMENDED PRODUCTS

- >> Brightmail Anti-Spam Enterprise Edition
- >> Postini Perimeter Manager

## Look for patterns among false-positive e-mails.

Often, when people write in uppercase letters only or use elaborate HTML backgrounds in Microsoft Outlook, spam filters come to the wrong conclusions about the e-mail's validity.

## Introduce new configurations slowly.

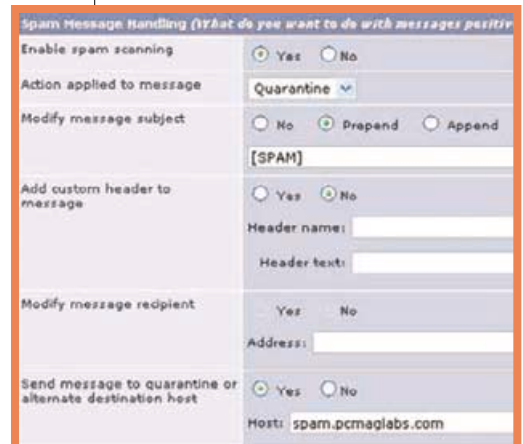
Modify only a filter field or two at a time so you can better determine what works and what doesn't.

## Be careful deleting all e-mails tagged as spam.

Although that's the most efficient way of handling spam from an administrative standpoint, filtering engines do produce false positives, and you might unknowingly delete lots of legitimate e-mail.

## ▼ In many situations it is better to maintain a spam queue

on your network that allows user-based access. End users don't want to manage their own spam filters, but they do want the chance to check periodically whether something was caught that shouldn't have been.



# Patch Management

With antivirus protection, spam filtering, and a secure gateway in place, you might think you're as safe as can be. But this is far from the truth. Many systems administrators, especially in smaller businesses, often disregard a major cause of security breaches and system failures: the lack of updated security patches.

**Prioritize patches and stay up to date.** Several thousand software vulnerabilities are discovered each year; manufacturers come up with patches for them all, but each is time-consuming to fix. In fact, it's virtually impossible for a small business to patch every single bug, but keeping up with the biggest threats out there is crucial. Worms and viruses act on vulnerabilities quickly, working their way past firewalls and antivirus scans, then wreaking havoc on server operating systems, workstations, or applications.

The time between the discovery of a vulnerability and a related worm or virus attack is shrinking, further heightening the need to keep patch management up to date. Last year's Blaster worm emerged 26 days after the vulnerability was revealed, but this year's Witty worm took less than 3.

**Keep track of your assets.** Maintain an inventory—through a database or spreadsheet—of your OS type, the release version, the installation date, the patch level at installation, and all subsequently installed fixes. You should also keep track of all business-critical applications and, ideally, all hardware on your network. Whether you manage patches manually or through automated tools, this inventory will pay off—particularly when a new threat emerges and you must quickly ascertain your current patch status and compatibility.

**Retain all deployed patches in a dedicated directory.** This allows you to verify their release versions quickly. If you outsource your security management responsibilities, make sure the consultant provides you with this information on an ongoing basis.

**Take full advantage of bundled management tools.** If yours is a young business with a new fleet of systems and servers, some of your hardware may come bundled with centralized network-management tools. These tools—such as Dell OpenManage, HP Systems Insight Manager, and IBM Director—not only manage patches but also track inventory and deploy software. For those with fairly heteroge-

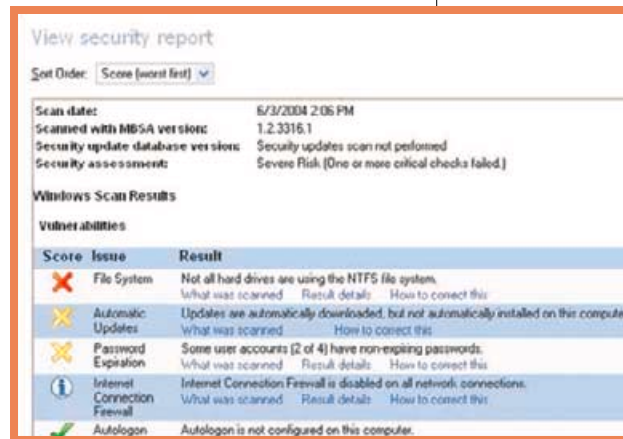
Windows workstations and servers on your network and you either don't want to rely on the local update engines or do want to exercise more control over what gets updated and when, consider Microsoft Software Update Services 2.0: It's a free server utility that lets you manage and distribute critical Windows patches across machines running Windows 2000, XP, or Server 2003. A successor to this product, Windows Update Services (available in the fall), will provide fixes for other applications such as Microsoft Office, SQL Server, and Exchange Server, in addition to general Windows patches.

Do you have a Macintosh or Linux network? Both of these platforms offer internal update engines as well. The Mac OS tool is Software Update, while Linux tools vary depending on the distribution you choose.

**Keep track of the top threats.** Your bundled OS and hardware tools won't help you when it comes to patches for applications from other vendors. So it's best to stay on top of all critical patches by doing some legwork

on your own. Check out the SANS Top 20 Internet Security Vulnerabilities ([www.sans.org/top20/](http://www.sans.org/top20/)) on a regular basis. This list is helpful for prioritizing the most immediate threats and critical vulnerabilities, since bringing all of your systems to a fully updated patch level at any given time is virtually impossible. The site doesn't have the actual patches but often includes links to them.

**Check software vendors' sites frequently.** See whether new patches have been released and recommended for deployment. Some applications and most appliances, such as firewalls and antivirus and antispam devices, even provide integrated update tools, which you can schedule to check back regularly to determine whether updates are necessary.



nous networks and some spare cash, LANDesk Management Suite ([www.landesk.com](http://www.landesk.com)) is a comprehensive, manufacturer-agnostic set of tools. Altiris ([www.altiris.com](http://www.altiris.com)) also offers high-end solutions for asset, client, and server management.

Your OS most likely comes with integrated update tools as well. Client PCs come bundled with Windows Update, which connects to Microsoft's site and can download and deploy patches locally. Microsoft also offers a free vulnerability and patch-level assessment tool called MBSA (Microsoft Baseline Security Analyzer), which you can download for free ([www.microsoft.com/technet/security/tools/mbsahome.mspx](http://www.microsoft.com/technet/security/tools/mbsahome.mspx)). Although MBSA does not deploy patches, it does allow you to scan your domain and multiple subnets for vulnerabilities.

If you have a considerable number of

## RECOMMENDED PRODUCTS

- >> Dell OpenManage Systems Management
- >> HP Systems Insight Manager
- >> IBM Director 4.1

## MORE ON THE WEB

Visit [www.pcmag.com/security](http://www.pcmag.com/security) for reviews of recommended products in this story as well as tips and analysis to keep your home and business PCs safe.



# Wireless Networking

The most basic wireless security steps for your office are the same as those covered in the “PC Security” section of this feature under “Hardware Firewalls.” What follows are additional, more in-depth measures businesses should consider. Keep in mind that some of these will require significant technical expertise to implement.

**Change the factory-default password.** If hackers discover the MAC address of any device on your network, they can usually identify the manufacturer and try using its default password to break in.

**Turn off DHCP.** Use static IP addresses and a private subnet rather than opening your network to anyone passing by.

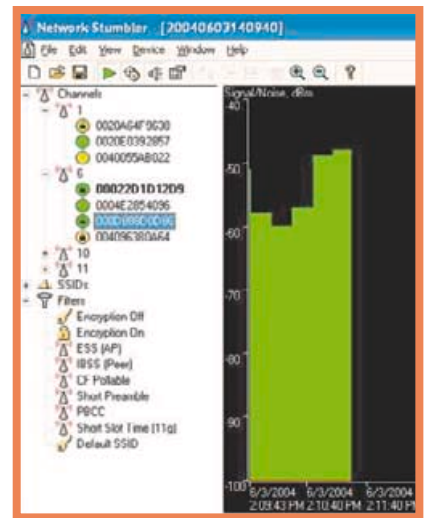
**Enable WPA; WEP isn't enough.** Home networks can get away with simple WEP security, but businesses need more. There are two kinds of WPA—Personal and Enter-

prise. Both have stronger shared-key encryption methods than WEP does. But WPA-Enterprise also offers support for 802.1x RADIUS authentication.

**Keep your signal to yourself.** You're less likely to attract wireless intruders if your signal isn't seeping outside and into other nearby buildings. Try to locate access

points centrally within a building and away from out-side walls and windows. With many models, you can also adjust the output wattage of each access point to reduce its coverage area.

**Double your protection.** If your business is extremely concerned about wireless security, require your employees to access your network through a VPN. Place wireless access points in a demilitarized zone (DMZ), an unprotected area on your network that sits outside your firewall. Employees can then tunnel into the network



using the VPN, which provides a second layer of authentication and encryption.

**Monitor your network.** We recommend that you run a wireless sniffer tool once a month. Tools such as AiroPeak ([www.wildpackets.com](http://www.wildpackets.com)) and NetStumbler ([www.netstumbler.com](http://www.netstumbler.com)) locate and identify local wireless networks, monitor signal strength, and report performance problems, such as traffic bottlenecks, or security-related issues, such as rogue access points.

# Vulnerability Prevention

You don't have to spend thousands of dollars to assess your business's vulnerability. Most products marketed as intrusion detection and prevention solutions are simply not an option for cost-conscious small businesses. But there are some affordable steps you can take to boost security.

**Use free scanners.** You can discover vulnerabilities using free downloads or Web services, such as Gibson Research Corp.'s ShieldsUP! ([www.grc.com](http://www.grc.com)). Limited freeware versions of products like GFI's LANGuard Network Security Scanner ([www.gfi.com](http://www.gfi.com)) can also uncover problems.

**Maintain password discipline.** Weak passwords are a hacker's dream. Require

your employees to use long passwords that are tough to break—those with at least eight characters and a mixture of both letters and numbers. You can enforce such rules and set expiration dates for passwords in Active Directory.

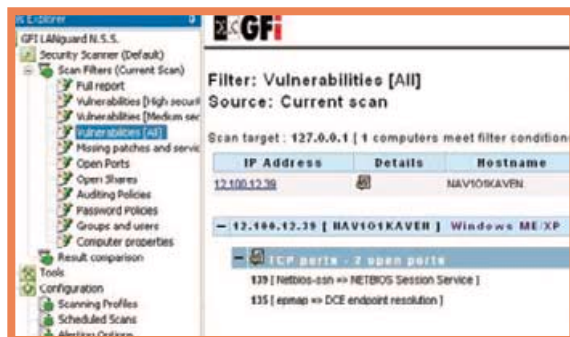
**Restrict disabling of AV on client PCs.** Users tend to complain that AV software slows their systems or prevents them from installing programs. But AV software is crucial to secur-

ing local PCs. **Get outside help, if you can afford it.** Depending on the volatility of your data, you may want to consider hiring a security professional, who can inspect your network and make recommendations on how to keep it secure. For

overall assessments of your network you'll probably want to hire someone with CISSP (Certification for Information System Security Professional) or GIAC (Global Information Assurance Certification) credentials. If you are purchasing equipment, applications, or other software, make sure your value-added reseller (VAR) or consultant has certifications from the specific manufacturers you are interested in.

**Don't run unnecessary services.** Windows includes some services that require open ports to operate, such as Windows Messenger Service, which lets programs communicate with users through pop-up windows. If your business doesn't use these types of services, disable them.

**Get physical with your security.** Keep your servers in a secure, locked location and keep your backup tapes somewhere else. Also, keep an additional set of backup tapes off-site. Tightly control who has access to your server room. Always lock your servers by either issuing a Unix/Linux log-off or locking your desktop screen. ☰



# Spector Pro

**NEW!**  
Version 5.0

## Record EVERYTHING They Do Online.

### How Does Spector Pro Work?

Install Spector Pro on your PC and it will record EVERYTHING your spouse, kids and employees do on the Internet. Spector Pro is the world's best selling software for monitoring and recording every detail of PC and Internet activity.

### Seven Recording Tools Work Together

Spector Pro contains seven integrated tools that record: chats, instant messages, emails sent and received, web sites visited, keystrokes typed, programs launched, peer to peer file searching and swapping – plus, Spector Pro provides the equivalent of a digital surveillance tape so that you can see the EXACT sequence of EVERYTHING your family members or employees are doing on the computer. All seven tools work together at the same time, saving all the recordings in a hidden location only you know about.

### NEW! - Internet Access Blocking

Spector Pro not only records almost every kind of Internet activity imaginable, but it also allows you to block access to specific web sites, chat applications and other programs and even gives you the power to restrict access on a schedule. Want to block the kids from chatting online after school? Easy. Keep them off AOL after 9:00 PM? No Problem. Block access to sex.com forever? Done.

### Spector Pro at Home

Spector Pro records EVERYTHING your kids do on the Internet. You will always have a COMPLETE VISUAL record of their online activity, giving you peace of mind even for those times when you can't be around to supervise. And, if you believe your spouse is using the Internet inappropriately, there is no faster or more accurate way to find out than with Spector Pro.

### Spector Pro at the Office

The average employee spends more than ten hours per week online. Are your employees working when they're online or are they playing in chat rooms, on auction sites, checking sports scores and stock quotes, and doing personal email? Are they spreading company confidential information in anonymous email accounts and message boards? Spector Pro records every EXACT DETAIL of their activity, from the moment they log on to the second they log off at the end of the day.

### Awarded PC Magazine Editors' Choice

Spector Pro has been awarded PC Magazine Editors' Choice as the best Internet monitoring software for recording PC activity. The review stated, "Spector Pro provides the best combination of features and polish".



### Spector Pro Automatically Records



#### Email (Sent & Received)

- Records SMTP/POP3 (e.g. MS Outlook, etc.), MS Exchange and Proprietary AOL Email
- Records Hotmail, Yahoo, AOL, ATT Worldnet, NetZero and Netscape web-based Email
- View/Open File Attachments



#### Chats/Instant Messages

- Records AOL Chat Rooms
- Records AOL Instant Messenger (AIM)
- Records MSN Instant Messenger
- Records Yahoo Messenger
- Records ICQ, IRC, Trillian and more...



#### Keystrokes Typed

- Records ALL Typed Keystrokes
- Records Hidden Characters and Passwords Typed



#### Web Sites & File Downloads

- Records Domain Names and Specific URLs Visited
- Record Files Downloaded (via the Internet or accessed over the network)
- Block Future Access to URLs with a Single Click
- View Date/Time, Total Duration and Total Number of Web Site Visits



#### Program Activity

- Record every Program launched on the PC
- View the Total Amount of Time a Program was Actively being used



#### Peer to Peer File Swapping

- Records Kazaa & Kazaa Lite
- Records Gnutella, Limewire and other programs that use the Gnutella file sharing engine
- View the text of all Peer to Peer program searches
- View the name of all Peer to Peer file downloads



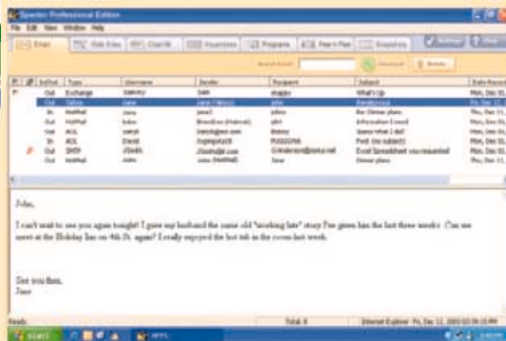
#### Screen Snapshots

- VCR Style Playback
- Fast Forward/Immediate Rewind



### Snapshot Recording

Spector Pro automatically takes snapshots of the computer screen as frequently as once per second and saves them to a hidden location on the PC. Reviewing the snapshot recordings is simple, with easy-to-use, VCR-like controls. Seeing the snapshots play back is like watching a surveillance tape of everything they were doing on the computer.



### Email Recording

Record all incoming and outgoing email from Internet-based services such as Hotmail, Yahoo mail and AOL Mail, Outlook, Exchange and industry-standard SMTP/POP3 email. All recorded emails and their associated file attachments can easily be viewed with the familiar Microsoft Outlook-like user interface.

**S P E C T O R S O F T**

[www.spectorsoft.com](http://www.spectorsoft.com)

888-598-2788 toll-free

1-772-770-5670 (outside of U.S.)

# Keep Your Kids Safe



The Internet is an essential part of life for kids today, but the dangers are real. Take steps now to protect your children.

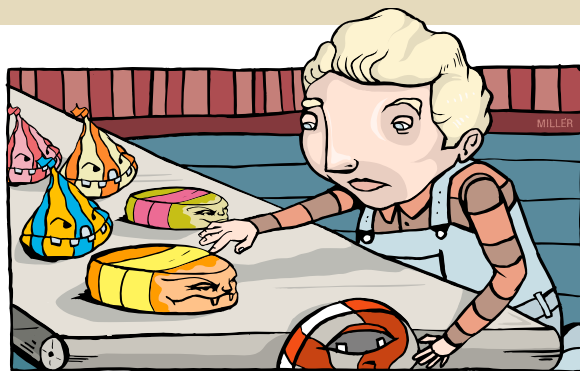
## IN SEPTEMBER 2003, 53-YEAR-OLD

John Zuccarini was arrested at a Florida hotel and, after admitting to his crimes in a plea bargain, became the first person convicted under the national Truth in Domain Names Act. The crime: According to the United States Attorney's office for the Southern District of New York, Zuccarini registered and used more than 3,000 misleading domain names, many of which directed children to hard-core porn sites and graphic depictions of young people engaged in sex acts. The domains included [www.teltubbies.com](http://www.teltubbies.com) and [www.bobthebiulder.com](http://www.bobthebiulder.com)—both misspellings of the addresses for popular children's TV shows.

Porn is just one of many issues parents should be concerned about when their kids go online. Problems could be as dangerous as encountering a predator in a chat room, as common as sharing music and software illegally via peer-to-peer file-sharing services, or as simple as spending far too much time playing games and chatting with friends.

Recent market research suggests that many parents consider online chatting more dangerous than Web surfing. Last year, Microsoft's MSN service shut down its chat rooms in 28 countries partly because of concerns about sexual predators preying on minors. And in a study published by Harris Interactive in November 2003, 24 percent of 550 U.S. teens surveyed said they had been contacted online by a stranger who tried to arrange an off-line meeting.

Meanwhile, the amount of time kids spend online is just



as important an issue. A November study performed by the Pew Internet & American Life Project found that almost 70 percent of young users say they would find it "very hard to give up" the Internet, compared with only 48 percent who said the same about television. Computers have become a hub for social activity. And for the most part, it is an unsupervised environment. Many parents go to sleep every night convinced that their kids are sleeping too, while some of the kids are actually chatting online with friends and strangers. And not surprisingly, some kids are also chatting when they should be doing homework.

The Internet has so much good to offer, however, that you can't just take your kids' access away permanently. It's a great educational resource and an essential form of communication today. And the more your kids learn about using

By Sebastian Rupley  Illustration by Michael James Miller

the Internet now, the better prepared they'll be for using it in the future.

Parents need to protect their kids online. Just as they want some control over where their kids go and whom they talk to in real life, parents need to establish some rules on where they go and whom they talk to online. Which strategy is best for your needs is your decision. The good news is that the products on the market offer a variety of approaches, so finding the right solution shouldn't be too difficult.

For this story, we tested many types of parental-control tools. We reviewed seven traditional Web-filtering apps, which remain the most popular first line of defense in protecting children from accessing inappropriate content on the Web. We also tested ISPs that provide parental controls, as well as some that offer special browsers designed for children. Home networking gear manufacturers are also addressing these issues, so we looked at two wireless routers that include filtering capabilities and other parental controls—an interesting solution if you have a home network. And we tested four monitoring applications; these apps provide the most aggressive approach, letting you view the sites your kids have visited, read their instant-messaging conversations, and review information about the applications they have used.

Don't be fooled by the category names, though. While each product emphasizes a particular function, most offer a variety of tools. For example, many of the filtering products include time management capabilities, and the monitoring products offer filtering and other parental controls. So we suggest you read through each section to find the solution that best fits your needs.

## IN THIS STORY

- 102 CyberPatrol 6.2 ●●●○○
- 102 Cybersitter 9.0 ●●●●○
- 104 EnoLogic NetFilter Home 3.0 ●●●○○
- 105 iProtectYou Pro Web Filter 6.03 ●●●○○
- 106 Net Nanny 5.0 ●●●●○
- 107 Norton Internet Security 2004 ●●●○○
- 108 Safe Eyes Platinum ●●●○○
- 104 Kids' Browsers and Services
- 105 Router-Based Parental Controls
- 106 Monitoring Software

# Filtering Software

The most common tool to protect kids online is filtering software, which filters out profanity and specific types of Web content—such as nudity and violence—while blocking content in other apps, like e-mail and IM clients.

Reviews by Jay Munro

## CyberPatrol 6.2

\$39 direct. SurfControl plc, [www.cyberpatrol.com](http://www.cyberpatrol.com).  
OVERALL RATING: ●●●○○

CyberPatrol 6.2 is a solid solution for controlling your children's computer activities. It filters out inappropriate content but lacks monitoring and adequate reporting tools. Thus, it doesn't offer any real insight into what your kids are doing online.

CyberPatrol's default user account provides restrictive filtering without requiring any configuration. It divides words and URLs into 13 categories so you can customize settings for individual users. You create user profiles and set user options in the password-protected CyberPatrol Headquarters. This interface hasn't changed much since the last time we reviewed CyberPatrol, though it includes new tool tips, hints, and information dialogs, all of which make the program easier to use.

Switching between users is a manual process, as CyberPatrol is not aware of Windows user accounts or Windows XP's fast switching. But we like that the program automatically reverts from the current user to the default user after a set period of inactivity. This prevents kids, for example, from using Mom's unrestricted account if she forgets to log off.

CyberPatrol can filter content in any program. Like Cybersitter with its word-blanking feature, CyberPatrol replaces restricted words with strings of periods. The program's category lists are not viewable, though parents can add specific sites to block or allow. For filtering chat sessions, parents can add words or phrases to ChatGuard's restricted-word lists on either a global or per-user basis.

In testing, CyberPatrol blocked most offensive sites we tried to access; only a few mildly risqué sites slipped through. And it wasn't as overzealous as Cybersitter and iProtectYou, though CyberPatrol blocked a page on Staples' site, indicating it had violated the "weapons" filter. Unfortunately, without detailed reports, we can't know what the specific offense was.

CyberPatrol offers several types of alerts, including a diagnostic screen that identifies the offending page and the category it violates. CyberPatrol also offers a stealth mode, which removes the tray icon and displays "Page not found" errors rather than warning messages.

CyberPatrol's time management abilities are particularly strong. The click-and-drag interface lets you quickly set daily or weekly time limits in 30-minute increments. If your child is spending too much time playing games and not enough doing homework, you can limit specific programs on a global or per-user basis.

## Cybersitter 9.0

\$39.95 direct; free upgrade from versions 2000 through 2003. Solid Oak Software Inc., [www.cybersitter.com](http://www.cybersitter.com). ●●●●○

Cybersitter 9.0 offers the strongest filtering we've seen, as well as good monitoring features. It is easy to use and does an excellent job of defending itself against computer-savvy kids who might try to find ways around the filter. While none of the programs in this roundup block content flawlessly, Cybersitter errs on the conservative side; by default it may block sites you would deem okay, but at least it doesn't let inappropriate content slip through.

**OUR CONTRIBUTORS:** Sebastian Rupley is a senior editor of *PC Magazine*. Nick Stam is the director of PC Magazine Labs. Jay Munro is a frequent contributor. Associate editor Matthew P. Graven and lead analyst Laura Delaney were in charge of this story.

Cybersitter relies on an extensive, frequently updated database of sites and word patterns. By default, Cybersitter blocks content related to sex, drugs, hate, and violence, as well as blocking all image searches. But parents can select from 32 content categories—including cults, gambling, file sharing, wrestling, and free e-mail sites—to tailor the filter to their needs. These settings are applied to Web browsing, e-mail, instant messaging, and newsgroups. Or you can simply block all instant messaging, newsgroups, FTP access, and file sharing.

Every Internet application is filtered for inappropriate content and personal information that parents have specified. Unlike iProtectYou, whose brute-force approach shuts down the app, Cybersitter just blanks out the bad words that appear in e-mails and instant messages. Of course, if a Web site has offending content, it is blocked.

Cybersitter offers a good stealth mode, letting parents filter and monitor kids' activities without their knowledge. Cybersitter can record both sides of IM sessions, as well as log all sites visited and any violations. This information can then be automatically e-mailed to you in a daily activity report.

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



When it comes to keeping your kids from seeing inappropriate Web sites, Cybersitter 9.0 has the strongest filtering capabilities among the products in this roundup. Content that can be blocked is broken down into 32 different categories—such as violence, drugs, gambling, and file sharing—so you can easily customize in detail what is blocked. And its database of sites and word patterns is frequently updated. Cybersitter is the most intuitive of the traditional filtering products, and with the decent set of monitoring, application-blocking, and time management features that it includes, it is also the most well rounded.

If your main concern is to offer a completely safe, kid-friendly environment for your child, you may want to consider a different approach. Designed specifically for kids, The Children's Internet is an ISP that provides an entirely safe Web experience for children. The service uses a proprietary browser—complete with a lively look and fun links—and a whitelist so that there is no chance an unapproved site will accidentally slip through.

If, on the other hand, you need a more aggressive way to monitor your kids' activities, Spector Pro 5.0 is the best choice. Logging the user's every keystroke and taking frequent screen grabs, the program is simple enough to use and offers the most powerful and complete assortment of monitoring and reporting features among the tools we've tested. It is also the only monitoring application we looked at that offers time management features.

**SCORECARD**



Each solution in this story—be it a filtering program, a monitoring application, or an online service—provides an assortment of tools for protecting your children online. But each has a different combination of strengths and features.

Simplicity is important, because you want to be sure the software is running properly, so we rate each product for **ease of use**.

Most of the programs—even the non-monitoring applications—provide tools for monitoring what users do online. They can log what sites have been visited, capture chat sessions, and take screenshots. To rate **monitoring** abilities, we evaluate how much information is captured and how well each program organizes the data. We've seen **reporting** handled in a variety of ways. Some programs will automatically e-mail reports to parents, while others require access to the child's computer. For this category, we rate options for accessing reports and how much

detail each report provides.

One of the most critical tasks these programs perform is **Web filtering**. We rate each solution's ability to block inappropriate Web content, as well as to recognize and allow access to good content. This rating also reflects the ability to customize filter settings for individual users. For the **application filtering and blocking** rating, we look at each program's tools for blocking applications from being used, and the ability to filter out bad language in programs like instant messaging and e-mail clients.

For **time management**, we evaluate options for specifying when particular users can and can't use specific programs. **Privacy control** tools let you specify information that can't be sent out over the Internet, preventing a child, for example, from giving out a phone number online. For this rating, we look at how easy it is to specify information and how well the program handles blocking personal data.

●●●●—EXCELLENT  
 ●●●●—VERY GOOD  
 ●●●—GOOD  
 ●●—FAIR  
 ●—POOR

|                                        | Ease of use | Monitoring | Reporting | Web filtering | Application filtering and blocking | Time management | Privacy control | OVERALL |
|----------------------------------------|-------------|------------|-----------|---------------|------------------------------------|-----------------|-----------------|---------|
| <b>CyberPatrol 6.2</b>                 | ●●●●        | N/A        | ●●        | ●●●●          | ●●●●                               | ●●●●●           | ●●●             | ●●●     |
| <b>Cybersitter 9.0</b>                 | ●●●●●       | ●●●        | ●●●●      | ●●●●●         | ●●●●                               | ●●●●            | ●●●●            | ●●●●    |
| <b>EnoLogic NetFilter Home 3.0</b>     | ●●●         | N/A        | ●●        | ●●●●          | ●●●●                               | ●●●             | ●●●●            | ●●●     |
| <b>iProtectYou Pro Web Filter 6.03</b> | ●●●●        | ●●●        | ●●●●      | ●●●●          | ●●●●●                              | ●●●●            | ●●●             | ●●●●    |
| <b>Net Nanny 5.0</b>                   | ●●●●        | ●●●        | ●●●●      | ●●●           | ●●●●                               | ●●●●            | ●●●●            | ●●●●    |
| <b>Norton Parental Control</b>         | ●●●●        | ●●         | ●●●●      | ●●●●          | ●●●●                               | N/A             | ●●●●●           | ●●●     |
| <b>Safe Eyes Platinum</b>              | ●●●●        | N/A        | N/A       | ●●●●          | ●●●                                | N/A             | N/A             | ●●●     |

RED denotes Editors' Choice. N/A—Not applicable: The product does not have this feature.

# Kids' Browsers and Services

Major ISPs, as well as a few smaller services, are now offering parental controls, site filtering, and environments designed specifically for kids. These services will block content whether you use their browsers or a different client. And most let you subscribe to and use their parental controls with another ISP.

America Online now provides specialized environments for kids, all included with regular accounts at no extra cost: **AOL KOL** for children 12 and under, **AOL RED** for teens 13 to 15, and **AOL RED Plus** for 16- and 17-year-olds. Its filter, which uses artificial intelligence, did a very good job in testing.

Parents can set controls on up to seven accounts. Each service is customizable and provides content tailored to the intended age group. KOL, for example, offers educational content, flash cartoons, and interactive games. Instant messaging is disabled by default, but kids can access supervised chat rooms. AOL RED offers an edgier environment, emphasizing entertainment and relationships. Web access is filtered for violent, mature, and adult content. AOL RED Plus offers full access to AOL content, IM, and e-mail. It does, however, block sites with adult and violent content. Parents can get activity reports and set an access timer for all users. (\$14.95 a month and up with any existing broadband service. America Online Inc., [www.aol.com](http://www.aol.com). ●●●○○)

**MSN Premium 9** doesn't provide a special browser, but it does offer kid-oriented content, parental controls, and filtering options that can be configured for up to ten users. Parents can limit downloads and set approved IM and e-mail contacts. MSN has some of the best Web filtering we've seen, but it does not filter IM, chat, or e-mail content. MSN offers weekly activity reports but lacks monitoring and time management features. (\$9.95 a month with any existing broadband service. Microsoft Corp., [www.msn.com](http://www.msn.com). ●●●○○)

**EarthLink Parental Controls** lets parents create up to eight profiles and designate each as Young Child (age 8 and under), Preteen (9 to 11 years old), or Teen (ages 12 and older). Its kids' browser is required for children under 12 and limits the youngest group to approved sites, while the preteen group can surf anywhere that isn't blocked by EarthLink. Teens can use a standard Web browser. For e-mail, chat, and other communications, parents can block or allow access, as well as limit communications to a list of approved CyberFriends. (Broadband, \$45.95 a month. EarthLink Inc., [www.earthlink.net](http://www.earthlink.net). ●●●○○)

**The Children's Internet** is a fun browser designed for kids. The license is limited to a single PC but supports an unlimited number of users. The desktop is locked down, so kids and parents must log on to the service. The styles of the animation and sound effects are set according to the user's age, while Web browsing is limited to approved sites. The only problem is that The Children's Internet lacks features like time management and monitoring. (\$9.99 a month with existing service. The Children's Internet, [www.childrensinternet.com](http://www.childrensinternet.com). ●●●○○)—JM



The Children's Internet

The Cybersitter Remote Control (available as a separate download) lets a parent remotely configure and control Cybersitter from a different machine on the network. This is handy for families with multiple PCs, but a static public IP address is required, so homes with a cable or DSL connection may require a special setup.

## EnoLogic NetFilter Home 3.0

\$47.59 direct. EnoLogic AS, [www.enologic.com](http://www.enologic.com). ●●●○○

EnoLogic NetFilter Home 3.0 takes a different approach to blocking content. It relies primarily on image- and text-analysis algorithms to determine whether content is inappropriate, rather than simply blocking a list of words and URLs. By default, NetFilter's emphasis is on blocking porn, but it can also filter content related to hate, violence, illegal activities, and piracy.

Set to normal sensitivity, NetFilter does a decent job distinguishing between good and bad content. For example, it let us look up historic information about the A-bomb but blocked information on building a bomb. It allowed sites about breast cancer but blocked some news and protest sites due to gruesome images. It blocked most extremely pornographic sites but allowed some sites that younger kids shouldn't be looking at.

Installation is easy enough. Like iProtectYou and Norton, NetFilter automatically detects and configures Windows user names, letting parents create a custom profile for each user.

NetFilter places an icon in the system tray, providing access to the admin panel. The initial status windows can be daunting, offering info such as whether a proxy is enabled. But for experienced users, NetFilter's advanced settings offer more granular control than most filters. For example, you can limit downloads by size, file extension, or filename. Whitelists and blacklists for applications and Web sites let parents specify words and URLs to block or allow. And you can place time limits on selected features, such as large file transfers, and allow others, such as general Web access.

NetFilter does not currently offer a stealth mode. And since the installation folder is in the Program Files folder, a savvy kid could potentially cripple the app. But the active files are locked by Windows. And if NetFilter is disabled, it locks the system's browsers.

### SCORECARD

|                                    | Ease of use | Monitoring | Reporting | Web filtering | Application filtering and blocking | Time management | Privacy control | OVERALL |
|------------------------------------|-------------|------------|-----------|---------------|------------------------------------|-----------------|-----------------|---------|
| <b>AOL KOL and AOL RED</b>         | ●●●●●       | ●●●        | ●●●       | ●●●●          | ●●                                 | ●●●●            | ●               | ●●●     |
| <b>The Children's Internet</b>     | ●●●●        | N/A        | N/A       | ●●●●●         | ●●●●                               | N/A             | N/A             | ●●●●    |
| <b>EarthLink Parental Controls</b> | ●●●●        | N/A        | N/A       | ●●●●          | ●●                                 | ●●              | ●●              | ●●●     |
| <b>MSN Premium 9</b>               | ●●●●        | N/A        | ●●●       | ●●●●●         | ●●                                 | N/A             | ●               | ●●●●    |

RED denotes Editors' Choice. N/A—Not applicable: The product does not have this feature.

## iProtectYou Pro Web Filter 6.03

\$34.95 direct. SoftForYou, www.softforyou.com.



As a filter, iProtectYou Pro Web Filter 6.03 does a good job. And it has some powerful features, such as logging, reporting, and time management. A couple of areas, however, could use improvement.

The program automatically recognizes Windows user names and lets parents put them into groups. There are four “intensity” levels for filtering, which can be assigned by group or user.

Much like Cybersitter and NetFilter, iProtectYou uses filtering patterns and keywords divided into categories: sex, drugs, violence, nudity, indecent, extremism, and satanic. By default, all those categories are blocked, but parents can configure the filter for individual users.

iProtectYou provides very strong filtering of Web, newsgroup, instant-messaging, and e-mail content. Parents can choose to display a cartoon warning, a custom message, or a simple “not found” message when a child tries to access a restricted site. In testing, the filter was sometimes too strong and couldn’t discern between good and bad sites based on context.

When iProtectYou blocks content in a program, it shuts down the app. If it finds one bad e-mail message, it cancels the download of all messages. When we turned off e-mail filtering, however, messages were still blocked, because our anti-virus program (Norton AntiVirus) was prescanning e-mail and was being filtered. To access e-mail, we had to put our anti-virus program on the trusted-application list. Ideally, iProtectYou should automatically recognize such a popular utility.

Parents can receive notifications of violations by e-mail with images of the offending screens. Unfortunately, this doesn’t always work if your SMTP servers require a password to log on, but we were able to use this feature with our system. The logs are very extensive and contain entries for each opened program, visited site, and violation.

Time management options are easy to configure. Uniquely, iProtectYou also lets you set a limit on the total number of bytes kids can download. As with the time schedule, you can set a maximum daily usage limit—in this case, up to 100MB—before a user’s Internet access is blocked.

## Router-Based Parental Controls

The software solutions reviewed in this story protect the PCs they are installed on. But if you have a home network with, say, two PCs you want to protect, you’ll need to buy and install the software twice, set the preferences twice, manage two copies of the software, and keep two copies up to date.

Router vendors may have found a simpler and more affordable approach. **Linksys** and **ZyXEL** have both partnered with online parental-control services—Netopia and Cerberian, respectively—to offer a single point of protection right in your router,

protecting all the systems on your network. Rather than locking users to specific systems with content filtering enabled, the routers let users log on to any PC on the network and get their individual permissions applied. And if multiple users share a single system, the log-on technique ensures that the filtering options are customized for the current user. (Linksys parental controls:

●●●●○; ZyXEL parental controls: ●●●●○)

For this story, we looked at two routers that recently shipped: the Linksys WRT54GS wireless router and the ZyXEL HomeSafe Parental Control Gateway model HS-100W. Linksys charges \$39.95

for a one-year subscription to Netopia, and ZyXEL charges

\$34.99 for Cerberian—not too bad for solutions that protect your entire network. The networking and administration features of both of these routers work quite well, but we focused our testing specifically on the devices’ parental controls.

When configuring the routers, each user is assigned a profile, such as child, young teen, mature teen, or adult. You can customize Web site category restrictions for each profile and set restrictions for each user. We preferred ZyXEL’s more complete list of site categories, though some users might prefer the simplicity of Linksys’s smaller list.

ZyXEL’s parental-control options are managed locally in the router’s admin screens. The router handles user log-on validation, time-of-day rules, and restrictions on e-mail and IM. Only the Web-filtering capabilities require you to connect to Cerberian. This means that even if Cerberian went down, some basic restrictions would remain enabled. The Linksys unit, on the other hand, requires that Linksys’s online servers validate user log-ons and enforce other basic options, such as time and application restrictions. During testing, the Linksys servers became temporarily inaccessible, disabling all the parental controls. But despite a few problems, both solutions were generally reliable and delivered excellent content filtering and access restrictions.

Both Netopia and Cerberian rate millions of Web sites for content. When a user attempts to access a Web site, the router sends a request to the online service. The service then sends back a rating, and the router either permits or rejects access based on the user’s permissions. Generally, this background interaction isn’t noticeable, though the Linksys router was a bit sluggish when displaying rejection messages. Overall, we were satisfied with the site-blocking capabilities offer both services.

Unfortunately, the routers are missing a few features that the software solutions include, such as extensive keyword filtering. While keywords can be entered manually into the ZyXEL router, it’s a tedious process. The routers also lack monitoring features. Linksys offers more flexible IM controls than ZyXEL, letting you block sessions or specify trusted contacts. Linksys provides similar controls for e-mail filtering, where the ZyXEL unit can only turn off e-mail or limit when it can be accessed.

Linksys also provides more detailed reporting capabilities than ZyXEL, with easily navigable surfing, IM, and e-mail usage reports. Only ZyXEL, however, allows reports to be e-mailed to designated recipients.

Centralizing parental controls within routers is a good idea; it works well, and it’s cost-effective. Although most users would be satisfied with the options these routers offer, they lack certain features some parents will consider essential.—*Nick Stam*



Linksys parental controls

## Net Nanny 5.0

\$39.95 direct. LookSmart Ltd., [www.netnanny.com](http://www.netnanny.com).

●●●●○

Net Nanny (recently acquired by LookSmart) is one of the most recognized names in parental controls. The latest version, Net Nanny 5.0, offers a decent toolset, including cookie and pop-up blocking, time management, and program controls. But despite its name recognition, it is far from the most effective solution in this market.

For parents just cutting their teeth on computers, the simple installation and automatic creation of a default user offers immediate protection without requiring configuration of a lot of settings. Unfortunately, we found it fairly easy to access explicit images without being blocked.

Net Nanny is the only product in this roundup that lets you view its built-in lists

of permitted and restricted sites and words. Parents can add to either list. But unlike Cybersitter, Net Nanny doesn't categorize sites; instead the blocked list is just one big pool of restricted URLs, making it difficult to customize settings for individual users.

Word filtering works on Web browsers, IRC chat sessions, unencrypted e-mail messages, and newsgroups. (Filtering does not work, however, on AOL Instant Messenger or MSN Messenger.) Net Nanny replaces objectionable words with pound signs. This may block certain words, but in many cases you can still get the message, and this doesn't help block pictures at all. Occasionally we were able to get to explicit images in newsgroups, though the more offensive words were blocked. If parents are concerned about what their kids may be exposed to in newsgroups, the best solution is

to block newsgroups completely.

Parents can use Net Nanny to log and review their kids' activities while filtering content. Alternatively, they can run Net Nanny in stealth mode, which monitors but doesn't block content. The software can record every site a child visits and send e-mail reports to the parents on a daily, weekly, or monthly basis.

This activity log is the most detailed in our roundup. It includes the number of online sessions, visited Web sites, traded files, and filter violations. Parents can choose to log violations only, log all activity, or turn off logging altogether.

For the youngest kids, parents could get away with Net Nanny as a set-it-and-forget-it solution. For older kids, though, they'll need to do more monitoring and be vigilant about configuring program settings.

# Monitoring Software

Using filtering software to block inappropriate content is a critical part of protecting your kids online. If you need a more aggressive strategy, however, you may want to consider a monitoring program. Such solutions emphasize tracking and reporting what your kids do.

There are many monitoring programs to choose from, and here we look at four good examples: **IamBigBrother 9.53B** (\$29.95 direct, Software4Parents.Com; ●●●●○), **PC Tattletale 7.5** (\$47, Cyber Samurai Marketing Inc., [www.pctattletale.com](http://www.pctattletale.com); ●●●●○), and SpectorSoft's **eBlaster 5.0** and **Spector Pro 5.0** (\$99.95 each, SpectorSoft Corp., [www.spectorsoft.com](http://www.spectorsoft.com); eBlaster: ●●●●○; Spector Pro: ●●●●○). Each program is capable of capturing every keystroke typed, every application opened, and every Web site visited. The programs log both sides of chats and instant-messaging conversations, as well as outgoing and incoming e-mail. But there are distinct differences in how customizable each program is, how each captures information and reports it.

Unlike other solutions, which let you set up different profiles for multiple users, these programs allow only one profile per computer—unless, in the case of eBlaster or Spector Pro, you purchase additional licenses. All of the programs track multiple users on the same PC, with everyone bound to the same rules.

## SIMPLICITY

All four of these solutions are intuitive, but IamBigBrother and PC Tattletale really stand out as the easiest to use, partly because they offer fewer options to configure. In fact, IamBigBrother offers little beyond settings for screen capture and keyword filtering. eBlaster and Spector Pro, on the other hand, provide abundant options for

customization—which is great for power users but may perhaps be overwhelming for novices.

## STEALTH MODE

Ideally, you should inform your children that they are being monitored in the hopes of curbing their behavior and creating a certain level of trust. In extreme cases, though, it may be necessary to monitor your kids without their knowledge. Some programs do a better job of hiding themselves than others. None of them appear in the Windows Task Manager or the Add/Remove Programs list, but eBlaster and Spector Pro do the best job of hiding: We found no traces of either app in the Windows Registry.

## APPLICATION USAGE

These programs do a decent job of tracking applications each user has opened. All of them list the time a program is loaded. But only eBlaster and Spector Pro provide the total time the given app is open as

well as the active time—the amount of time the program remains in the Windows foreground. eBlaster and Spector Pro also capture data for peer-to-peer programs like Kazaa, so you can see what your kids are downloading. In addition, Spector Pro lets you block chat sessions, e-mail access, peer-to-peer services, or any other app that requires an open port.

## E-MAIL AND INSTANT MESSAGING

Reading someone's personal e-mail or chat sessions may seem unethical. And if your teenager finds out you're doing that, it could be a devastating blow to your relationship. So tread lightly. All these programs log incoming and outgoing e-mail, as well as conversations in popular instant-messaging clients. Each also lists user

The screenshot shows the Spector Pro 5.0 interface. At the top, there's a menu bar with 'File', 'Edit', 'View', 'Options', and 'Help'. Below that is a toolbar with icons for 'Enter', 'Exit', 'View Data', 'Print', 'Refresh', 'Programs', and 'Print'. The main area is divided into two panes. The left pane shows a tree view of running programs, including 'ACU Instant Messenger', 'ipanel', 'LeftAlt Screen Saver', 'ESET-NP', 'Internet Explorer', 'KMAIL', 'Microsoft Office Outlook', 'Microsoft Office Word', 'PC Tattletale', 'Registry Editor', and 'Windows Explorer'. The right pane shows a table of application usage statistics.

| Time                 | App                   | App Name  | Open    | Total   | Active  | Window Title |
|----------------------|-----------------------|-----------|---------|---------|---------|--------------|
| 05/24/04 09:16:23 AM | PC Tattletale         | Microsoft | 0:00:00 | 0:00:04 | 0:00:04 |              |
| 05/24/04 09:16:23 AM | Symantec AntiVirus    | Microsoft | 0:01:18 | 0:00:00 | 0:00:00 |              |
| 05/24/04 09:16:23 AM | ACU Instant Messenger | Microsoft | 0:00:00 | 0:00:00 | 0:00:00 |              |
| 05/24/04 09:16:23 AM | Windows Explorer      | Microsoft | 0:02:42 | 0:00:20 | 0:00:20 |              |
| 05/24/04 09:17:52 AM | Symantec AntiVirus    | Microsoft | 0:00:33 | 0:00:25 | 0:00:25 |              |
| 05/24/04 09:17:52 AM | Symantec AntiVirus    | Microsoft | 0:01:24 | 0:00:22 | 0:00:22 |              |

Spector Pro 5.0



## Norton Internet Security 2004

\$69.95 direct. Symantec Corp., [www.symantec.com](http://www.symantec.com).  
Norton parental controls: ●●●○○

Symantec's Norton Internet Security 2004 (NIS) includes several tools to help parents protect their children. Besides combining good filtering with first-rate virus protection and a strong firewall, the suite offers spam and ad blocking.

The component called Parental Control can import Windows user accounts for fast configuration of multiple users (and support for fast user switching). With the exception of the administrator, all accounts default to the most restrictive protection. Accounts can then be individually configured, but you can't change settings globally.

Norton's site filtering is strict. Similar in breadth to Cybersitter, Norton offers 31 fil-

ter categories, 18 of which are selected by default, including all 7 related to sex and nudity. Norton blocked most offensive sites we tried to access, and it allowed most good sites. Parents can add sites to be blocked or allowed, or they can opt to block all sites except ones they add to the list.

Some features overlap between Parental Control's tools and other parts of NIS. For example, in Parental Control parents can allow or block up to 11 types of applications, including IM clients and network games. But to add or remove apps on the list, they must open the program control in the firewall component.

NIS also lets you specify private information to be blocked from being shared online. Like filtering, this can be applied on a per-user basis. There is no word list for filtering words in e-mail or other apps, but

you can block words by adding them to the privacy control. Blocking profane words isn't the primary purpose of the privacy control, but nonetheless it works in all apps.

Norton does not have a stealth mode; blocked Web pages always display the URL and the category of the violation. When a user enters private data that is blocked, a dialog box similar to a virus warning pops up. Norton's comprehensive statistic screen shows how many sites and programs were blocked or permitted.

Parental Control can be disabled in NIS, and you can run any other product in this roundup alongside the rest of the suite. If you want the absolute best parental filtering available, we recommend Cybersitter. But we like that Norton Parental Control is part of a comprehensive security suite.

names, so you can easily see who said what. PC Tattletale and Spector Pro offer the best views, displaying conversations in a split window. PC Tattletale also uses colors to differentiate users—which is a nice touch.

### KEY LOGGING

You can use a key logger to reveal your kids' passwords, though reading through key logs is a tedious task. PC Tattletale and Spector Pro both use a split-window approach; they list the application in one pane and the keystrokes in another. IamBigBrother places keystrokes underneath the application name in linear order, making text more difficult to read. eBlaster offers the option of showing extended keystrokes, which include keys like Shift and Ctrl.

### INTERNET TRACKING AND FILTERING

All four programs we tested record the times that sites are accessed; eBlaster and Spector Pro also log the amount of time spent on each Web page. Only PC Tattletale and Spector Pro offer ways to deny access to Web sites.

PC Tattletale blocks sites based on keyword filters that you set manually. If a keyword is embedded in a Web page, PC Tattletale will switch to a default URL and send an e-mail alert with information about the site visited to the parent. But it doesn't extend keyword alerts to chats or e-mails. Spector Pro lets parents set up time blocks for blocking all Internet access. If more than one person uses

the PC, Spector Pro can block access for specific users. Parents can also block or allow particular sites by manually specifying URLs.

### KEYWORD FILTERING

You can specify keywords that should be blocked. PC Tattletale monitors keywords only when they are sent out over the Internet; eBlaster and Spector Pro alert you whenever a keyword is typed, regardless of the application. E-mail alerts can be good and bad. Our in-box was quickly inundated with messages regarding keywords. Fortunately, eBlaster, PC Tattletale, and Spector Pro let you customize when and how often alerts are sent.

### SCREEN CAPTURE

Screen captures provide the best view of what your kids are doing online. The only program here that doesn't capture screens is eBlaster, primarily because it's based on e-mail reports. With the others, you can specify how often screens are saved. IamBigBrother provides thumbnails of images that link to larger views. PC Tattletale lists images by date and time, with a screen view in a separate window, but the text in its screen grabs is sometimes unreadable. Spector Pro lets you view screens as a slide show, with lots of playback controls. In case you want to view only activity in the middle of the week, Spector Pro provides a timeline slider to pinpoint the day and time a screenshot was taken. This approach is by far the easiest and most comprehensive.—*Laura Delaney*

## SCORECARD

●●●●—EXCELLENT  
●●●●—VERY GOOD  
●●●—GOOD  
●●—FAIR  
●—POOR

|                            | Ease of use | Monitoring | Reporting | Web filtering | Time management | Keyword notification | OVERALL |
|----------------------------|-------------|------------|-----------|---------------|-----------------|----------------------|---------|
| <b>eBlaster 5.0</b>        | ●●●●        | ●●●●○      | ●●●●      | N/A           | N/A             | ●●●●●                | ●●●●    |
| <b>IamBigBrother 9.53B</b> | ●●●●●       | ●●●●       | ●●●○      | N/A           | N/A             | ●●●                  | ●●●○    |
| <b>PC Tattletale 7.5</b>   | ●●●●●       | ●●●●○      | ●●●●○     | ●             | N/A             | ●●●                  | ●●●●    |
| <b>Spector Pro 5.0</b>     | ●●●●        | ●●●●●      | ●●●●●     | ●●            | ●●●             | ●●●●                 | ●●●●○   |

RED denotes Editors' Choice. N/A—Not applicable: The product does not have this feature.

## Safe Eyes Platinum

\$34.95 direct (for installation on 3 systems).  
SafeBrowse.com Inc., [www.safeeyes.com](http://www.safeeyes.com). ●●●○○○

Safe Eyes Platinum is a very basic URL filter. It has a twist, though: All of Safe Eyes' settings and filters are located on a server. When a user logs on, a connection is set up between the client and the Safe Eyes server. There is no list to download, update to buy, or subscription to maintain. And a single license allows you to install Safe Eyes on up to three systems. Since all user information is stored on the server, users can log on from any machine running Safe Eyes—a handy option for homes with multiple computers.

Setup is easy. But if there's a firewall, you may need to configure it to work with Safe Eyes. Parents can customize settings for multiple users, choosing from among 36 different categories to filter. By default, the program filters sex, nudity, pornography, and tasteless content for all users. Unique among the products in our roundup, Safe Eyes does not let users surf unfiltered; they can't disable the four default filtering categories. If a child visits a restricted site, the program displays a full-screen alert with the offending URL and category violated.

In testing, we found the filter very restrictive, although it did allow access to sites about breast cancer. The interface is intuitive, with few settings other than the categories. Parents cannot view the list of blocked sites, but the Test a Site feature lets them check whether a URL is blocked, and if so, in which category. Safe Eyes doesn't filter content in applications or let users specify personal information to be blocked. But it can block access to IM, e-mail, newsgroups, FTP, and file-sharing programs. Safe Eyes also comes with a pop-up blocker, which can be configured for users individually but not globally. Strong filtering at a one-time price makes Safe Eyes a good, low-maintenance choice for parents with younger kids. As kids get older, however, you may find that you need features like personal-information filtering, activity logging, and time management settings.

## More on the Web

Visit *PC Magazine's* home page at [www.pcmag.com](http://www.pcmag.com) for more reviews, news and opinions.

# Resources for Parents

Keeping your kids safe doesn't stop with buying a piece of software. You need to stay abreast of the issues. These sites will help. And for information about making sure your children are safe when they go online at school, read "Safety in School" on page 58, written by Parry Aftab of [WiredKids.org](http://WiredKids.org).

### BE SAFE ONLINE

Feeling overwhelmed trying to keep on top of all the potential dangers of the Internet? If you don't know where to start, check out Be Safe Online ([www.besafeonline.org](http://www.besafeonline.org)). This primer discusses the common problems associated with everything from e-mail and instant-messaging clients to file sharing and shopping online. It's basic but essential information.

### BE WEB AWARE

A well-organized site with a vast amount of information, Be Web Aware ([www.bewebaware.org](http://www.bewebaware.org)) includes useful safety tips that are organized by age group. It discusses many of the problems kids might encounter (from pornography to cyberbullying and Internet addiction), provides warning signs, and lists preventative tips for each topic. On a more optimistic note, there are also articles on getting the most out of the Internet, with lists of URLs for such things as kid-friendly portals and monitored chat rooms.



Be Web Aware



GetNetWise

### THE CYBERSMART! SCHOOL PROGRAM

A nonprofit corporation, The CyberSmart! School Program ([www.cybersmart.org](http://www.cybersmart.org)) has developed a K-8 curriculum to help teachers educate schoolchildren on how to use the Internet productively and safely. This first initiative, which was copublished by Macmillan/McGraw Hill, is available for free. The site also includes online safety tips and other essential information for parents, children, and teachers.

### GETNETWISE

A public service provided by the Internet Education Foundation and a list of contributing partners that includes America Online and Microsoft, GetNetWise ([www.getnetwise.org](http://www.getnetwise.org)) is a fantastic resource for understanding all the dangers of the Internet as well as how to protect yourself and your family. The Keeping Children Safe Online area provides an online safety guide with tips organized by age, information on handy tools (including many of the products reviewed here), a list of sites designed for kids, and advice on what to do if you encounter a potential problem. The site also discusses antivirus software, firewalls, spam, and other security-related issues.

### PEACEFIRE

Peacefire ([www.peacefire.org](http://www.peacefire.org)) is a very informative site about filtering software. Its mission is to defend the First Amendment rights of individuals—namely people under 18—and it offers current news articles, information about various filtering products, and a download that can be used to circumvent any filtering software running on your computer. Whether you agree with Peacefire's goal or you're just trying to stay one step ahead of your children, this site is a worthwhile read.—*Matthew P. Graven*



# ABS® Mayhem G2

Microsoft® Windows® XP Home SP1a  
 Intel® Centrino™ Mobile Technology  
 Intel® Pentium® M Processor 735  
 Intel® PRO/Wireless Network Connection 2200BG  
 Intel® 855PME  
 1024MB DDR333 SDRAM  
 ATI Mobility Radeon™ 9700 with 128MB Memory  
 15.4 WXGA 1280x800 TFT LCD  
 S-Video TV-Out  
 60GB/5400 rpm Hard Drive  
 Integrated DVD/CD-RW Combo Drive  
 3 in 1 SD/MMC/MS Card Reader  
 802.11g/b 54M Rate Wireless Network Card  
 10/100 Mbps Ethernet Controller & 56K V.90 Modem  
 1 Firewire port & 3 USB 2.0 Ports  
 Travel Weight: 6.4 lbs.

## \$1899

### mobile Performance

ABS® Recommends Microsoft® Windows® XP



[www.abspc.com/pm14](http://www.abspc.com/pm14)

*Always Better Service*

## 800.876.8088

- ▶ 1 Year Limited Parts Warranty
- ▶ 30 Days Money Back Guarantee ▶ Hours: Mon-Fri 8:30AM-5:30PM PST
- ▶ 24/7 Technical Support ▶ Lifetime Toll-Free Tech Support

Price, specification, and terms are subject to change without notice. Picture shown with upgraded options. ABS® is not responsible for errors in typography and/or photography. 30 days money back guarantee does not include opened software, parts, or special orders merchandise. Original shipping and handling fee along with return shipping charge are non-refundable. Products returned after 30 days or in a non-refundable condition are subject to a restocking fee. Intel, Intel Inside, and Pentium are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries.



**\$ 1149**

**XPLORER U3 2000 NOTEBOOK**

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor
- Intel® PRO Wireless 802.11G 54Mbps Mini-PCI Wireless Card
- Intel® 855GM Chipset
- 512MB PC2700 DDR333 Memory
- 60GB Ultra ATA100 Hard Drive
- 14.1" XGA TFT Display 1024X768 Pixels
- CD-RW/DVD Combo Drive
- 10/100 Network Card & 56K V.92 Modem
- 1 Firewire IEEE 1394 & 4 USB 2.0 Ports
- 5 Hours Battery Life
- Super Light Weight only 5.4 Lbs
- Microsoft® Windows® XP Home Edition
- Free Carrying Case
- 7 Custom Colors to Choose From

- |                                                                        |                |        |
|------------------------------------------------------------------------|----------------|--------|
| Intel® Pentium® M Processor 745<br>(1.8Ghz, 2MB L2 Cache, 400 Mhz FSB) | <b>\$ 1615</b> | CNB821 |
| Intel® Pentium® M Processor 735<br>(1.7Ghz, 1MB L2 Cache, 400 Mhz FSB) | <b>\$ 1379</b> | CNB822 |
| Intel® Pentium® M Processor 1.7Ghz                                     | <b>\$ 1245</b> | CNB823 |
| Intel® Pentium® M Processor 1.6Ghz                                     | <b>\$ 1185</b> | CNB824 |
| Intel® Pentium® M Processor 1.5Ghz                                     | <b>\$ 1149</b> | CNB825 |



**\$ 1635**

**XPLORER S4 3000 NOTEBOOK**

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor
- Intel® PRO Wireless 802.11B 54Mbps Mini-PCI Wireless Card
- Intel® 855GM Chipset
- 1024MB PC2700 DDR333 Memory
- 80GB Ultra ATA100 Hard Drive
- Mobile ATI Radeon 9700 PRO 128MB Video
- 15" XGA TFT Display 1400X1050 Pixels
- CD-RW/DVD Combo Drive
- 10/100 Network Card & 56K V.92 Modem
- 1 Firewire IEEE 1394 & 4 USB 2.0 Ports
- 5 Hours Battery Life
- Super Light Weight only 6 Lbs
- Microsoft® Windows® XP Home Edition
- Free Carrying Case
- 7 Custom Colors to Choose From

- |                                                                        |                |        |
|------------------------------------------------------------------------|----------------|--------|
| Intel® Pentium® M Processor 745<br>(1.8Ghz, 2MB L2 Cache, 400 Mhz FSB) | <b>\$ 2099</b> | CNB831 |
| Intel® Pentium® M Processor 735<br>(1.7Ghz, 2MB L2 Cache, 400 Mhz FSB) | <b>\$ 1869</b> | CNB832 |
| Intel® Pentium® M Processor 1.7Ghz                                     | <b>\$ 1729</b> | CNB833 |
| Intel® Pentium® M Processor 1.6Ghz                                     | <b>\$ 1669</b> | CNB834 |
| Intel® Pentium® M Processor 1.5Ghz                                     | <b>\$ 1635</b> | CNB835 |



**\$ 1716**

**XPLORER X5 8000 NOTEBOOK**

- 1024 PC2700 DDR333 Memory
- 80GB Ultra ATA100 Hard Drive
- Mobile ATI Radeon 9700 PRO 128MB Video
- 15.4" WXGA Wide-Screen TFT Display 1280x800 Pixels
- 16X/2X CD-RW/DVD-RW Combo Drive
- 10/100 Network Card & 56K V.92 Modem
- Wireless 802.11G 54Mbps Networking
- 3-in-1 Built-in Media Reader
- 1 Firewire IEEE 1394 & 3 USB 2.0 Ports
- 1 PCMCIA Type II Slot
- Weight only 6.39 Lbs
- Microsoft Windows XP Home Edition
- Free Carrying Case
- 7 Custom Colors to Choose From

- |                                                  |                |        |
|--------------------------------------------------|----------------|--------|
| Intel® Pentium® 4 Processor<br>3.4Ghz 800MHz FSB | <b>\$ 1973</b> | CNB811 |
| 3.2Ghz 800MHz FSB                                | <b>\$ 1824</b> | CNB812 |
| 3.0Ghz 800MHz FSB                                | <b>\$ 1758</b> | CNB813 |
| 2.8Ghz 800MHz FSB                                | <b>\$ 1716</b> | CNB814 |



**\$ 695**

**GAMER INFINITY 8500 THUNDER**

- Intel® I865PE Chipset 800MHz FSB 8X AGP DDR400 MB
- 512MB PC3200 Dual Channel DDR400 Memory
- 80GB 7200RPM ATA100 Hard Drive
- ATI® RADEON™ 9600 8X AGP 128MB DDR Video Card w/ TV Out
- 8X DVD-RW DVD-Rewritable Drive
- AC97 3D 5.1 Surround Sound
- 600Watt Speaker System
- 56K V.92 Fax Modem w/ Voice
- PS2 Multimedia Controlled Keyboard & Internet Mouse
- **A-TOP X-BLADE Case 420 Watt with See Through Windows and Sound Activated Neon Light**
- 6 Cool Custom Colors to Choose From
- Free First Year On Site Service plus 24/7 Tech Support
- Upgrade to Viewsonic® Office Keyboard and Optical Mouse +\$49

- |                                                                     |               |        |
|---------------------------------------------------------------------|---------------|--------|
| Intel® Pentium® 4 Processor with HT Technology<br>3.4Ghz 800MHz FSB | <b>\$ 959</b> | CBF801 |
| Intel® Pentium® 4 Processor with HT Technology<br>3.2Ghz 800MHz FSB | <b>\$ 809</b> | CBF802 |
| Intel® Pentium® 4 Processor with HT Technology<br>3.0Ghz 800MHz FSB | <b>\$ 739</b> | CBF803 |
| Intel® Pentium® 4 Processor with HT Technology<br>2.8Ghz 800MHz FSB | <b>\$ 695</b> | CBF804 |



**\$ 755**

**XP 8000 DREAM**

- Intel® I865PE Chipset 800MHz FSB 8X AGP MB
- 512MB PC3200 Dual Channel DDR400 Memory
- 80GB 7200RPM ATA100 Hard Drive
- NVIDIA® GeForce™ FX 5200 8X AGP 128MB DDR w/ TV Out
- 16X DVD-ROM
- 52X32X52 CD-RW Drive
- 3D 5.1 Surround & 600Watt Subwoofer System
- 56K V.92 Fax Modem w/ Voice
- Mitsumi 1.44MB Floppy Drive
- Internet Multimedia Keyboard & Internet Mouse
- **Turbo X-Infinity Case 420Watt with See Through Windows and Sound Activated Neon Light.**
- 6 Cool Custom Colors to Choose From
- Microsoft® Windows® XP Home Edition
- Microsoft® Work 7.0
- Free First Year On Site Service plus 24/7 Tech Support
- Upgrade to Viewsonic® Office Keyboard and Optical Mouse +\$49

- |                                                                     |                |       |
|---------------------------------------------------------------------|----------------|-------|
| Intel® Pentium® 4 Processor with HT Technology<br>3.4Ghz 800MHz FSB | <b>\$ 1015</b> | C8021 |
| Intel® Pentium® 4 Processor with HT Technology<br>3.2Ghz 800MHz FSB | <b>\$ 865</b>  | C8022 |
| Intel® Pentium® 4 Processor with HT Technology<br>3.0Ghz 800MHz FSB | <b>\$ 795</b>  | C8023 |
| Intel® Pentium® 4 Processor with HT Technology<br>2.8Ghz 800MHz FSB | <b>\$ 755</b>  | C8024 |



**\$ 1025**

**GAMER INFINITY 8000 DREAM**

- Intel® I915 Chipset 16X PCI Express Motherboard
- 512MB PC3200 Dual Channel DDR400 Memory
- 160GB 7200RPM Ultra ATA100 Hard Drive
- PCI Express 16X NVIDIA® GeForce™ 5750 256MB DDR Video
- NEC 8X DVD-RW Drive 2500A
- AC97 3D 5.1 Surround Sound
- Creative Inspire S560 5.1 Surround Sound System
- Creative Lab V.92 Fax Modem w/ Voice & 1.44MB Floppy Drive
- Ideazon CrossFire Gaming Swapable Z-Board
- Microsoft® USB Optical Mouse
- **A-TOP X-BLADE Case 420 Watt with See Through Windows and Sound Activated Neon Light**
- 6 Cool Custom Colors to Choose From
- Microsoft® Windows® XP Home Edition
- Microsoft® Work 7.0
- Norton Anti Virus 2004
- Free First Year On Site Service plus 24/7 Tech Support

- |                                                                                           |                |
|-------------------------------------------------------------------------------------------|----------------|
| Intel® Pentium® 4 Processor 550 with HT Technology<br>(3.4Ghz, 1MB L2 Cache, 800 Mhz FSB) | <b>\$ 1285</b> |
| Intel® Pentium® 4 Processor 540 with HT Technology<br>(3.2Ghz, 1MB L2 Cache, 800 Mhz FSB) | <b>\$ 1135</b> |
| Intel® Pentium® 4 Processor 530 with HT Technology<br>(3.0Ghz, 1MB L2 Cache, 800 Mhz FSB) | <b>\$ 1069</b> |
| Intel® Pentium® 4 Processor 520 with HT Technology<br>(2.8Ghz, 1MB L2 Cache, 800 Mhz FSB) | <b>\$ 1025</b> |

# Cyberpower Custom Build PC Work Shop

~ Building Your Dream PC is AS Easy AS 1, 2, 3.



- Our Awards
- Return to Home
- Order Status
- Show Order
- Why CyberPower
- Click here to chat with a representative



**Get more done, have more fun.**

*You can quickly run multiple applications at once with a CYBERPOWER XP 800 Dream based on the Intel® Pentium® 4 Processor with HT Technology.*

Normal View | Real Time | Quick Link: Custom Build Configurations

Final Price: **\$1085.00** Add to cart | Reset configuration

|                    |                                                                                   |
|--------------------|-----------------------------------------------------------------------------------|
| CASE               | ALUMINUM TURBO X-SuperAlien SERVER CASE 425 WATT w/ WINDOW [ +109 ]               |
| PROCESSOR          | Intel® Pentium® 4 Processor 3.0GHz 800MHz FSB [ +345 ]                            |
| MOTHERBOARD        | *(DDR400-800MHz FSB) ABIT IS7-E I865PE 800MHz FSB MB w/ SATA, LAN & SOUND [ +85 ] |
| MEMORY             | 512MB (256MB X 2) PC3200 400MHz DUAL CHANNEL DDR MEMORY [ +89 ]                   |
| HARD DRIVE         | 80GB 7200RPM ATA-100 HARD DRIVE [ +79 ]                                           |
| HARD DRIVE 2       | NONE [ +0 ]                                                                       |
| RAID Configuration | OPTIONAL - REQUIRES 2 IDENTICAL HARD DRIVES [ +0 ]                                |
| VIDEO CARD         | NVIDIA® GeForce™4 MX440 64MB DDR AGP 8X EDITION w/ TV-OUT [ +43 ]                 |
| DVD-ROM            | 16X DVD-ROM DRIVE [ +33 ]                                                         |
| CD-RW              | 52X24X52 CD-RW DRIVE [ +39 ]                                                      |
| MONITOR & LCD      | (BLACK) ViewSonic® E90FB 19 INCH 231H mm MONITOR [ +100 ]                         |
| SOUND              | 3D WAVE ON-BOARD 5.1 SOUND CARD [ +0 ]                                            |

**System Summary**  
Price: \$1085.00

- Aluminum X-SuperAlien Server Case 420Watt & Window (BLACK)
- Intel® Pentium® 4 Processor 3.0GHz 800MHz FSB
- ABIT IS7-E I865PE 800MHz FSB Motherboard
- 512MB (256MB x 2) PC3200 DDR400 Dual Channel Memory
- 80GB 7200 RPM ATA-100 Hard Drive
- NONE - Hard Drive 2
- NVIDIA® GeForce™4 MX 440 64MB AGP 8X
- 16X DVD-ROM Drive (BLACK)
- 52X24X52 CD-RW Drive (BLACK)
- (BLACK) ViewSonic® E90FB 19-inch 231H mm SVGA Monitor
- 3D Wave On-Board 5.1 Sound Card

Price: \$1085.00

1. Select and Customize each component from CPU, Motherboard, down to accessories such as neon light and case fans. The picture of your Dream PC will be updated in Real-Time with the final price
2. System Summary-Along the side of your browser will display the detail of the configured items, final price, and compatibility of your Dream PC.
3. Seat back & enjoy, we will custom build your Dream PC, with our 200 Point testing and 72 hours burn in. your Dream PC will be arrived at your house in about a week.

# CYBERPOWERING.COM



**\$ 915**

- ESSENTIAL WORKSTATION 8000**
- Intel® I865PE Chipset 800MHz FSB 8x AGP DDR400 MB
  - 512MB PC3200 DDR400 Memory
  - 80GB 7200RPM ATA100 Hard Drive
  - ATI® RADEON™ 9200 128MB DDR Video Card w/ TV Out
  - Viewsonic® 19" E90 .23MM SVGA Monitor
  - Combo Drive (16X DVD-ROM & 52X32X52 CD-RW)
  - 3D 5.1 Surround Onboard Sound
  - 600Watt Subwoofer System
  - 1.44MB Floppy Drive
  - Keyboard & Mouse
  - Plastic GAZelle Mid-Tower Case w/ 400Watt Power [As Shown]**
  - Microsoft® Windows® XP Home Edition
  - Microsoft® Work 7.0
  - Free First Year On Site Service plus 24/7 Tech Support

- Intel® Pentium® 4 Processor with HT Technology 3.4Ghz 800MHz FSB \$ 1179 CP801
- Intel® Pentium® 4 Processor with HT Technology 3.2Ghz 800MHz FSB \$ 1025 CP802
- Intel® Pentium® 4 Processor with HT Technology 3.0Ghz 800MHz FSB \$ 959 CP803
- Intel® Pentium® 4 Processor with HT Technology 2.8Ghz 800MHz FSB \$ 915 CP804



**\$ 1029**

- ESSENTIAL WORKSTATION 8000**
- Intel® I865PE Chipset 800MHz FSB 8x AGP DDR400 MB
  - 512MB PC3200 DDR400 Dual Channel Memory
  - 160GB 7200RPM 8MB Cache Serial ATA150 Hard Drive
  - ATI® RADEON™ 9600 256MB DDR Video Card w/ TV Out & DVI
  - Viewsonic® 19" E90 .23MM SVGA Monitor
  - Combo Drive (16X DVD-ROM & 52X32X52 CD-RW)
  - 3D 5.1 Surround Onboard Sound
  - 600Watt Subwoofer System
  - Build-in 10/100 Network Card
  - 1.44MB Floppy Drive
  - Keyboard & Mouse
  - AluminumTitanium Workstation Case w/ 420Watt Power [As Shown]**
  - Microsoft® Windows® XP Home Edition
  - Microsoft® Work 7.0
  - Free First Year On Site Service plus 24/7 Tech Support

- Intel® Pentium® 4 Processor with HT Technology 3.4Ghz 800MHz FSB \$ 1289 CTA801
- Intel® Pentium® 4 Processor with HT Technology 3.2Ghz 800MHz FSB \$ 1139 CTA802
- Intel® Pentium® 4 Processor with HT Technology 3.0Ghz 800MHz FSB \$ 1075 CTA803
- Intel® Pentium® 4 Processor with HT Technology 2.8Ghz 800MHz FSB \$ 1029 CTA804



**\$ 1325**

- CYBERPOWER MEDIA CENTER PC**
- Intel® I865PE Chipset 800MHz FSB 8X AGP MB
  - 1024MB PC3200 DDR400 Dual Channel Memory
  - 160GB 7200RPM ATA100 8MB Cache Hard Drive
  - NVIDIA® GeForce™ FX 5700 256MB 8X AGP Video Build In TV-Tuner w/ FM Radio
  - NEC 8x DVD +-RW DVD Drive 2500A; 16X DVD-ROM
  - 3D 5.1 Wave Surround Sound System
  - Logitech Z640 5.1 Surround Sound Speaker System
  - Creative Lab V.92 Fax Modem w/ Voice & 1.44MB Floppy Drive
  - Wireless Microsoft Internet Keyboard and Mouse
  - Phillip Remote Control
  - Aluminum Silverstone Stereo Component Case w/ 420Watt Super Quiet Power Supply**
  - 6 Cool Custom Colors to Choose From
  - Microsoft® Windows® XP Media Center 2004 Edition
  - Microsoft® Work 7.0
  - Free First Year On Site Service plus 24/7 Tech Support

- Intel® Pentium® 4 Processor with HT Technology 3.4Ghz 800MHz FSB \$ 1585 CMC801
- Intel® Pentium® 4 Processor with HT Technology 3.2Ghz 800MHz FSB \$ 1435 CMC802
- Intel® Pentium® 4 Processor with HT Technology 3.0Ghz 800MHz FSB \$ 1369 CMC803
- Intel® Pentium® 4 Processor with HT Technology 2.8Ghz 800MHz FSB \$ 1325 CMC804

Intel®, Intel® logo, Intel Inside®, Intel Inside® logo, Intel® Centrino™, Intel® Centrino™ logo, Celeron®, Intel® Xeon™, Intel® SpeedStep®, Itanium®, Pentium®, and Pentium® III Xeon™ are trademarks or registered trademarks of Intel® Corporation or its subsidiaries in the United States and other countries.

# Network Pr

By M. David Stone

Illustrations by Daniel Baxter

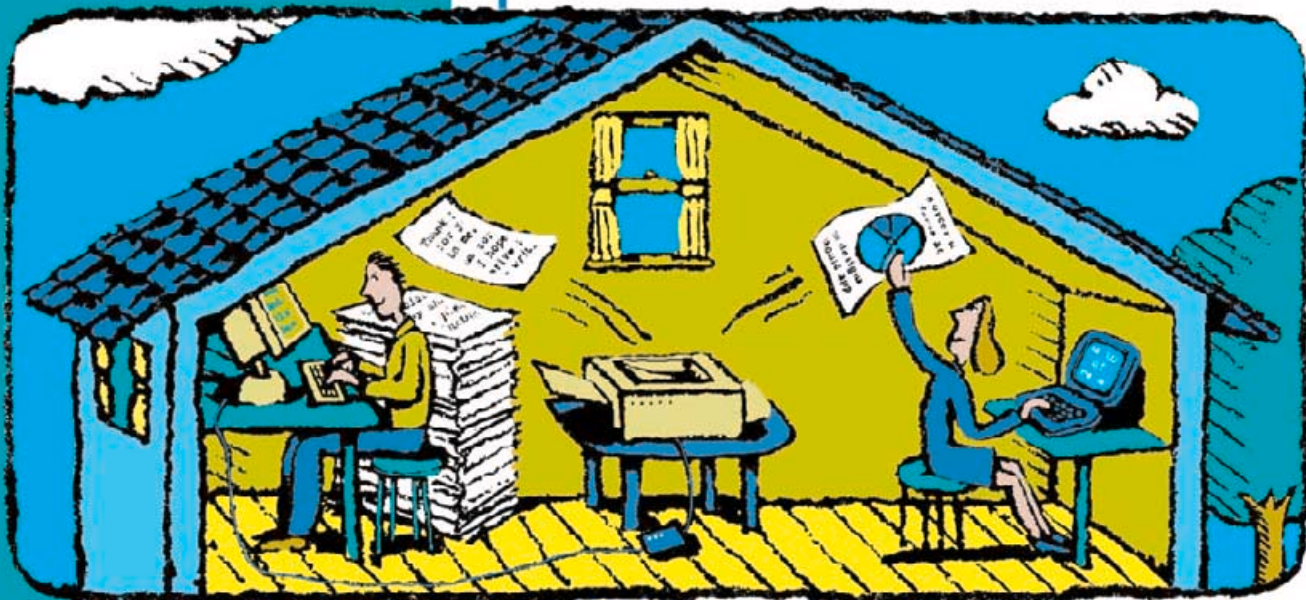
## READ ON TO LEARN:

- Which network solution is best for home offices, small businesses, and medium-size businesses
- The benefits of various features and technologies available in network printers
- The difference between using a wireless network printer and a wired printer on a wireless network

**A**n anyone with more than one computer has good reason to consider sharing a printer over a network. No matter what kind of environment you work in—even if you don't already have a network set up—you can save both space and money when you share over a network. And you can use that extra cash to buy a printer that better suits your needs.

In a small office, for instance, instead of spending \$300 on separate \$100 printers for each of three computers, you can buy a single \$100 printer or spend the \$300 on a faster, more capable printer. Or you can spend \$225, get a somewhat better printer, and still save some money. And any way you go, getting a single printer will save you space.

Small or home offices, small businesses, and medium-size businesses are each different contexts for setting up and running network printers. Once you decide that you want to share a printer on a network, you also have to decide what network features, if any, to look for. You can share any printer on a network by connecting it to a *print server*—a device that connects a printer to the network—or by connecting the printer to a computer and telling Windows to share the printer. Either of these approaches may serve your purposes, as we'll discuss in the section on small and home offices.



Too many printers and not enough money or space? Save both with a shared or network printer. Find out which one is right for your business.

# Printers

But neither one turns the printer into a *network printer*, meaning a printer that's designed for efficient use on a network.

All network printers today offer their own built-in network interface, called a *network interface card* (NIC), even if the network connector isn't actually on a separate card. The NIC usually supplies an Ethernet connection. You also need to make sure the printer works with your operating system. (If you're an Apple user and prefer using AppleTalk for printing, you'll need to make sure the printer supports AppleTalk, although both OS 9 and OS X also support the TCP/IP protocol that's standard for Windows. You'll need an Apple driver too.)

With rare exceptions, today's network printers have built-in Web pages to let you check the status and change settings via a Web browser. This is a benefit for the support staff in large companies, where the help desk may be on a different floor than the printer. But even if the printer is located next to you, working with a Web browser is a lot easier than slogging through menus on a front-panel LCD.

Network printers work with network-management software to provide more sophisticated remote management than what you can do with a Web page. If you have a dozen or more printers, you might want to create groups, so you can look at a list of, say, just color printers. We'll discuss remote-management software in the section on medium-size businesses.

One trap to watch out for is thinking of printers as being designed to work with a given number of computers. It's common to speak of "small workgroup printers," "large workgroup printers," or "department printers." In truth, however, the number of computers per printer matters less than the number of pages that go through the printer every day and the proximity of your employees to the printer or printers they need.

Despite the many options to consider and the new terminology, buying a network printer doesn't have to be complicated. We'll walk you through the technology and help you figure out which solution fits your business best.

## Small and Home Office

If you work in a small or home office, you understand what it

means to work in a tight space. So it makes sense to pare down the number of printers to make room for more important things—like you. Here's where the network-printer option comes in.

If you already have a network and at least one printer connected to a computer, the simplest approach is to share the printer rather than connect it directly to the network. Print jobs from other systems will print by going through the computer the printer is attached to. To set this up, just go into the properties for the printer, choose the Sharing tab, and tell Windows to

1. Make sure you really need a network printer. For a small network in a home-office environment, using Windows to share a printer may be enough.
2. Make sure the printer you choose has the right interface for your network. This usually means an Ethernet connection, but other choices exist too. Also make sure the printer works with your operating system.
3. Unless you're thoroughly familiar with network printer setup, insist on a fully automated network setup routine. Setting up a network printer manually requires knowing how to assign an IP address, create a new port, and more.
4. Insist on built-in Web pages that let you check the status and change settings from your

browser. This will let you check any printer from your desk. It's also easier than using LCD menus, even if the printer is right next to you.

5. If anyone in your office has to print documents that others shouldn't read, get a private-printing feature. This lets you send a print job that won't print until you walk to the printer and enter a PIN code.

6. Don't depend on manual duplexing—printing a job on one side of the paper, reinserting the pages so they'll print

on the opposite side, going back to your desk, hitting Print, and finally schlepping back to the printer for your documents. If you need to duplex, get a duplexer.

7. Make sure your network printer offers input trays that hold a lot of paper—at least 1,000 sheets for a small business. Even if you don't think you need that much capacity now, you may want to add it later.

8. Get an output tray that's big enough for several typical print jobs. People sometimes leave output sitting in trays for hours or even days.

9. If you have enough printers to use remote-management software, consider which programs they work with. A capable program can save a lot of time and effort, letting you upgrade firmware and drivers without having to visit each printer.

10. Even if you don't need advanced paper handling now, consider printers with stacker or sorter options, so you can add them later if you need to.

—M. David Stone

Top  
10  
Tips for  
Buying  
a Network  
Printer >>

## Know Your Printer Inside & Out

- **RAM.** Some printers need more than their minimum RAM to print a full page at top resolution. Others use extra RAM for techniques that can speed up printing. If a printer's standard or minimum RAM is different from its maximum RAM, find out what it uses the extra memory for.
- **Hard drive.** Some printers use hard drives to store fonts. Others use them to hold print jobs in a queue or to store print jobs for features like private printing, which requires you to enter a PIN on the front panel.
- **Processor.** The faster a printer's processor, the faster it can prepare complex images for printing. A printer with a fast engine and a slow processor will print text quickly but be slow with photos and graphics. Some printers don't have processors; they use your computer's processor instead. These printers' performance will vary depending on the computer they're printing from.
- **Network port.** The only network port you need is the one that works with your network, but make sure the printer has the right one. This almost always means an Ethernet port, sometimes with AppleTalk support, depending on your network.
- **Printer language.** A printer language is a collection of commands for controlling a printer. The two most common languages for network printers are PCL and PostScript. PCL was developed by HP and is generally faster. PostScript was developed by Adobe and generally prints better photos and graphics. Many network printers offer both languages. If a printer doesn't come with a driver for your operating system, you may still be able to print with it if you have a generic driver for the printer's language.
- **PostScript source.** Because Adobe created PostScript, its version is the standard. PostScript from other sources is usually reliable, but if you have any doubts, check out online discussions for any problems or complaints involving PostScript from the source you have in mind.—MDS



share the printer. Then install the printer driver on the other systems. (For more details on this, see “Four Easy Ways to Network a Printer,” at [www.pcmag.com/networkingprinters](http://www.pcmag.com/networkingprinters).)

The ability to share printers and print from any computer on the network can pay dividends if you have more than one type of printer—for example, if you have a monochrome laser printer on one system for printing text and an ink jet on another for printing color graphics.

The key advantage to this approach is that you don't need to buy a print server or a new printer. The disadvantage is that you can't use a printer unless the computer it's attached to is on. Whether that will be a problem depends on how many people are in your office and whether you normally have all the computers on at the same time.

Other issues include the possibility that someone may reboot the system the printer is attached to while you're in the middle of printing, or that the system will slow down noticeably when you print from a different computer. This usually isn't a problem in a home or small office, because all the computers are typically in the same room and you either work alone or with one or two colleagues, so everyone is generally aware of what everyone else is doing. But it's something to consider if you and your employees work farther apart and are not always aware of the others' activities.

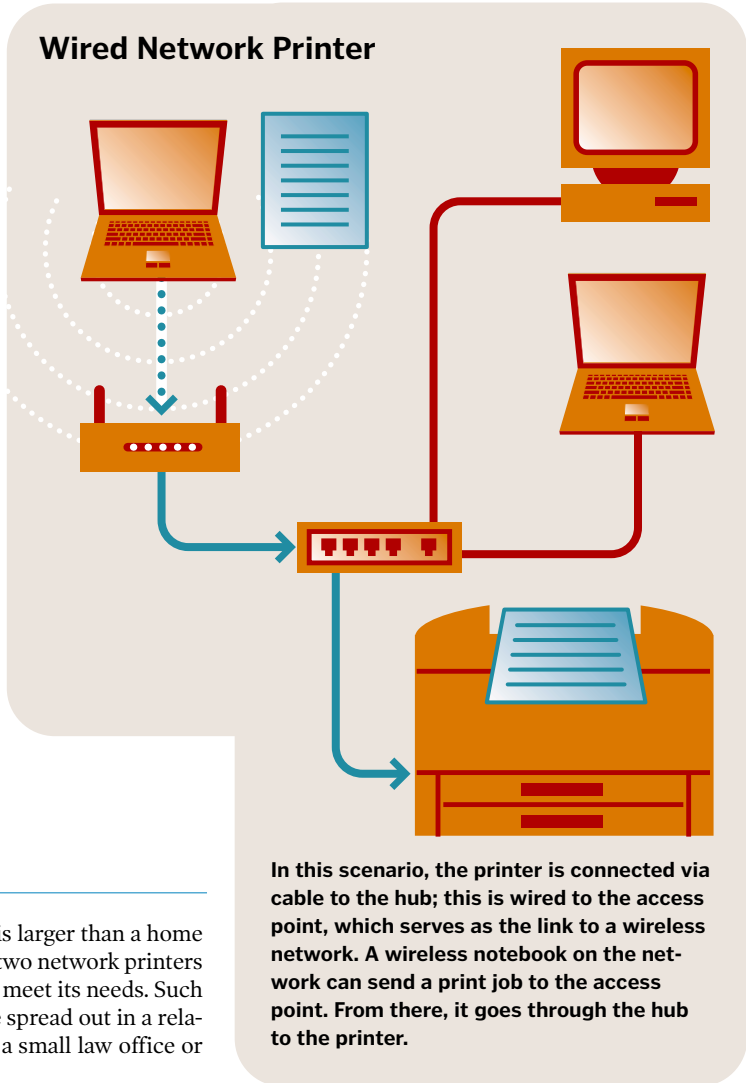
A simple alternative is to use a print server to connect the printer to the network. These come in all sorts of variations, starting at about \$50. You can find versions that plug into a single printer's parallel or USB port to provide an Ethernet connection; versions with connectors for two or more USB or parallel-port printers to provide an Ethernet connection for each; and versions that plug into a USB or parallel port to provide a wireless connection to a network.

Unfortunately, most print servers are hard to install. Almost all network printers today—most of which are installed by knowledgeable IT professionals—come with network setup routines that require little to no knowledge of networks. But almost all print servers, which are generally installed by people who aren't IT professionals, require more difficult, manual setup routines.

For this reason, you should consider a low-end network printer from a company that also makes high-end network printers, such as Hewlett-Packard or Konica Minolta, because they come with the same automated setup routines designed for the high-end printers. Check reviews and check the installation manuals available on the company Web sites to see how easy a given network setup routine is. If you're planning to spend \$300 to \$500 on a printer and print server suitable for a small office, you can find low-end network printers for about the same amount of money.

Our contributors: Associate editor **Sarah E. Anderson** and PC Magazine Labs lead analyst **M. David Stone** were in charge of this story.





## Small Business

A small business is larger than a home office, but one or two network printers can still suffice to meet its needs. Such

businesses typically have four to ten computers and are spread out in a relatively large space, like a storefront real-estate office or a small law office or accounting firm.

If your business falls into this category, you probably don't have anyone on hand with expertise in either networks or printers. That means you should not consider anything less than a true network printer with a fully automated network setup routine and a built-in Web page.

State-of-the-art installation routines will find the printer on the network, ask you to confirm that it's the right printer, ask whether you want to share it, and then handle everything else automatically. But not all setup routines are so sophisticated. Some will ask you for an IP address or leave it to you to create a new port in Windows or set up sharing for the printer. If none of this sounds familiar and you don't want to learn about it by way of a technical-support call, make sure you get a printer with fully automated network setup. You should be able to find out about the setup routine through the reviews and manuals on the manufacturers' Web sites.

Small businesses can benefit more than home offices from built-in Web pages, which let you check printer status from any computer to find out such things as whether the paper or toner is running low. That can be a welcome convenience if the alternative is having to walk into another room to check. Most built-in Web pages keep track of other information too, such as the number of color, black-and-white, single-sided, and double-sided pages printed. Information like this can help you make

### Did You Know?

- Approximately 80% of monochrome laser printers are networked today, compared with only 10% ten years ago.

SOURCE: GARTNER, 2003

decisions about the features you will need in your *next* printer.

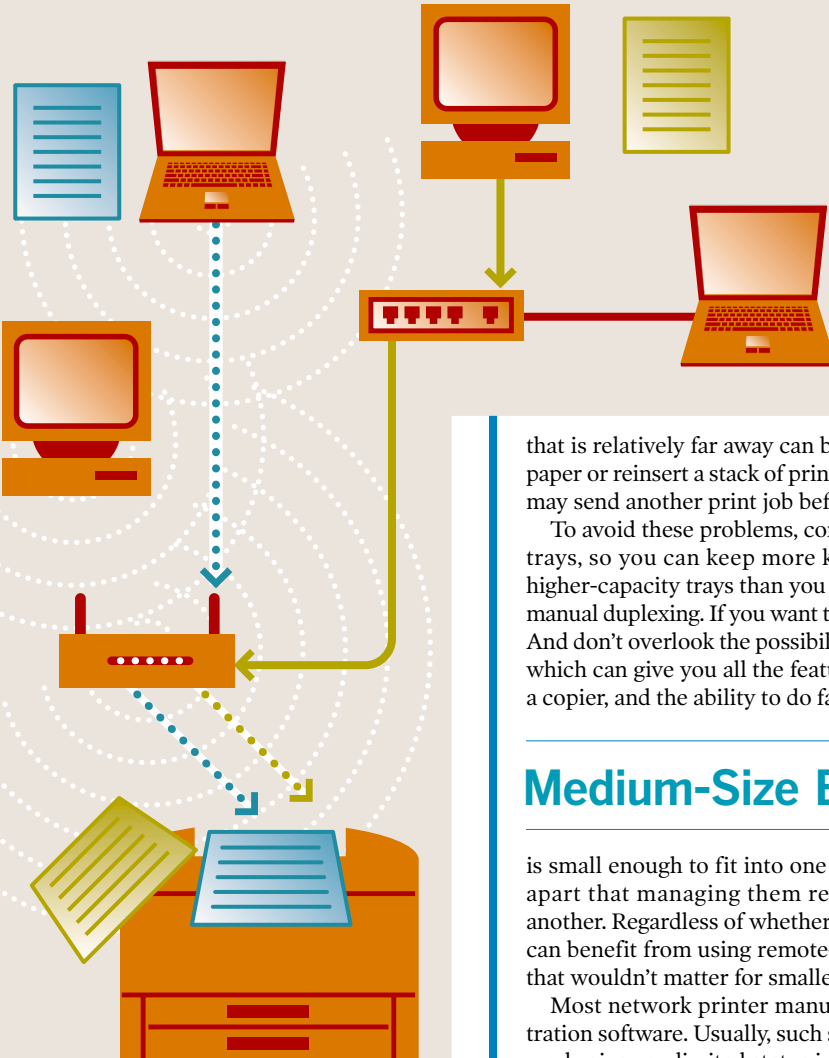
Some network printers offer features you won't find on non-network printers. With *private printing*, for example, a printer holds the print job until you walk to the printer and enter a PIN code. This is especially useful when you're printing sensitive information, such as an employee's annual review. Private printing usually requires a hard drive in the printer to store the print job. It often goes hand in hand with other features that need a hard drive, such as reprint or proof-and-print. Proof-and-print does the first copy of a multiple-copy print job, then stops to give you a chance to proofread that copy before you give the command to print the rest of the job.

When you're shopping for a network printer, remember that you'll likely want more sophisticated paper-handling options than you would need in a desktop printer. Adding or changing paper in a printer

that is relatively far away can be a major annoyance. And if you load special paper or reinsert a stack of printed paper for manual duplexing, someone else may send another print job before you have a chance to send yours.

To avoid these problems, consider getting a printer with additional paper trays, so you can keep more kinds of paper loaded. You might also want higher-capacity trays than you would get on a desktop printer. Don't rely on manual duplexing. If you want to duplex, get a printer with a built-in duplexer. And don't overlook the possibility of getting a network multifunction printer, which can give you all the features of a network printer, plus a fax machine, a copier, and the ability to do faxes and scans from over the network.

### Wireless Network Printer



Here the printer is wireless. Print jobs go from the notebook to the access point and then to the printer, all wirelessly. Print jobs from wired computers go through the hub to the access point by cable before proceeding wirelessly to the printer.

## Medium-Size Business

We define a medium-size business as any business or office that

is small enough to fit into one building but has printers located far enough apart that managing them remotely is easier than walking from one to another. Regardless of whether such businesses have their own IT staff, they can benefit from using remote-administration software for printers in ways that wouldn't matter for smaller businesses.

Most network printer manufacturers supply their own remote-administration software. Usually, such software can at least find a printer on the network, give you limited status information, and let you change some settings. It's important for one manufacturer's printers to work with someone else's management software, because that lets you buy printers from different companies and not have to learn a new management program for each machine.

Some manufacturers don't supply any programs. Instead, one of their selling points is that their printers work with one or more of the three dominant programs in the field: Xerox's CentreWare Web, Lexmark's MarkVision, or Hewlett-Packard's Web Jetadmin, all of which are available for free online.

Before you choose your next network printer, you may want to download one or all of these programs. Explore the options, so you can get a feel for which remote-management features you'd like to have. Then check those features against the software that comes with the printer you're considering, or make sure the printer works with the management program you like.

With printers and software designed to work together, you can typically use remote-administration software to update printer firmware or change the

# CDW



## Color printing is finally affordable. Ladies and gentlemen, start your documents.

There's never been a better time to buy a color printer. The average cost has dropped 40% in the last several years while print speeds have increased 200%. And, as more and more companies choose color as a way to make documents stand out and make an impact, the ability to print in house saves money as well. CDW has more of the top brand color printers in stock. And, we have people dedicated to making sure you get the one that fits your needs.

So if you want the right printer at the right price, now's the right time.

THE RIGHT TECHNOLOGY. RIGHT AWAY.™ ► [CDW.com/PRINTEREVENT](http://CDW.com/PRINTEREVENT) • 800.399.4CDW

In Canada, call 800.387.2173 • [CDW.ca](http://CDW.ca)



To everyone who's been waiting for the right time to buy a color printer: Start shopping.



\*After 4-bate, call your account manager for details. †Based on trading in a HP LaserJet 4500 printer in "good" condition; actual trade-in price may vary. Please visit [CDW.com/hptradein](http://CDW.com/hptradein) for a trade-in quote. ‡Bundle offer expires 10/03/04. Customer understands that CDW is not the manufacturer of the products purchased by customer hereunder and the only warranties offered are those of the manufacturer, not CDW. All pricing is subject to change. CDW reserves the right to make adjustments to pricing, products and service offerings for reasons including, but not limited to, changing market conditions, product discontinuation, product unavailability, manufacturer price changes and errors in advertisements. All orders are subject to product availability.



### hp Color LaserJet 3500N

- Up to 12ppm color/black and white
- 600dpi
- RAM: 64MB
- 45,000 page monthly duty cycle
- 1 year onsite standard warranty
- Network Ready



**\$999** CDW 574756  
**-233** ESTIMATED TRADE-IN<sup>1</sup>  
**\$766** YOUR PRICE

Recommended supplies and accessories:  
 HP Print Cartridge Black \$132.99 (CDW 578556)  
 HP Print Cartridge Color \$129.99 (CDW 578560, 578561, 578562)  
 Network Cable \$7.00  
 HP Next Day Onsite 3 Year Warranty \$559.99 (CDW 579343)

### XEROX Phaser 8400B Color Printer

- 24ppm color/24ppm black and white
- Up to 600x600dpi (2400 Fine Point)
- RAM: 124MB standard
- 85,000 page per month duty cycle
- Network Optional
- 1 year depot warranty standard

**XEROX**

**\$999**  
 CDW 563463



Xerox Genuine Solid Inks Black \$64.99 (CDW 570058)  
 Xerox Genuine Solid Inks Color \$99.99 (CDW 570107, 570108, 570109)  
 10/100 Base-TX Ethernet Interface \$399.99 (CDW 586141)  
 Xerox 1 Year Onsite Warranty Upgrade \$99.99 (CDW 570121)

**Free ink! \$115 value until 09/30/04\***



### Lexmark C510 Network Bundle

- 8ppm color/30ppm black and white
- RAM: 64MB
- 2400 image quality
- Network optional
- 1 year onsite warranty standard

**LEXMARK**

**\$749<sup>2</sup>**  
 CDW 587373

**Save \$79 with bundle purchase**

Bundle includes:  
 Lexmark C510 printer (CDW 585935) and  
 Lexmark NC4000E External Print Server (CDW 522898)

Recommended supplies and accessories:  
 High Yield Toner Cartridge Black \$119.99 (CDW 585945)  
 High Yield Toner Cartridge Color \$169.99 (CDW 585936, 585938, 585941)  
 Lexmark Additional 1 Year Extended Onsite Warranty \$369.99 (CDW 205959)

**THE RIGHT TECHNOLOGY. RIGHT AWAY.™**  **CDW.com/PRINTEREVENT • 800.399.4CDW**

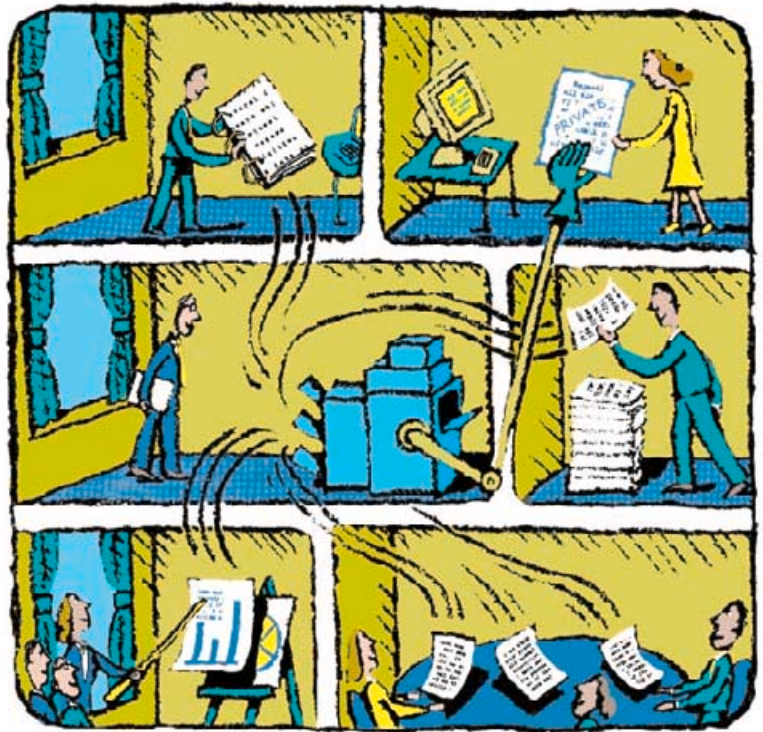
In Canada, call 800.387.2173 • CDW.ca

## Cut the Cord for a Wireless Network

With wireless networks and access points springing up like mushrooms, wireless network printing is becoming an increasingly viable option. For those who already have wired networks, wireless printing makes sense—especially if they also have at least one notebook with a wireless connection. It also makes sense for those who don't have a wired network and don't want to spend time or money fishing cables through walls.

If you have only a wired network, you'll need to add an access point. Once your notebook has wireless access to the network, you can print to any printer on the network just as if you were connected by cable. Creating a wireless network from scratch requires getting an access point, adding wireless cards to those computers that don't already have them, and setting up the wireless connections. You then have several choices for connecting the printer.

For starters, you can connect a network printer to a hub or switch that's connected to or part of the access point, or connect a non-network printer to the hub or switch using a print server. You can also use Windows to share a printer that's connected to one of the computers, get a printer with built-in wireless support, or plug any printer into a wireless print server to communicate with the access point wirelessly. Whichever route you choose, the printer will work just as it would on a wired network.—MDS



configuration—either for one printer at a time or for several at once.

You'll also usually find some way to send alerts, often by e-mail. The specifics vary, but typical options let you notify specified people of everything from a paper jam to toner running low. Another common feature is the ability to create and label groups of printers, such as color printers or tabloid-size printers. This cuts long lists of printers down to a manageable size.

Print speed and sophisticated paper handling are usually bigger issues for medium-size businesses than for smaller ones. Be sure to pick printers that are fast enough to handle the print volume you need, so workers don't have to wait around for other people's print jobs to finish. Make sure each printer you get has enough paper drawers to hold all the different kind of papers you regularly print on—and can hold enough paper that you don't have to be constantly reloading the drawers.

Depending on how many people are using each printer and how many total pages and separate jobs each user prints every day, you might want output options like a stacker or sorter to separate print jobs. Another option is a finisher, which can sort, staple, and punch holes in documents.

You won't necessarily need every feature on every printer you get. You can usually save money by spending some time planning the mix of printers and their locations. The trick is to make sure that the features any given person needs are available in at least one conveniently located printer on the network. ☰

### Did You Know?

- Networked monochrome laser printer sales in the United States grew from 285,000 in 1993 to 2,433,000 in 2003.
- 5.8% of U.S. households have a home network.

SOURCE: GARTNER, 2003

### MORE ON THE WEB

If you found this Buying Guide helpful, be sure to visit [www.pcmag.com/buyingguides](http://www.pcmag.com/buyingguides) to explore PC Magazine's Buying Guides for all kinds of products: desktop PCs, servers, digital cameras, PDAs, networking equipment, and more. And visit [www.pcmag.com/printers](http://www.pcmag.com/printers) to read our numerous in-depth printer reviews and Editors' Choice analyses. Here you can apply what you've just learned and find the network printer that's right for you.



# CDW®



## Great color printers, low prices and fast shipping? Let the printing begin.

### New! OKI C5200n Digital Color/Mono Printer

- Up to 16 ppm color, 24 ppm mono
- Up to 1200x600 dpi
- RAM: 32MB/288MB
- Network ready
- 1 year limited overnight exchange warranty

**OKI**

Recommended supplies and accessories:

- Oki Type C6 Toner Cartridge Black **\$44.99** (CDW 467599)
- Oki Type C6 Toner Cartridge Color **\$109.99** (CDW 467596, 467597, 467598)
- Oki Duplexer **\$330.00** (CDW 465295)
- Oki Additional 1 Year Overnight Extended Warranty **\$199.99** (CDW 491964)



**\$999**  
CDW 645541



**\$699** CDW 570441  
**-50** MAIL-IN REBATE\*  
**\$649** YOUR PRICE

### Brother HL-2700CN

- 8ppm color/31ppm black and white
- Up to 2400x600 dpi
- RAM: 64MB
- Network ready
- 1 year onsite warranty standard

**brother** 

Recommended supplies and accessories:

- Brother Toner Cartridge Black **\$169.99** (CDW 573269)
- Brother Toner Cartridge Color **\$164.99** (CDW 573271, 573272, 573273)
- Duplex Unit For HL-2700CN **\$799.99** (CDW 586077)
- Brother HL-2700CN Additional 1 Year Onsite Warranty **\$609.99** (CDW 585461)

THE RIGHT TECHNOLOGY. RIGHT AWAY.™  [CDW.com/PRINTEREVENT](http://CDW.com/PRINTEREVENT) • 800.399.4CDW

In Canada, call 800.387.2173 • CDW.ca

\*Receive \$50 Brother mail-in rebate with the purchase of the HL2700CN; offer ends 10/02/04. Customer understands that CDW is not the manufacturer of the products purchased by customer hereunder; and the only warranties offered are those of the manufacturer; not CDW. All pricing is subject to change. CDW reserves the right to make adjustments to pricing, products and service offerings for reasons including, but not limited to, changing market conditions, product discontinuation, product unavailability, manufacturer price changes and errors in advertisements. All orders are subject to product availability. Therefore, CDW cannot guarantee that it will be able to fulfill customer's orders. The terms and conditions of sale are limited to those contained herein and on CDW's Web Site at CDW.com. Notice of objection to and rejection of any additional or different terms in any form delivered by customer is hereby given. © 2004 CDW Corporation PCMA PG 8/04

**Brooke Alovis**  
212-503-3284

**Stacey Harnick**  
212-503-5106

**Kathy Rosa**  
212-503-4847

**Christopher Thornton**  
212-503- 5067

## MarketLink Sales 1-877-267-2315

|                                |                             |     |
|--------------------------------|-----------------------------|-----|
| Aberdeen Inc.                  | www.aberdeeninc.com/mag     | 127 |
| Academic Superstore            | www.academicssuperstore.com | 129 |
| Advanced Internet Technologies | www.aitcom.com              | 130 |
| American Microsystems          | www.barcodepower.com        | 122 |
| BenQ                           | www.tigerdirect.com         | 124 |
| Blue Genesis                   | www.bluegenesis.com         | 131 |
| Broadway Photo                 | www.bwayphoto.us            | 126 |
| Capitol College                | www.capitol-college.edu     | 129 |
| Coast to Coast                 | www.18004memory.com         | 124 |
| dot Canada                     | www.dotcanada.com/pc        | 130 |
| Expectec Technology Services   | www.expectec.com            | 129 |
| Fat Cow Web Hosting            | www.fatcow.com/now          | 131 |
| General CADD                   | www.generalcadd.com         | 124 |
| Inkfarm                        | www.inkfarm.com             | 129 |

|                                  |                           |     |
|----------------------------------|---------------------------|-----|
| Jotto Desk                       | www.jottodesk.com         | 122 |
| Lazarus Data Recovery            | www.lazarus.com           | 129 |
| Logicube                         | www.logicube.com          | 125 |
| One Web Hosting                  | www.onewebhosting.com     | 131 |
| PC America                       | www.pcamerica.com         | 123 |
| PC Sound                         | www.pcsound.com           | 130 |
| Pest Patrol                      | www.pestpatrol.com/pc     | 126 |
| Princeton Disc                   | www.princetondisc.com     | 122 |
| Projector People                 | www.projectorpeople.com   | 124 |
| Sinclair Intimacy Institute      | www.bettersex.com         | 132 |
| Spectrum Software                | www.donglefree.com        | 124 |
| Susteen                          | www.datapilot.com         | 128 |
| Talking Technology International | www.tti.net               | 129 |
| Trilogy                          | www.partslistsoftware.com | 130 |

**The best value for virtually any Portable Data Collection Application**

DEALER INQUIRIES WELCOME

**\$795**

**M5510**  
Portable Data Terminal  
with Integrated CCD Scanner

Also available with these options  
M5500 Laser Scanner - \$895  
M5520 Long Range Laser Scanner - \$945

MADE IN THE U.S.A. © 2003 American Microsystems, Ltd.

**Reliable Easy-to-Use Affordable**  
Bar Code & Data Collection Solutions

|                           |                                |
|---------------------------|--------------------------------|
| Bar Code Decoders         | Magnetic Stripe & Slot Readers |
| Bar Code Software         | Linear Imagers                 |
| Asset Tracking Software   | Laser, CCD, & Wand Scanners    |
| Cordless Scanning Systems | Bar Code Label Printers        |

**BarcodePower 800-648-4452**  
[www.barcodepower.com](http://www.barcodepower.com)

Lifetime toll-free Technical Support    Quantity Discounts Available  
Secure on-line ordering    Same day shipping on in-stock items

**CD & DVD Replication**  
From creating a dynamic multimedia presentation on CD, DVD or web, to custom printing and packaging, we are your total solutions provider!

- Mastering & Custom Presentations
- CD/DVD Duplication/Replication
- Printing & Packaging
- CD/DVD Copiers/Printers

**Princeton Disc**    **Call today!**  
Since 1986    800.426.0247  
[www.princetondisc.com](http://www.princetondisc.com)

**JOTTO DESK**  
Vehicle Mounting Solutions

Do-It-Yourself Installation  
Turns your vehicle into a mobile office  
Truly universal to all computers & vehicles  
Secures your laptop at your fingertips

[jottodesk.com/pcmag](http://jottodesk.com/pcmag)  
For more information call:  
1.877.455.6886

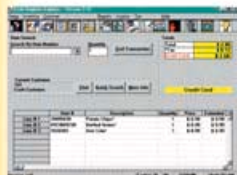
Mention this Ad and receive **5% OFF**

Jotto Desk® is a patented product and registered trademark of Associates Unlimited Corporation



## Cash Register Express Software for Windows...\$495

Computerize any type of retail store using Cash Register Express for Windows. Computerization pays for itself, saving you thousands of dollars, giving you peace of mind, and making the best use of your time. Cash Register Express



has more than 250 of the most desired point of sale features to help you leapfrog past your competition by controlling costs, reducing errors and increasing efficiency.

## More Software for Your Retail Store

- ◆ Video Express
- ◆ Salon Express
- ◆ Auto Express
- ◆ RestaurantPro Express
- ◆ Barcode Express
- ◆ Label Works
- ◆ Inventory Track Express
- ◆ Credit Card Software
- ◆ All Single or Multiuser

All PC America Software requires Microsoft Windows. The software was written in Visual Basic using Microsoft Access Files. The source code is available.

# CASH REGISTER EXPRESS™

**More Profit!**

**More Sales!**

**More Customers!**

*Save Time, Reduce Theft, Speed Checkout, Increase Accuracy, Reduce Costs, Make Better Business Decisions by computerizing your Retail Store.*



## Dealers Wanted!

Join our dealer program. It's **FREE**. It's the fastest way to make money...AND we make it **EASY**.

### MORE INFO?

- ◆ Call Toll Free 1-800-722-6374
- ◆ www.pcamerica.com
- ◆ Fax on Demand 1-914-267-3551



**SYSTEMS START AT \$495.**



**Barcode Scanners \$495\***  
Metrologic, Symbol, NJCR, Percon, PSC



**Receipt Printers \$299\***  
Star, Ihaca, Citizen, Epson



**Barcode Printers \$799\***  
Cognitive Solutions Barcode Blaster



**Pole Displays \$289\***  
Logic Controls



**Programmable Keypads \$495\***  
Logic Controls, Cherry, Genovation

**Credit Card Readers \$189\***  
Unitech, Mag-Tek

\*All prices depend on make and model.

**Cash Drawers \$189\***  
MMF, Logic Controls, Indiana, APG

# 1-800-PC-AMERICA

Call Toll Free 1-800-722-6374  
PH: 845-267-3500  
FX: 845-267-3550

PC America  
60 N. Harrison Ave.  
Congers, NY 10920



Circle 195 on reader service card



**Portable Data Collectors \$695\***  
American Microsystems AMS3000

**SHARP**  
**XR-1S**

**Super-Compact.  
A Super Impression.**

SVGA (800 x 600), 1100 lumens,  
sleek design, 3.3 lbs!

**Everyday  
Low Price** .....

**\$1449<sup>00</sup>**



**XD50U Mini-Mits**

**Uncompromising Mobility.**

XGA (1024 x 768), 1500 lumens,  
a tiny 3.4 lbs., 3-year warranty!

**Everyday  
Low Price** .....

**\$2199<sup>00</sup>**

**EPSON**

**PowerLite 7800p**  
**Let There Be Bright.**

XGA (1024 x 768), 3500 lumens bright, 12.1 lbs.

**Call for Today's  
Low Price** .....

**\$4699<sup>00</sup>**

**InFocus**

**LP120  
Coach Edition**

**Light as a Feather.**

XGA (1024 x 768), 1100 lumens,  
2000:1 contrast, 1.98 lbs.

**Everyday  
Low Price** .....

**\$2099<sup>00</sup>**

With Coach® leather briefcase (\$600 value).

\*Prices at time of printing - call for latest deals and discounts!

**"The projectors, the prices,  
the peace of mind."**

**\* HERE'S A TIP**  
"For increased portability, consider  
the projector footprint as well as its  
weight. Some are so small they fit  
in the palm of your hand."

**ProjectorPeople.com**  
**Call 877-845-0037**  
M-F 8-8 EST. or order online at  
[www.projectorpeople.com](http://www.projectorpeople.com)

**BENQ HITACHI NEC proxima**

**The DLP™ Collection, A Projector for Everyone.**

**benq**

**PB6100**

- Home Theater/Office
- 1500 Lumens for Bright and Crisp Pictures
- 2000:1 Ultra High Contrast Ratio
- Optical Zoom Lens, 10x Digital Zoom
- HDTV Compatible - 720p, 1080i, 480p
- PC/Mac/Video5-Video
- 4.316:1 Screen Ratio Selectable
- 40" to 240" Screen Size
- 3000 Hours Lamp Life™
- Whisper Quiet, Less Than 34 dB

**\$899\***

**benq**

**PB6200**

- Office/Home
- 1700 Lumens, Super Bright for All Applications
- 2000:1 Ultra High Contrast Ratio
- Native 1024x768, Support up to 1280x1024
- Optical Zoom Lens, 10x Digital Zoom
- HDTV Compatible - 720p, 1080i, 480p
- PC/Mac/Video5-Video
- 40" to 300" Screen Size
- 3000 Hours Lamp Life™
- Light Weight Only 5.5 lbs

**\$1,399\*\***

Every BenQ projector includes a DLP™ Chipset that ensures high-quality, digitally based images that won't fade or degrade over time. And with our 3-year warranty and 1st year QXchange policy, it's fast and easy to get a new projector should you need a replacement.



1-888-777-9200

[www.tigerdirect.com/BenQ](http://www.tigerdirect.com/BenQ)

**benq**

**PB7200**

- Conference Room/Home
- 2200 Lumens, 2000:1 Contrast Ratio
- Native 1024x768, Support up to 1280x1024
- Optical Zoom Lens, 10x Digital Zoom
- HDTV Compatible - 720p, 1080i, 480p
- 2 PC Inputs, PC/Mac/Video, PP
- Intelligent Remote Control
- 34 dB Whisper Quiet
- Throw Ratio: 60" @ 5.6'
- Dynamic Color Management System
- Compact and Light Weight, 5.8 lbs

**\$1,699\***



\*Price after \$100 mail-in rebate. Rebate valid from 8/1/04 - 8/31/04  
\*\*Price after \$200 mail-in rebate. Rebate valid from 8/1/04 - 8/31/04  
\*\*\*Economy Mode: 3000 hours; Standard: 2000 hours  
Under normal operating conditions the DLP™ imaging device lifetime exceeds 100,000 operating hours

**benq**

**MEMORY for PC and Apple, Laptops,  
Digital Cameras, MP3 Players and more ...**

**WE CAN BEAT  
Crucial, Kingston,  
Comp-USA, ANYONE!  
AND, WE GIVE YOU  
FREE SHIPPING!**

Since 1994 **18004MEMORY.com**

**1-800-4-MEMORY**  
1-800-463-6679  
<http://www.18004memory.com>

**HARDWARE  
LOCK  
REPLACEMENTS  
IMAGINE THAT!  
DONGLE EMULATORS  
HERE**

Spectrum Software, Inc  
St. Augustine, FL  
[www.donglefree.com](http://www.donglefree.com)  
904-797-6600/3246 fax

Looking For  
**Generic  
CADD**  
for  
**Windows  
??**  
- Available Now -  
[www.generalcadd.com](http://www.generalcadd.com)

# MD5 FORENSIC HARD DRIVE CAPTURING SYSTEM

The Perfect Racing Machine from Logicube



USB Write Protect for Fast and secure access to Suspect PC or Laptop.

**3GB/Min.**  
Acquisition  
& MD5  
Authentication  
(128 bit)

- Simultaneous hardware MD5 Capture at full speed (Up to 3GB a minute)
- Even more reliable than CRC32
- Many times faster than software-based systems
- Capable of capturing from a Suspect's SCSI/IDE Drive to the Evidence Drive with USB adapter



Keyword Search Search for 100's of words concurrently on a hard drive while capturing or later.



Fully Integrated QWERTY Keypad: For easy entry of file names, users credentials, key-words searches...

Removable Compact Flash: Stores keyword lists, software updates, debug traces...



(Inside is the Evidence Drive)

DD Image Capture Mode: Capture a Suspect's Hard Drive to multiple DD Image Files. Archive to CD-R's, Jaz & DVD-R's.

Ideal for Law Enforcement, FBI, CIA, IRS, INS, NSA, DEA, ATF, Military Intelligence, NATO, Sheriff, Police, Scotland Yard, MIS Forensics Depts., Security, Government & more...



**Logicube** MD5 COMPUTER DATA CAPTURING SYSTEM  
[www.logicube.com](http://www.logicube.com) [logicubeforensic.com](http://logicubeforensic.com) • toll-free (888) 233-0720

**GSA** Federal Supply Schedule Contract # GS-35F-0409L **MADE IN THE USA**

# Broadway Photo

**1-800-514-0163** 2922 Ave. L, Brooklyn, NY 11210

Hours: M-Th: 9am-10pm • F: 9am-4pm • Su: 10am-7pm • Sa: CLOSED

Visit our website at: [www.bwayphoto.US](http://www.bwayphoto.US)

We specialize in Overnight Delivery. Place Your Order by 7:00 PM EST and Receive Your Order by the Next Business Day! For an Additional \$29.95

Customer Service: 718-338-3028  
Local & International: 718-338-1800  
24 Hour Fax Hotline: 718-338-3029  
Email: [info@bwayphoto.com](mailto:info@bwayphoto.com)

- 21 Day Satisfaction
- Next Day Air Available
- Worldwide Shipping
- No Surcharge on Credit Cards
- Government & School PO's Accepted



## DIGITAL CAMERAS

**NIKON Coolpix 8700**  
• 4x Opt/4x Opt Zoom  
• 1.8" LCD  
**\$669<sup>99</sup>**

**NEW!** Coolpix 2200... \$109.99  
**NEW!** Coolpix 3200... \$189.99  
**NEW!** Coolpix 4200... \$289.99  
**NEW!** Coolpix 5200... \$359.99

**OLYMPUS C-8080**  
• 8.0 MegaPixels  
• 5x Optical Zoom  
**\$649<sup>99</sup>**

C-740... \$239.99 C-750... \$339.99  
C-765... \$329.99 C-770... \$394.99  
C-5000... \$234.99 C-5060... \$414.99

**SONY Mavica CD-500**  
• 5.0 MegaPixels  
• 2.5" LCD Screen  
**\$419<sup>99</sup>**

Mavica CD-350... \$399.99  
Mavica FD-200... \$254.99

**CANON Powershot PRO 1**  
• 8.0 MegaPixels  
• 7x Optical Zoom  
**\$689<sup>99</sup>**

S410... \$289.99 S560... \$369.99  
A80... \$244.99 S1 IS... \$364.99  
A75... \$199.99 A310... \$139.99

**MINOLTA Dimage A2**  
• 8.0 MegaPixels  
• 7x Optical Zoom  
**\$669<sup>99</sup>**

A1... \$479.99 XT... \$194.99  
S414... \$189.99 Xa... \$214.99

**NIKON D70**  
• 6.1 MegaPixels  
• 1.8" LCD Screen  
**\$779<sup>99</sup>**

**NEW!** D70 KIT... \$1079.99  
D2H... \$2349.99 D2X... CALL  
D100... \$1149.99 D1X... \$2519.99

**OLYMPUS E-1**  
• 5.24 MegaPixels  
• 1x Opt/1x Dig Zoom  
**\$1069<sup>99</sup>**

E-20... \$809.99 ST410... \$654.99  
E-580... \$219.99 C-60... \$319.99

**SONY Cyber-shot DSC-V1**  
• 5.0 MegaPixels  
• 4x Opt/4x Opt Zoom  
**\$364<sup>99</sup>**

DSC-P73... \$239.99 DSC-F40... \$279.99  
DSC-P100... \$314.99 DSC-W1... \$339.99  
DSC-T11... \$404.99 DSC-T1... \$389.99

**CANON Digital Rebel Kit (w/18-55mm)**  
• 6.3 Mega Pixels  
• 1x Dig/1x Opt. Zoom  
**\$719<sup>99</sup>**

Digital Rebel... \$629.99  
G5... \$404.99 EOS 1D Mark II... \$4049.99

**MINOLTA Dimage Z2**  
• 4.0 MegaPixels  
• 10x Opt/4x Dig. Zoom  
**\$294<sup>99</sup>**

NEW! Z1... \$294.99  
NEW! G600... \$319.99  
NEW! Maxxum 7 Digital... CALL

**NIKON Coolpix 5400**  
• 5.1 MegaPixels  
• 4x Digital Zoom  
**\$404<sup>99</sup>**

Coolpix 4300... \$249.99  
NEW! Coolpix 3700... \$229.99  
NEW! Coolpix 5700... \$439.99\*

**SONY DSC-S28**  
• 7x Opt/4x Dig. Zoom  
**\$689<sup>99</sup>**

DSC-F717... \$474.99 DSC-P1... \$309.99  
DSC-P9... \$219.99 DSC-P10... \$299.99

**CANON EOS 100**  
• 6.3 MegaPixels  
• 1.8" LCD Screen  
**\$1099<sup>99</sup>**

105... \$569.99  
SD10... \$249.99 SD110... \$209.99

**PENTAX Optio 555**  
• 5.0 MegaPixels  
• 5x Optical Zoom  
**\$364<sup>99</sup>**

S41... \$259.99 S40... \$219.99  
43WR... \$269.99 15T Dig... \$979.99

**FUJIFINE PIX 57000**  
• 3024x2016 Resolution  
**\$389<sup>99</sup>**

NEW! F710... \$324.99  
NEW! S20 Pro... \$479.99  
S5000... \$229.99 S3000... \$189.99  
S2... \$1299.99 S3... CALL

## DIGITAL VIDEO

**CANON GL-2**  
• 20x Optical Zoom  
• 100x Digital Zoom  
• 2.5" LCD Screen  
• REE 1394  
**\$1479<sup>99</sup>**

NEW! Optura 300 MC... \$609.99  
NEW! Optura X1... \$729.99  
NEW! Optura 30... \$579.99  
NEW! Optura 40... \$639.99

**JVC GR-HD1**  
• 1.18 MegaPixels  
• 200x Digital Zoom  
**\$1849<sup>99</sup>**

NEW! GR-DX77... \$369.99  
NEW! GR-DX97... \$404.99  
NEW! GR-DX307... CALL  
NEW! GR-DV6000... \$799.99

**SONY DCR-DVD201**  
• 10x Opt./120x Dig. Zoom  
• 2.5" LCD Screen  
**\$699<sup>99</sup>**

NEW! DCR-DVD101... \$599.99  
NEW! DCR-IP1... \$739.99  
NEW! DCR-IP55... \$609.99  
NEW! DCR-IP220... \$759.99  
NEW! DCR-PC330... \$349.99  
NEW! DCR-PC109... \$609.99

**CANON XL-1S**  
• 3 CCD  
• 7" Color LCD  
**\$2669<sup>99</sup>**

NEW! Elura 60... \$374.99  
NEW! Elura 65... \$454.99  
NEW! Elura 70... \$494.99  
NEW! ZR80... \$299.99  
NEW! ZR85... \$334.99  
NEW! ZR90... \$399.99

**SONY DSR-PD170**  
• 1.0 MegaPixels  
• 12x Optical Zoom  
• 1/3" CCD  
**\$2469<sup>99</sup>**

Special! DSR-PDX10... \$1499.99  
Special! DCR-TRV950... \$1249.99  
NEW! DHR-1000... \$2979.99

**PANASONIC PV-GS200**  
• 10x Opt./120x Dig. Zoom  
• 2.5" LCD  
**\$604<sup>99</sup>**

NEW! PV-G53... \$264.99  
NEW! PV-G512... \$309.99  
NEW! PV-G514... \$339.99  
NEW! PV-G515... \$359.99  
NEW! PV-G555... \$409.99  
NEW! PV-G5120... \$459.99  
NEW! PV-G5400... CALL

**JVC GR-D93**  
• 10x Optical Zoom  
• 2.5" LCD  
**\$379<sup>99</sup>**

NEW! GR-D230... \$439.99  
NEW! GR-D33... \$259.99  
NEW! GR-D72... \$299.99  
NEW! GR-DVP9... \$619.99

**SONY DCR-VX2100**  
• 12x Opt./48x Dig. Zoom  
• 2.5" LCD Screen  
**\$1849<sup>99</sup>**

NEW! DCR-HC20... \$384.99  
NEW! DCR-HC30... \$424.99  
NEW! DCR-HC40... \$459.99  
NEW! DCR-HC45... \$529.99  
NEW! DCR-HC85... \$639.99  
NEW! DCR-TRV260... \$279.99  
NEW! DCR-TRV460... \$319.99

**PANASONIC AG-DVX100A**  
• 3 CCD Imaging  
• 12x Optical Zoom  
**\$2579<sup>99</sup>**

NEW! AG-DV2500... \$1279.99  
NEW! AG-DVC7... \$719.99  
NEW! AG-DVC30... \$1699.99  
NEW! PV-DV73... \$409.99  
NEW! PV-DV953... \$749.99  
NEW! VDR-M50... \$509.99  
NEW! VDR-M70... \$599.99

Policy: Visa, MasterCard, Discover, American Express, Diners Club, Money Orders, Certified Check, Personal Checks up to 10,000.00 with name and address imprinted on check. C.O.D. orders are also accepted. Orders by mail please print name address and phone number clearly. Shipping methods in the Continental U.S.A. will be via FedEx, U.P.S. or Air Mail. Over size items via truck. Shipping and Handling are additional. 21 days for return or exchange Video & Digital 7 days with prior authorization only. (Call customer service for authorization number). Shipping and Handling are not refundable. All returns are subject to a minimum restocking fee of 5%. Prices may reflect mail-in rebate. All returned merchandise must be in new condition and must include all packaging and printed material in original, unaltered condition. Broadway Photo is not responsible for typographical errors. Prices are subject to change. Please check our website for current prices. All items are covered by USA, International or Broadway Photo and Video Warranty. All our merchandise is brand new and factory fresh. Quantities are limited. Thank you and enjoy your order. 8/3/04

EYE SPY SOMETHING... RED

152 3902181

Your Bank Account.

Visit [www.pestpatrol.com/pc](http://www.pestpatrol.com/pc) and run a FREE scan to find who's lurking on your PC right now.

This is not child's play. It's real. And most likely it is happening to you. The game is Spyware and it is a leading cause of identity theft. It can:

- Steal your social security number
- Hijack your credit card account
- Track every keystroke and mouse click you make
- See every e-mail you write, website you visit, and file you download

Now there is program that can protect against the widest range of spyware threats in the industry — PestPatrol, the Authority in Spyware.

PestPatrol is a quick, easy and completely confidential way to scan your PC for spyware. You can safely remove, quarantine, find and detect the most invasive and destructive pests.

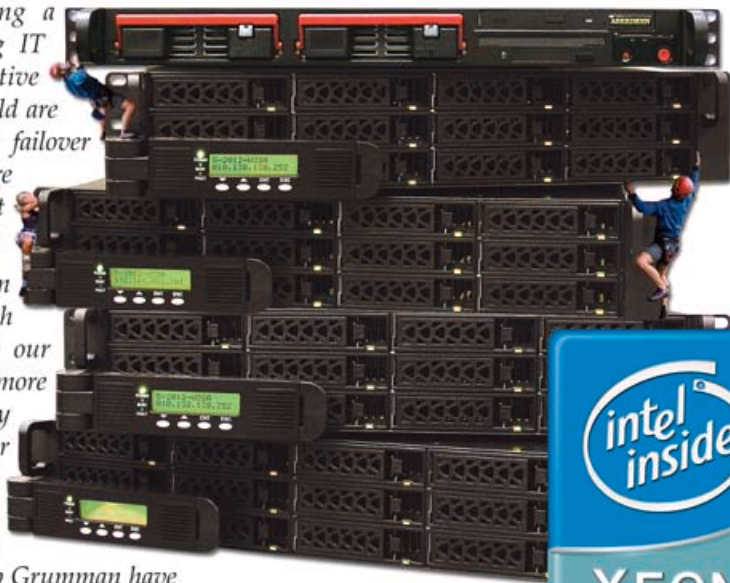


# SCALING NEW HEIGHTS IN SCALABLE STORAGE

Aberdeen, the innovator of incredible storage solutions, is proud to introduce the XDAS. The highly scalable XDAS provides a flexible framework for building and managing cost-effective SATA RAID storage systems. Each scalable XDAS box packs a whopping 3 Terabytes in a standard 2U format. Bundled with either an Aberdeen Stirling server or AberNAS solution, the XDAS delivers additional scalable storage space of up to 15TB per SCSI port.

The expandable, dense storage capacity of the XDAS provides for dependable storage and can be deployed easily via any external SCSI port thus allowing a seamless integration into your existing IT infrastructure. Among the innovative features setting XDAS apart from the field are host and OS independence, dual host failover clustering capability and an optional fibre channel interface allowing its placement to be literally miles away from the server.

Give us a call and one of our expert system consultants will help you determine which solution best fits your needs, or visit our website, [www.aberdeenninc.com](http://www.aberdeenninc.com), to view more detailed specs of this revolutionary product. Our industry-leading 5-Year Warranty reduces cost of ownership and provides peace of mind. See why Fortune 500 companies such as Agilent, Boeing, Lockheed Martin, Motorola and Northrop Grumman have chosen Aberdeen, the Custom Server Solution Provider.



## ABERDEEN XDAS

### Direct Attached Scalable Storage 2U SATA-to-SCSI RAID

- 3TB of Direct Attached Storage
- Daisy Chain Units for Scalability
- OS and Host Independent
- Supports Dual Host for Server Failover Clustering
- 2 SCSI Host Channels
- 12 x 250GB 7200 RPM Hot-Swap SATA Hard Drives
- Intel® 80321 I/O Processor
- Modular/Cableless internal design
- RAID Controller Smart LCD Display
- RAID level 0, 1, 3, 5, 6, 10, JBOD
- HotSpare, HotSwap & Auto-Rebuild
- Multiple RAID arrays/LUNs
- Fast RAID Initialization and Fast Rebuild process
- Dual Flash ROM for Redundant Firmware Images
- RJ-45 LAN port & RS-232 for setup & management
- Optional Fibre Channel Interface
- 5-Year Limited Warranty

**\$8628**

## ABERDEEN STIRLING S13

### 1U Rackmount Server XDAS Scalable Controller

- Connect up to 10 Aberdeen XDASs
- Up to 30TB of Scalable Attached Storage
- Supermicro P4SC8 with Intel® E7210 Chipset
- Intel® Pentium 4® Processor 2.4GHz 800MHz FSB
- 1GB CL2 DDR400 SDRAM (Up to 4GB)
- Integrated Adaptec Dual-Channel Ultra320 SCSI Controller for up to 5 Aberdeen XDASs
- External SCSI port for easy connection to XDAS
- Optional SCSI Controller for up to 10 Aberdeen XDASs
- Integrated SATA/150 RAID Host Controller
- 2 x 80GB 7200 RPM Hot-Swap SATA Hard Drives
- Upgradeable to 500GB of Hot-Swap Host Storage
- Dual Integrated Intel® Gigabit® for Network Teaming
- 5-Year Limited Warranty

**\$1911**

- Add \$8628 for each 3TB Aberdeen XDAS
- Scalable AberNAS Version Available

## ABERDEEN STIRLING S33

### 3U Rackmount Server XDAS Scalable Controller

- Connect up to 25 Aberdeen XDASs
- Up to 75TB of Scalable Attached Storage
- Supermicro X5DP8-G2 with Intel® E7501 Chipset
- Dual Intel® Xeon® Processors 2.4GHz 533MHz FSB
- 2GB ECC Registered DDR SDRAM (Up to 16GB)
- Integrated Adaptec Dual-Channel Ultra320 SCSI Controller for up to 5 Aberdeen XDASs
- External SCSI port for easy connection to XDAS
- Optional 4 SCSI Controllers for up to 25 Aberdeen XDASs
- 3Ware 8506 8 port SATA RAID Controller
- 2 x 80GB 7200 RPM Hot-Swap SATA Hard Drives
- Upgradeable to 1.75TB of Hot-Swap Host Storage
- 2 Integrated Intel® Gigabit® NICs
- Dual Integrated Intel® Gigabit® for Network Teaming
- 5-Year Limited Warranty

**\$4699**

- Add \$8628 for each 3TB Aberdeen XDAS
- Scalable AberNAS Version Available

Intel, Intel logo, Intel Inside, Intel Inside logo, Celeron, Intel Xeon, Itanium, Pentium and Pentium III Xeon are trademarks or registered trademarks of Intel Corporation. pc029

**888-453-0707**  
[www.aberdeenninc.com/mag](http://www.aberdeenninc.com/mag)

# Click. Sync. Done.



**20% OFF all Kits**

Shop [www.datapilot.com](http://www.datapilot.com)

Enter Promo Code: 555

Offer valid 8/1/04 - 8/31/04

**susteen**

## Help Wanted!

Picture Yourself on a Winning Team!

Expetec Franchisees provide

- ❖ Maintenance Contracts
- ❖ Computer Service and Repair
- ❖ Networking Services
- ❖ Consulting Services

For more information on joining us, see our website: [www.expetec.com](http://www.expetec.com), or call at 888-209-3951.




We provide in-house financing to qualified prospects

## DATA RECOVERY IN HOURS

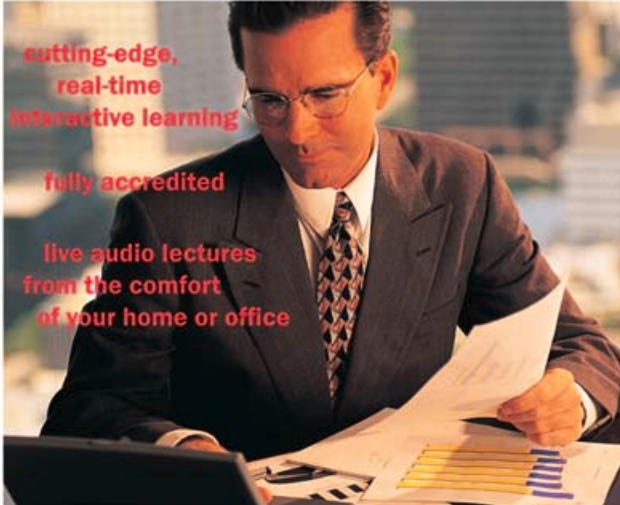
- Over 14 years of experience with clients worldwide (HP, NASA, & FedEx).
- We've recovered more than half-a-million megabytes of lost data.
- You only pay if there's a recovery.
- Call 24-hours a day.

Working at the speed of business.

**800-341-DATA**



415-495-5556 • FAX 415-495-5553 • RESTRICTIONS MAY APPLY  
379 Clementina Street • San Francisco, California 94103



cutting-edge, real-time interactive learning

fully accredited

live audio lectures from the comfort of your home or office

## MASTER'S DEGREES ONLINE

In network security, computer science, electrical engineering, information architecture, information and telecommunications systems management, and business administration (MBA).

## CAPITOL COLLEGE

Engineering • Computer Sciences • Information Technologies • Business

888-522-7486 [www.capitol-college.edu](http://www.capitol-college.edu)

# ACADEMIC DISCOUNTS

## Save Up To 80% on Name Brand Software



**FULL-VERSION ACADEMIC PRICES:**

**Adobe®**  
Acrobat 6 Professional.....**Save 70%**  
Creative Suite Premium...**Save 69%**

**Microsoft®**  
FrontPage 2003.....**Save 55%**  
Visual Studio.Net 2003.....**Save 85%**

**Macromedia®**  
Contribute 2.....\$75  
Dreamweaver MX 2004.....\$95  
Flash MX 2004.....\$95

**Sony Pictures Digital®**  
Sound Forge 7.....\$149  
Vegas+DVD.....\$269  
ACID Pro 4.....\$149

**Wacom®**  
Graphire3 4x5 Tablet.....\$89  
Intuos2 6x8 Tablet.....\$259

ALL MAJOR MANUFACTURERS... ALL AT HUGE DISCOUNTS!

Order Online and Receive a Discount on Shipping!  
[PM.AcademicSuperstore.com](http://PM.AcademicSuperstore.com)

**CALL US TODAY!**  
**1-800-254-3341**




## TALKING TECHNOLOGY INTERNATIONAL INC.

Turn your PC into a call processing center!  
Automated dialing for businesses, government, military and groups. Messages to live people and answering machines. Message confirmation. Large selection. Solid support.

- Emergency Notification
- Telemarketing
- Automated Dialing
- Patient Reminders
- Political Advertising & Fundraisers
- Church Phone Trees
- Text To Speech

VISA/MC/AMEX/DISC

Intel-Dialogic Cards • Buy - Sell - Trade • Authorized Intel Reseller  
[www.tti.net](http://www.tti.net) **510.339.8275** Since 1987

## WHILE SUPPLIES LAST!

Qty 2+: **\$9.99!** Qty 1: \$10.99



Remanufactured HP 51645a (No. 45) cartridge.

more great deals at...

1-800-INKFARM  
**inkfarm.com**  
the ink & toner supersite.™

Data Conversion/Data Recovery • Multimedia/Education/General • Printing/Paper/Supplies • Tech Support



# DEDICATED WEBHOSTING

## Dedicated Hosting - Standard

### "The Developers Choice"

- SELF MANAGED!
- 2.8 GHz P4
- 512 SDRAM
- 80 GB Hard Drive
- 1000 GB DataTransfer
- Linux or Windows OS
- Multiple IP Addresses

**\$49.95**  
/ per month

## Dedicated Hosting w/ Ensim

### "Award Winning Control Panel"

- SELF MANAGED!
- Ensim Control Panel
- 2.8 GHz P4
- 512 SDRAM
- 80 GB Hard Drive
- 1000 GB DataTransfer
- Full Root/Admin Access
- Multiple IP Addresses
- Multiple Domain Hosting

**\$67.95**  
/ per month



## All Plans Include:

- FREE 24/7 Customer Service
- FREE Domain Registration
- FREE Search Engine Placement
- FREE Billing Software
- FREE Dedicated IP
- FREE Script Library
- OS/Hardware Management
- Shared Hosting from \$18.95/month
- ... and much more

## Dedicated Hosting - Business

### "Great for Online Businesses"

- FULLY MANAGED!
- FREE Shopping Cart
- FREE Domain Registration
- 2.8 GHz P4
- 512 SDRAM
- 80 GB Hard Drive
- 1000 GB DataTransfer
- AIT Control Panel

**\$79.95**  
/ per month

## Dedicated Hosting - Enterprise

### "Great for Web Hosting Resellers"

- FULLY MANAGED!
- FREE Shopping Cart
- FREE Domain Registration
- 2.8 GHz P4
- 512 SDRAM
- 80 GB Hard Drive
- 1200 GB DataTransfer
- AIT Control Panel
- Multiple Domain Hosting

**\$129.95**  
/ per month

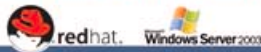


[www.AIT.com](http://www.AIT.com)

CALL TOLL FREE 1-800-878-4084

[sales@AITcom.net](mailto:sales@AITcom.net)

**dotAmerica.com** \$7<sup>95</sup>  
Professional hosting made easy! MO.



- |                           |                   |
|---------------------------|-------------------|
| Free Setup                | MySQL, CGI, PHP   |
| Free Domain               | .NET, ASP, Access |
| Free Site Creator         | 50 GB Bandwidth   |
| Money Back Guarantee      | 1000 MB Storage   |
| Buy 12 Months, Get 2 Free | 1000 POP Emails   |
| Buy 24 Months, Get 6 Free | 24x7 Support      |

[www.dotamerica.com](http://www.dotamerica.com) 1.866.673.HOST

**Parts & Vendors**<sup>TM</sup>

For Engineers,  
Designers and  
Prototypers

Personal Parts List Manager and Vendor Database

Download a FREE Demo from:

[www.partslistsoftware.com](http://www.partslistsoftware.com)

**Trilogy**  
DESIGN<sup>TM</sup>

200 Litton Dr. #330  
Grass Valley, CA 95945  
530-273-1985  
FAX 530-477-9106

**pcsound.com**

APC • 3Com • Belkin • Hewlett Packard  
Sony • Microsoft • Powerware • Okidata

Avery • Dymo • Fellowes • GBC  
Photo Paper • Ink & Toner  
Privacy Screens • Business Calculators

**thesuppliesroom.com**  
Office Stuff. Fast. Simple.

**1-800-727-6863**



**MarketLink**

**Generate More Sales.**

**Put Your Ad Here.**

**call now - 1-877-267-2315**



# KICKASS SERVERS

FOR \$69.99!



FREE 30-DAY TRIAL:  
**VM Server**

Host from 10 to 100  
Windows & Unix sites!

Enjoy the freedom to manage your own server and the comfort of knowing that your websites are running on our award winning clustered architecture. Let us take care of all the hardware and software while you concentrate your effort on what matters most: building websites and making MORE money!

Single domain hosting available for as low as \$6.99!

Call TODAY! 1-866-258-3350



- Award Winning Technology
- 24X7 Outrageous Support
- 99.9% Uptime guarantee
- NO SETUP FEES!

Check out our free demo at [BlueGenesis.com](http://BlueGenesis.com)

Only \$8<sup>25</sup>\*  
per month

# Anything Else is JUST Hosting!



Now including Brightmail Anti-Spam®, the industry's most accurate and easiest-to-use anti spam solution.

Only \$8<sup>25</sup>\*  
per month

## FatCow™

The FatCow™

- 500 MB Disk Space
- 25 GB Monthly Data Transfer
- 100 Email Accounts
- WebMail
- Brightmail Anti-Spam®

Including: !

- Shopping Cart
- CGI, PHP
- Toll-Free Support
- Website Statistics
- Search Engine Tools

MiniMoo

- Domain Name Parking
- 1 Email Account
- Brightmail Anti-Spam®
- Coming Soon Page
- \$20 Domain Names

\$5 a year

FatCow™: The Smart Choice in Small Business Hosting Since 1998.

[www.fatcow.com/now](http://www.fatcow.com/now)  
Toll Free 1.866.517.6484

Copyright © 2004 FatCow Web Hosting, LLC. Brightmail® is a trademark or registered trademark of Brightmail, Inc. in the United States or other countries, and is used under license.



# Reliable. Affordable. Hassle-free.

**FREE!**  
• Domain Name  
• Spam Filtering  
• Virus Filtering

## Get your Small Business On the Web Today!

Our all-inclusive hosting makes getting your business online, quick and easy.



- Free Domain Name (yourcompany.com)
- SiteBuilder, Frontpage, & FTP
- Customized Email (you@yourcompany.com)
- Urchin 5.0 Website Visitor Analysis
- Automatic Spam & Virus Email Filtering
- Web-Based OneSuite Groupware™

Only \$8<sup>95</sup>  
per month  
These great features & much more!

30 DAY  
Money Back  
Guarantee



**OneWebHosting.com**  
Your Small Business Hosting Provider.

GET STARTED TODAY! CALL OR CLICK NOW!

**1-800-4-HOSTING (446-7846)**

E-commerce for only \$14.95/mo. // Resellers! Host domains for only \$2/mo.

Sign up today and get FREE SETUP & FREE DOMAIN:  
[onewebhosting.com/pcmag](http://onewebhosting.com/pcmag) or call 800-4-HOSTING

Web Hosting/E-Commerce/Online Services/Dedicated Servers

# GREAT LOVERS ARE MADE, NOT BORN.<sup>®</sup>

When your lover tells you, with a word or a sigh—that this is the place to touch, then you have just learned a powerful sexual secret that can be used again and again.

Can you imagine what would happen if you and your lover could discover dozens of such secrets in the privacy of your own home by actually watching others having sex?

Imagine no more. The Sinclair Institute, the world's leading creator of sexually-explicit educational videos, brings you *The Better Sex Video Series: Advanced Techniques*.

Interspersed with explanations and advice from nationally-recognized sex therapists, each video features explicit sexual scenes of everyday couples sharing their most intimate and passionate moments. Listen to what they say. Watch what they do. And then set off on your own erotic journey.

Mastering the art of sexual love, like any great endeavor, takes practice, an attention to detail, and a willingness to venture beyond the known. At Sinclair, we have enough new ideas to keep you exploring forever.

Try us and see.

## NEW! 2 FREE VIDEOS

*Advanced Sexual Positions*, our new 30-minute video, is guaranteed to increase your lovemaking pleasure. *Great Sex 7 Days A Week* shows you even more creative ways to ignite intense sexual excitement. Get both videos **FREE** when you order today!



## Better Sex ADVANCED TECHNIQUES™ video series

**100% SATISFACTION GUARANTEED!**

**WARNING:** THE BETTER SEX VIDEO SERIES: Advanced Techniques is highly explicit and is intended for adults over the age of 18 only.

FOR FASTEST SERVICE WITH CREDIT CARDS OR A FREE BROCHURE, CALL **1.800.955.0888** EXT.8PCM14 24 HOURS

or mail to: **The Sinclair Intimacy Institute**, ext.8PCM14, PO Box 8865, Chapel Hill, NC 27515

*Plain Packaging Protects Your Privacy*

Please specify desired format: **VHS DVD TOTAL**

|                                                 |  |  |                    |             |
|-------------------------------------------------|--|--|--------------------|-------------|
| Advanced Sexual Positions (Free with Purchase)  |  |  |                    | <b>FREE</b> |
| Great Sex 7 Days a Week (Free with Purchase)    |  |  |                    | <b>FREE</b> |
| Vol. 1: Sexual Positions for Lovers             |  |  | 19.95              |             |
| Vol. 2: Ultimate Orgasms: Multiples and G-Spots |  |  | 19.95              |             |
| Vol. 3: 10 Secrets to Great Sex                 |  |  | 19.95              |             |
| <b>Buy The 3-Volume Set and Save \$10</b>       |  |  | 49.85              |             |
|                                                 |  |  | postage & handling | 5.00        |
|                                                 |  |  | <b>TOTAL</b>       |             |

Bank Money Order  Check  VISA  MC  Discover  AMEX

Card#

Exp. date

NC orders please add 7% sales tax. Canadian Orders add U.S. \$6 shipping. Sorry - no cash or C.O.D. 8PCM14 ©S.I.I. 2004

Name \_\_\_\_\_

Address \_\_\_\_\_

City \_\_\_\_\_

State \_\_\_\_\_

Zip \_\_\_\_\_

Signature \_\_\_\_\_

( I CERTIFY THAT I AM OVER AGE 18 )



# GEAR. GADGETS. GIRLS.

WHAT MORE COULD A GUY WANT FROM LIFE?

**SYNC**<sup>TM</sup>  
*Your life. Only shinier*

**INTRODUCING SYNC** — the new magazine that believes it's not about the stuff. It's what you do with it and the fun and entertainment it brings. *Sync* will bring you the latest and hottest trends, and products in the world of gear and gadgets and put them to the real test: everyday life. Try an issue — absolutely FREE!

**GET YOUR FREE TRIAL ISSUE OF SYNC AT:**

<http://subscribe.syncmagazine.com>

# AFTER HOURS

## TECHNOLOGY ON YOUR TIME

### Music 101

BY EMILE MENASCHÉ

I can still feel the stuffy air in my viola teacher's waiting room. I'd stew week after week while the kid with the lesson before me went overtime, a fate I knew I would soon endure myself. I've avoided formal lessons ever since. My kids have much cooler music teachers, but the one-on-one approach is no longer the only way to learn to play. As the music industry relies more on computers, software-based music education continues to mature along with it.

A good educational program doesn't replace a human teacher, but it should do three things: get students motivated to learn, teach them the basics, and provide a framework on which to build. Each of the entry-level programs we tested takes a different approach. And some are more successful than others. Unlike most music production software, none of these programs are resource hogs. Although you will want a working sound card, the latest version of QuickTime and Windows Media Player software, and in some cases a MIDI controller.



#### Instant Play Guitar

Instant Play Guitar comes in a two-CD set. The first disc, *Guitar Coach First Lessons* (which must be loaded on your computer in order to run) offers 15 lessons for com-

#### WHAT THE RATINGS MEAN

- EXCELLENT
- VERY GOOD
- GOOD
- FAIR
- POOR

plete beginners. Many of them include exercises with optional accompaniment, instructional videos, and tips. The curriculum emphasizes classical-guitar technique, though many of the techniques presented can be used on any type of guitar.

The exercises and video are clear and effective, but Instant Play Guitar has the feel of someone sitting you down, putting the guitar in your hands, and showing you

a few things—a friendly approach but lacking overview and structure. It gets your fingers on the guitar, but you'd have to look elsewhere to see where it's going. At the end of the 15 lessons, you'll see an ad for a more comprehensive guitar program, *Guitar Coach Skills Edition*.

Disc two of the set, *Play Guitar*, is a run-time disc with plenty of practical information about scales, notes on the neck, and techniques, but as with the first disc, the presentation lacks the overview that would give it

more authority.

\$29.99 direct. Topics Entertainment Inc., [www.topics-ent.com](http://www.topics-ent.com). ●●●○○

#### Instant Play Piano

The twin-disc Instant Play Piano is similar in structure to Instant Play Guitar, but it benefits from the fact that, as a keyboard trainer, it can incorporate a MIDI controller into the lesson plan. Like the Instant Play Guitar program, it offers accompanied exercises. But here you have

a little more control over the accompaniment, with separate tracks for rhythm and chordal backing.

The Keyboard Foundation disc starts you out on some very simple exercises, designed to get you making music immediately. Disc two features a trainer, which lets you practice sight-reading the music displayed onscreen. You can play from a selection of exercises or import a MIDI file of your own. The program didn't read our playing very accurately when we triggered the computer's internal sounds but did much better when we used an external sound source.

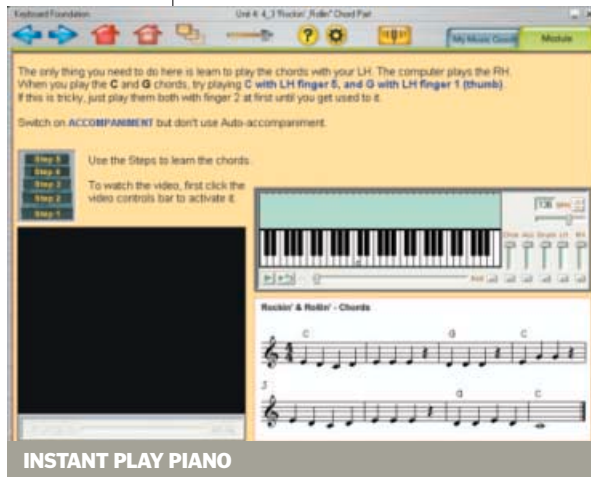
\$29.99 list. Topics Entertainment Inc., [www.topics-ent.com](http://www.topics-ent.com). ●●●○○

#### Morton Subotnick's Making Music

Morton Subotnick's *Making Music* series is designed to introduce small children to the world of music and composition. All the other programs we tested are relatively traditional, but *Making Music* and the similar *Making More Music* (below) are more object-oriented.

*Making Music* is the more basic of the two. One of its modules lets you grab musical phrases (each represented by an animal) and reassemble them into a new piece. From there, you can bring them down into a musical staff and edit them in a gridlike interface that's similar to what you'd find in a standard MIDI sequencer.

Another module lets you paint music with a tool palette that's akin to what you'd



find in a draw program (creator Subotnick credits the act of painting with inspiring Making Music). You can transform the music in a number of ways, reversing it, compressing it, and so on. A game module offers some fast and fun ear-training exercises as well.

Viva Media also publishes a beginners'



program called Morton Subotnick's Hearing Music, which helps children distinguish and appreciate melody, rhythm, and other musical elements in a fun virtual-playground environment.

\$29.99 list. Viva Media LLC, www.viva-media.com.



### Morton Subotnick's Making More Music

Making More Music expands on the concept of Making Music, offering a more thorough exploration of composition and style and introducing essential concepts like time signatures. Though its look and feel are similar, Making More Music is better executed than its brand mate and stands on its own as a fine entry into the world of composition for young people. In this case, More is more.

\$29.99 list. Viva Media LLC, www.viva-media.com.

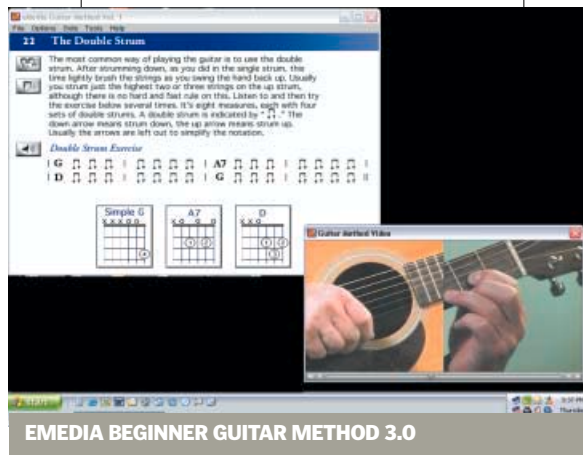


### eMedia Beginner Guitar Method 3.0



This program is comprehensive, clear, well organized, and visually compelling. It starts with an introduction to the guitar; then, in more than 125 lessons, it takes you through all the important aspects of the instrument. The table of contents tells what's covered in each section, so you can skip around to get to the techniques you want to work on.

The included material benefits



from excellent attention to detail: Clear video, a nicely animated fret board, and well-presented musical examples help you make the connection between guitar fingering and traditional notation. The text that supports the lessons is well written and offers plenty of depth. The whole package speaks with authority, which will inspire confidence in the nascent musician.

With over 70 songs on-board, you get a decent selection of familiar material to work with. You can choose between live audio and MIDI accompaniment; the latter lets you control the speed of the backing tracks to meet your level.

At \$59.95, Guitar Method costs about as much as two lessons from a competent teacher in most urban areas. And if you're a budding teacher yourself, the eMedia program might serve as a good example of how to build a curriculum. A piano version of the program is also available from eMedia Music, as well as more advance learning packages for guitar, piano, and bass; the company also offers packages that bundle instruments with the software.

\$59.95 direct. eMedia Music Corp., www.emediamusic.com. ●●●●●

### Piano Suite Premier

Piano Suite Premier is a rare bird: kid-friendly software that doesn't condescend. This information-packed program is articulate enough even for adult beginners, and it seems equally well suited for private home study and classroom use. You can create a personal profile: The software tracks which lessons you have completed and rates your proficiency for each exercise.

## MORE ON THE WEB

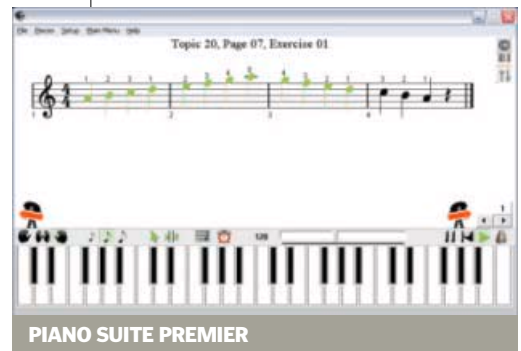
[www.pcmag.com/afterhours](http://www.pcmag.com/afterhours)

See After Hours online for more Quick Clips and Gear & Games reviews.

Piano Suite is designed to be an introduction to the piano, so it covers the basics, including the origins of the instrument, proper posture and finger placement, the location of the notes, and music theory. After some audio instruction, written instruction, and a clear demonstration of each exercise, you're ready to try each new skill. Whenever you perform an exercise, Piano Suite lets you know when you've made a mistake yet never fails to pat you on the back when you make it through to the end.

In addition to the piano theory course, you get a fine array of pieces to practice. They are grouped by complexity, from the very basic, like "Away in a Manger," to more advanced fare such as a melody from Schubert's "Unfinished" Symphony.

A basic MIDI recorder called Composer



Corner lets you record your own pieces, save them as MIDI files, and share them with other students—an ideal learning tool. In the Games section, note spelling, replay, and our personal favorite, "Concentration," are a challenging and fun way to reinforce the lessons.

Piano Suite is available in a package with a MIDI keyboard, and although you can muddle through without one (you can use your QWERTY keyboard to trigger some notes), a real keyboard is a must. Adventus also deserves kudos for including a printed manual. The user interface isn't slick, but it's clear, and the notation is nice and big—tops in this group for readability. This is an outstanding choice for parents, teachers, and students.

\$89.95 direct. Adventus Interactive, www.adventus.com. ●●●●●

# GEAR & GAMES



## Cases in Color

Many a hipster has been spotted recently toting one of Timbuk2's cool-looking bags; they are also very durable and easy to carry. Newest are the light and streamlined **Timbuk2 Laptop Grip Sleeve** and **Laptop Tote**, in black, red, navy blue, or orange. Each is lined with soft corduroy and is amply padded to protect your gear. Included is Timbuk2's "quick-adjust removable shoulder strap," which you really can adjust faster than any other strap we've tried—a nice convenience.—CAM

Sleeve: Small, medium, or large, \$50 list; extra large, \$60. Tote: Large, \$80; extra large, \$90. Timbuk2, [www.timbuk2.com](http://www.timbuk2.com). ●●●●○



## Charge as You Go

The **APC TravelPower Backpack** might seem heavy, but it will save you from carrying even more weight in the long run. It comes with a power brick (about 1.7 pounds) that lets you charge most take-along gadgets, even while they're packed away. (Before you buy, check the APC Web site to be sure the company offers the connectors you'll need.) The bag has adjustable chest and waist straps and curved, padded back straps for comfort, as well as an impressive number of useful compartments. You won't use it every day—it's too bulky—but the included connection kit alone makes it worth the price.—*Carol A. Mangis*

\$120 street. American Power Conversion Corp., [www.apc.com](http://www.apc.com). ●●●●○



## Schlep in Style

The **Belkin NE-WT7 Women's Tote** is understatedly stylish and sleek—but with plenty of room for papers, pens, and other slim necessities. We like the trolley strap, great for business trips, and the removable card holder. Long handles let you carry it by hand or by shoulder, but we'd prefer the option of using an even longer single diagonal strap, to help balance weight more easily. Still, this is a sharp-looking option for those who don't have to tote their laptops too far on foot.—CAM

\$59.99 direct. Belkin Corp., [www.belkin.com](http://www.belkin.com). ●●●●○



## Backpack It Up

For many of us, backpacks are the least painful way to lug heavy laptops and other accessories. The sturdy, ergonomically designed **Kensington SaddleBag Sport Notebook Backpack** survived dozens of trips packed full of digital cameras, and even better, so did the tester who carried it; he was reluctant to give it up for its photo shoot. We especially like the easily accessed side pockets and the comfy padded shoulder straps.—CAM

\$69.99 direct. Kensington Technology Group, [www.kensington.com](http://www.kensington.com). ●●●●○

# iPod Accessories

BY TROY DREIER

Remember when just having an Apple iPod was enough to make your friends jealous? That doesn't work so well anymore, now that those trademark white headphones are in nearly everyone's ears.

To make your friend's jaws drop, you'll have to up the ante and trick out your iPod. Luckily, it seems that nothing spurs inventors' creativity like Apple's sleek music player: There are some truly swank and useful iPod accessories on store shelves. So we present this roundup of four of the coolest iPod accessories we've seen lately.

## Belkin Digital Camera Link

Shutterbugs will find the Digital Camera Link indispensable, since it solves the problem of digital camera memory cards that fill up too quickly. With it, you can easily transfer pictures from your camera's memory card to your iPod and then upload them to your



Macintosh or Windows PC the next time you sync. We found it a breeze to use: Simply connect it to your iPod and your camera (you'll need your camera's USB cord), then press the Digital Camera Link's one button to begin the transfer.

\$89.99 direct. Belkin Corp., [www.belkin.com](http://www.belkin.com). ●●●●●



## LDK Felicidade Groove Purse Triplet

We fell in love with this sassy little bag. Made of shiny white synthetic leather, the Groove Purse perfectly compliments the iPod's free spirit and go-anywhere nature. To use it, slip any model iPod into the front pocket and plug in the attached speakers. The bad news is that the bag doesn't sound as good as it looks: The speakers produce a weak, muddy sound

that's light on bass—but maybe you'll look so good carrying it that no one will notice. \$144.95 direct. LDK Office Co. & Studio. Available at Dr. Bott LLC, [www.drbot.com](http://www.drbot.com). ●●●○○

## Griffin iTalk

The Griffin iTalk is a fun gift for the iPod-toting college student in your life. Plug it into the iPod's audio port and the iPod instantly becomes a voice recorder, ready to capture an entire lecture for later review. The mic is not powerful (a student will want to sit up close to the professor) but worked fine in our testing. The iTalk saves recordings by date and instantly transfers them to a computer when the iPod is synced. It also has a built-in speaker, letting users review recordings without plugging in headphones.

\$39.99 direct. Griffin Technology, [www.griffintechnology.com](http://www.griffintechnology.com). ●●●●●



## TEN naviPod

If you regularly plug your iPod into external speakers so that you can listen to your music without headphones, the naviPod will be a welcome addition. It's a remote just for the iPod, letting you adjust the volume, pause songs, and skip backward and forward within playlists from across the room. To set it up, plug the infrared remote sensor into your iPod's audio jack and connect a speaker to the audio port on the back of the sensor.

\$49.95 direct. TEN Technology, [www.tenttechnology.com](http://www.tenttechnology.com). ●●●●●

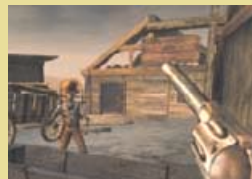


## QUICK CLIPS

### Dead Man's Hand

In this Wild West first-person shooter, you use shotguns, bolt-action rifles, and six-shooters instead of plasma rifles and thermonuclear

weapons. Players take on the role of El Tejon, a gun-slinger betrayed



by his own gang, who now wants revenge. The graphics are excellent and highly detailed. Dead Man's Hand also features multiplayer capability, so you can bring your friends to justice—dead or alive.—*John Blazevic*

\$20 street. Atari Inc., [www.dmhgame.com](http://www.dmhgame.com). ●●●●●



### Mountaincow Printing Press 2.1

110 templates help you create attractive invitations for weddings, dinner parties, and the like, and they're customizable with included clip art or imported images. The engraved-look custom fonts set this program apart; you can easily generate matching envelopes, place cards, thank-you notes, and reply cards. Other tools help you track RSVPs, gifts, and thank-you notes. Some tasks require too many mouse clicks and aren't always obvious, but you'll achieve high-quality results.—*Sally Wiener Grotta*

\$99.95 list. Mountaincow LLC, [www.mountaincow.com](http://www.mountaincow.com). ●●●●●

### Manhunt

In this stealth game, you have a starring role in a new underground production, but there's a catch. The director has allowed you to be spared from death by corrupt prison guards but has also arranged for lots of nasty people to hunt you down in an abandoned part of town while he films the gory action.

Be sure to use the shadows, and mind your noise level. You'll find yourself tilting in your chair to peek around corners.—*JB*

\$40 street. Rockstar Games, [www.rockstargames.com/manhunt](http://www.rockstargames.com/manhunt). ●●●●●



# BACKSPACE

## FOREVER IN SEARCH OF A NICE WARM HOT SPOT

Edited by Don Willmott

### iPod Used In Domestic Homicide

Friday, March 5, 2004 Posted: 4:50 PM EST (1460 GMT)

**MEMPHIS, TENNESSEE (HLN) - A Memphis woman was arrested and charged with first-degree murder after she bludgeoned her boyfriend to death with an iPod.**

Arleen Mathers, 23, was arrested Thursday morning after she called Memphis Police and said she had killed her boyfriend, according to a Sheriff's Department report.



« Well, at least we know it's rugged.  
(Reuters news)

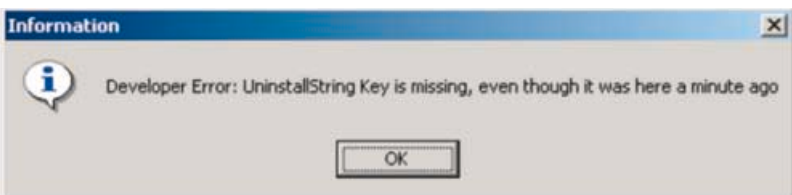
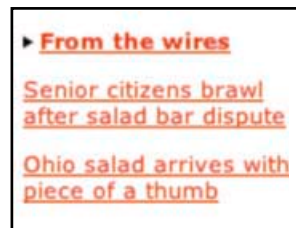


» Either Kim Jong-il is revealing a secret ambition for global domination or this online atlas is seriously screwed up.  
(www.mapzones.com)



« And some macaroni and cheese to go along with it. Don't ask us why.  
(Citigroup ad)

» No playing with knives!  
And this means you, Gramps!  
(Salon.com news)



« Why don't you take a look around? We'll wait.  
(PHP DVD Movie Writer dc3000)



« According to this store location map, San Angelo, Texas, boasts the world's first floating Home Depot.  
(www.homedepot.com)

» Okay, we'll take 100 copies. (www.zones.com)



If your entry is used, we'll send you a *PC Magazine* T-shirt. Submit your entries via e-mail to [backspace@ziffdavis.com](mailto:backspace@ziffdavis.com) (attachments are welcome) or to Backspace, *PC Magazine*, 28 E. 28th St., New York, NY 10016-7940. Ziff Davis Media Inc. shall own all property rights in the entries.  
Winners this issue: Michel Acolty, Nourvan Gorgi-Faridan, Gordon Hay, Jake Lauer, Steve Marion, Joseph Prisco, and Curtis Walter.

*PC Magazine*, ISSN 0888-8507, is published semi-monthly except 3 issues in November and monthly in January and July at \$39.97 for one year. Ziff Davis Media Inc, 28 E. 28th St., New York, NY 10016-7940. Periodicals postage paid at New York, NY 10016-7940 and at additional mailing offices. POSTMASTER: Address changes to *PC Magazine*, P.O. Box 54070, Boulder, CO 80328-4070. The Canadian GST registration number is 865286033. Publications Mail Agreement No. 40009221. Return Undeliverable Canadian Addresses to P.O. Box 503, R.P.O. West Beaver Creek, Richmond Hill, ON L4B 4R6, Canada. Printed in the U.S.A.





## We raised the bar. Without raising the price.



### INSPIRON™ 1150 NOTEBOOK

Starting at \$899  
Notebook Essentials – Starting at 7.49 lbs<sup>2</sup>

- Mobile Intel® Pentium® 4 Processor at 2.66GHz<sup>1</sup>
- Microsoft® Windows® XP Home Edition
- 14.1" XGA TFT Display
- 256MB Shared™ DDR SDRAM
- 30GB Hard Drive
- 8x DVD-ROM Drive
- Integrated Intel® Extreme Graphics
- Productivity Pack including WordPerfect® 12
- 1-Yr Limited Warranty;<sup>3</sup> 1-Yr Mail-In Service

# \$999

Ask about our financing plans  
for qualified customers

E-VALUE Code: 01029-D80709m

#### Make this your perfect PC:

- Dell™ 1350 Internal Wireless Card (802.11b/g), add \$39
- 40GB Hard Drive, add \$39
- 24x CD Burner/DVD Combo Drive, add \$59
- 512MB Shared™ DDR SDRAM, add \$100

### The Inspiron 1150, the perfect combination of mobility and affordability.

For starters, it's available with the Mobile Intel® Pentium® 4 processor, offering you the same great benefits as the Intel® Pentium® 4 processor, but with power-saving features to keep you mobile. Add an optional internal wireless card and you can connect to your network wirelessly and effortlessly.<sup>5</sup> And, if your needs change in the future, the memory is expandable up to 1GB. But best of all? You'll get Dell's 24x7 service and support. Simply call or go online today and get an out-of-this-world notebook at a price that's down-to-earth.

### Dell recommends Microsoft® Windows® XP Professional for Business

## Dell Rated #1 in Intel® Processor-Based Notebook Satisfaction

24 Consecutive Quarters  
Technology Business Research  
Corporate IT Buying Behavior and Customer Satisfaction Study  
First Quarter 2004 – May 2004

Affordable mobility. Easy as **DELL™**

Click [www.dell.com/pcmag](http://www.dell.com/pcmag) Call 1-800-433-8099

Call: M-F 7a-9p, Sat 8a-5p CT

**\*MUST REGISTER FOR AMERICA ONLINE SERVICE WITHIN 30 DAYS OF DATE OF INVOICE. AOL TRIAL MUST BE USED WITHIN 6 MONTHS OF INITIAL AOL SIGN-ON. TO AVOID BEING CHARGED AN AOL MONTHLY FEE, SIMPLY CANCEL BEFORE THE 6-MONTH PROMOTIONAL OFFER PERIOD ENDS. Premium services carry surcharges, and communication surcharges may apply in certain areas even during the promotional offer period. Members may incur phone charges on their telephone bills, depending on their calling plan and location, even during the promotional offer period. For new U.S. members only, age 18 or older. A major billing method is required. AOL may be optimizing some of your computer settings to enhance your experience on AOL. America Online, AOL, and the Triangle design are registered trademarks of America Online, Inc. TopSpeed is a trademark of America Online, Inc. 2003 America Online, Inc. All rights reserved.**

Pricing, specifications, availability and terms of offer may change without notice. Taxes, fees and shipping charges extra, and vary. New Home Systems for Dell Home Systems customers only. New Business Systems for Dell Small Business customers only. U.S. only. Dell cannot be held responsible for pricing or other errors, and reserves the right to cancel orders arising from such errors. <sup>1</sup>Power management features limit processor speed to maintain system cooling or power requirements. <sup>2</sup>You can get a copy of our limited warranties and guarantees by writing Dell USA L.P., Attn: Warranties, One Dell Way, Round Rock, Texas 78682. To purchase warranty only or for more information on other service options, please call 1-800-915-3355 or visit [dell4me.com/termsandconditions](http://dell4me.com/termsandconditions). <sup>3</sup>Service may be provided by third party. Technician will be dispatched, if necessary, following phone-based troubleshooting. Subject to parts availability, geographical restrictions and terms of service contract. Service timing dependent upon time of day call placed to Dell, U.S. only. <sup>4</sup>At-Home or On-Site service provided via third-party contract with customer. Technician will be dispatched, if necessary, following phone-based troubleshooting. Availability varies. Other conditions apply. <sup>5</sup>Where wireless access is available. Additional access charges apply in some locations. <sup>6</sup>For comparative purposes only. Actual speed varies with environment, equipment and other factors, and will be less.



## Options. Options. Options.



Dell recommends Microsoft® Windows® XP Professional for Business



### Home Desktops & Notebooks

#### DIMENSION™ 2400 DESKTOP

##### Essential Technology, Affordable Price

- Intel® Celeron® Processor (2.40GHz, 256KB L2 Cache, 400MHz 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
- 48x CD Burner
- Integrated Audio; Speakers Not Included
- Productivity Pack including WordPerfect® 12 and Microsoft® Money 2004 Standard
- 6 Months of America Online® Membership Included†
- 1-Yr Limited Warranty; 1-Yr At-Home Service‡

**\$599** Ask about No Payments for 90 Days for well-qualified customers!  
E-VALUE Code: 01030-D50705

#### DIMENSION™ 4600 DESKTOP

##### Exceptional Performance

- Intel® Pentium® 4 Processor (2.80GHz, 512KB L2 Cache, 533MHz FSB)
- Microsoft® Windows® XP Home Edition
- 256MB Shared™ Dual Channel DDR SDRAM
- 40GB Hard Drive (7200 RPM)
- 17" (16.0" v.i.s., .27dp) E773 Monitor
- Integrated Intel® Extreme Graphics 2
- 16x DVD-ROM Drive
- Integrated 5.1 Channel Audio
- Speakers Not Included
- Productivity Pack including WordPerfect® 12 and Microsoft® Money 2004 Standard
- 6 Months of America Online® Membership Included†
- 1-Yr Limited Warranty; 1-Yr At-Home Service‡

**\$769** Ask about No Payments for 90 Days for well-qualified customers!  
E-VALUE Code: 01030-D50707

#### NEW DIMENSION™ 8400 DESKTOP

##### Cutting-Edge Performance

- Intel® Pentium® 4 Processor 550 with HT Technology (3.40GHz, 1MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- 512GB Dual Channel DDR SDRAM
- 80GB Hard Drive
- 17" (16.0" v.i.s., .27dp) E773 Monitor
- 128MB PCI Express™ x16 ATIs Radeon™ X300 SE Graphics Card
- 48x CD Burner/DVD Combo Drive
- Sound Blaster® Audigy™ 2 (D) Sound Card
- Dell 5650 5.1 Surround Sound Speaker System with Subwoofer
- Productivity Pack including WordPerfect® 12 and Microsoft® Money 2004 Standard
- 6 Months of America Online® Membership Included†
- 1-Yr Limited Warranty; 1-Yr At-Home Service‡

**\$1599** Ask about No Payments for 90 Days for well-qualified customers!  
E-VALUE Code: 01030-D50715d

#### NEW INSPIRON™ 1000 NOTEBOOK

##### Value Solution

- Mobile Intel® Celeron® Processor at 2.20GHz
- 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
- Productivity Pack including WordPerfect® 11 and Microsoft® Money 2004 Standard
- 90-Day Limited Warranty; 90-Day Mail-In Service

**\$799** Ask about No Payments for 90 Days for well-qualified customers!  
E-VALUE Code: 01030-D80707m

##### Recommended Upgrades:

- Dell™ 1300 Wireless PC Card (802.11b/g), add \$39
- 3-Yr Limited Warranty; 3-Yr Mail-In Service, add \$119

#### INSPIRON™ 5150 NOTEBOOK

##### Perfect Balance of Price and Performance

- Mobile Intel® Pentium® 4 Processor at 2.80GHz†
- Microsoft® Windows® XP Home Edition
- 15" XGA TFT Display
- 512MB DDR SDRAM
- 30GB Hard Drive
- 24x CD Burner/DVD Combo Drive
- 32MB DDR NVIDIA® GeForceFX™ Go5200 AGP 4X Graphics
- Dell™ 1350 Internal Wireless Card (802.11b/g)
- Productivity Pack including WordPerfect® 12 and Microsoft® Money 2004 Standard
- 1-Yr Limited Warranty; 1-Yr Mail-In Service

**\$1349** Ask about No Payments for 90 Days for well-qualified customers!  
E-VALUE Code: 01030-D80713m

##### Make this your perfect PC:

- 40GB Hard Drive, add \$59
- 3-Yr Limited Warranty; 3-Yr At-Home Service; add \$269

#### INSPIRON™ 9100 NOTEBOOK

##### Multimedia Powerhouse

- Intel® Pentium® 4 Processor with HT Technology at 2.80GHz
- Microsoft® Windows® XP Home Edition
- 15.4" UltraSharp™ Wide Screen XGA TFT Display
- 512MB DDR SDRAM at 400MHz
- 40GB Hard Drive
- 24x CD Burner/DVD Combo Drive
- 64MB DDR ATI's MOBILITY™ RADEON™ 9700 AGP 8X Graphics
- Productivity Pack including WordPerfect® 12 and Microsoft® Money 2004 Standard
- 1-Yr Limited Warranty; 1-Yr Mail-In Service

**\$1579** Ask about No Payments for 90 Days for well-qualified customers!  
E-VALUE Code: 01030-D80715p

##### Make this your perfect PC:

- 15.4" UltraSharp™ Wide Screen SXGA+ TFT Display, add \$50
- 3-Yr Limited Warranty; 3-Yr At-Home Service; add \$269



## Small Business Desktops

### DIMENSION™ 2400 DESKTOP

#### Economical, Essential Technology Desktop

- Intel® Celeron® Processor (2.40GHz, 256K L2 Cache, with 400MHz FSB)
- Microsoft® Windows® XP Home Edition
- Productivity Pack including Corel® WordPerfect®
- 128MB Shared® DDR SDRAM
- 40GB Hard Drive (7200 RPM)
- Integrated Intel® 3D Extreme Graphics
- 48x CD-ROM; Integrated Audio
- Integrated 10/100 Ethernet
- 1-Yr Limited Warranty; 1-Yr On-Site Service\*
- Monitor Not Included

**\$399** Lease as low as **\$19/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S50703y

#### Recommended Upgrades:

- NEW WordPerfect® Office 12, add \$49
- 17" (16.0" v.i.s.) E773 Monitor, add \$100

### NEW OPTIPLEX™ 170L DESKTOP

#### Network-Optimized, Value Business Desktop

- Intel® Pentium® 4 Processor (2.80GHz, 512K L2 Cache, 533MHz FSB)
- Microsoft® Windows® XP Professional
- 128MB Shared® DDR SDRAM
- 40GB Hard Drive (7200 RPM)
- Integrated Intel® Extreme Graphics 2
- 48x CD-ROM
- Integrated 10/100 Ethernet
- 3-Yr Next Business Day On-Site Service\*
- Monitor Not Included

**\$699** Lease as low as **\$19/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S30706y

#### Recommended Upgrades:

- 48x CD Burner/DVD Combo Drive, add \$80
- Microsoft® Office Basic Edition 2003, add \$119
- 17" Dell™ UltraSharp™ 1703FP Digital Flat Panel, add \$529

### DIMENSION™ 4600 DESKTOP

#### Exceptional Performance Desktop

- Intel® Pentium® 4 Processor (2.80GHz, 512K L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Home Edition
- Productivity Pack including Corel® WordPerfect®
- 512MB Dual-Channel DDR SDRAM
- 40GB Hard Drive (7200 RPM)
- 128MB DDR NVIDIA® GeForce™ FX 5200 Graphics Card
- 48x CD Burner; Integrated Audio
- Integrated Intel® PRO 10/100 Ethernet
- 1-Yr Limited Warranty; 1-Yr On-Site Service\*
- Monitor Not Included

**\$799** Lease as low as **\$22/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S50707y

#### Recommended Upgrades:

- NEW WordPerfect® Office 12, add \$49
- Dell™ All-In-One Printer A960, add \$179



## Small Business Notebooks

### LATITUDE™ D505 NOTEBOOK

#### Balance of Price and Performance – Starting at 5.1 lbs\*

- Intel® Celeron® M Processor at 1.30GHz
- Microsoft® Windows® XP Home Edition
- 14.1" XGA TFT Display
- 128MB Shared® DDR SDRAM
- 20GB Hard Drive
- Modular 24x CD-ROM Drive
- Dell Wireless 1350 802.11b/g 54Mbps® Mini-PCI Wireless Card
- Integrated Intel® Extreme Graphics
- 1-Yr Mail-In Service; Serial and Parallel Ports Included

**\$1049** Lease as low as **\$28/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S70710m

#### Recommended Upgrades:

- Microsoft® Windows® XP Professional, add \$60
- Additional Primary Battery (6-Cell), add \$99

### INSPIRON™ 600m NOTEBOOK

#### Great Performance, Compact Design – Starting at 4.98 lbs\*

- Featuring Intel® Centrino™ mobile technology
  - Intel® Pentium® M Processor 715 (1.50GHz, 2MB L2 Cache, 400MHz FSB)
  - Intel® PROWireless 2100 802.11b 11Mbps® Mini-PCI Wireless Card
- Microsoft® Windows® XP Home Edition
- Productivity Pack including Corel® WordPerfect®
- 14.1" XGA TFT Display
- 256MB DDR SDRAM
- 30GB Hard Drive
- Modular 8x DVD-ROM Drive
- 32MB DDR ATI's MOBILITY™ RADEON® 9000 AGP 4X Graphics
- 1-Yr Mail-In Service; Serial and Parallel Ports Included

**\$1299** Lease as low as **\$35/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S80712m

#### Recommended Upgrades:

- 512MB DDR SDRAM, add \$100
- NEW Dell™ Laser Printer P1700, add \$199

### INSPIRON™ 8600 NOTEBOOK

#### Power on the Go – Starting at 6.9 lbs\*

- Featuring Intel® Centrino™ mobile technology
  - Intel® Pentium® M Processor 715 (1.50GHz, 2MB L2 Cache, 400MHz FSB)
  - Intel® PROWireless 2100 802.11b 11Mbps® Mini-PCI Wireless Card
- Microsoft® Windows® XP Home Edition
- Productivity Pack including Corel® WordPerfect®
- 15.4" UltraSharp™ Wide Screen XGA TFT Screen
- 512MB DDR SDRAM
- 30GB Hard Drive
- Modular 8x DVD-ROM Drive
- 32MB DDR NVIDIA GeForce™ FX Go5200 AGP 4X Graphics
- 1-Yr Mail-In Service; Serial and Parallel Ports Not Included

**\$1329** Lease as low as **\$36/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S80713m

#### Recommended Upgrades:

- Microsoft® Office Basic Edition 2003, add \$129
- Advanced Port Replicator, add \$169



## Small Business Servers & Workstations

### POWEREDGE™ 400SC SERVER

#### Small Business Value Server

- Intel® Celeron® Processor at 2.40GHz
- Upgradable to Intel® Pentium® 4 Processor at 3.20GHz with 800MHz Front Side Bus
- 128MB ECC DDR SDRAM (Up to 4GB)
- 40GB (7200 RPM) IDE Hard Drive
- Upgradable to 500GB of Internal Hard Drive Storage
- Embedded Intel® PRO Gigabit™ NIC
- RAID 1 Optional
- 1-Yr Next Business Day On-Site Service\*
- Small Business Pricing

**\$499** Lease as low as **\$14/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S20704h

#### Recommended Upgrades:

- PowerConnect™ 2216 16-Port Fast Ethernet Switch, add \$69
- System Including Microsoft® Windows® Small Business Server 2003 (256MB SDRAM Min. Required), now \$1098

### POWEREDGE™ 1600SC SERVER

#### High-Speed Small Business Server

- Intel® Xeon™ Processor at 2.40GHz
- Dual Intel® Xeon™ Processor Capable (Up to 3.20GHz)
- 256MB DDR SDRAM (Up to 4GB)
- 36GB (10K RPM) Ultra320 SCSI Hard Drive
- Upgradable to 876GB of Internal SCSI Hard Drive Storage
- Embedded Intel® PRO Gigabit™ NIC
- Six PCI Slots (2-64/100MHz, 2-64/66MHz, 2-32/33MHz)
- 1-Yr Next Business Day On-Site Service\*
- Small Business Pricing

**\$899** Lease as low as **\$24/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S20708h

#### Recommended Upgrades:

- PowerConnect™ 2608 8-Port All-Gigabit Ethernet Switch, add \$129
- System Including Microsoft® Windows® Small Business Server 2003 (256MB SDRAM Min. Required), now \$1398

### DELL PRECISION™ 360 WORKSTATION

#### Maximum Performance, Single Processor Workstation

- Intel® Pentium® 4 Processor (2.80GHz, 1MB L2 Cache, 800MHz FSB)
- Microsoft® Windows® XP Professional
- Dell™ OpenManage Client Instrumentation Software Available
- 512MB Dual-Channel DDR SDRAM
- 40GB (7200 RPM) IDE Hard Drive; 48x CD Burner
- 64MB NVIDIA® Quadro NVS 280 AGP 8X Graphics
- Integrated Intel® PRO 1000MT Gigabit™ NIC
- Lifetime 24x7 Dell Precision™ Dedicated Tech Support
- 3-Yr Next Business Day On-Site Service\*
- Monitor Not Included

**\$1199** Lease as low as **\$32/mo.**, (48 prmts.™)  
E-VALUE Code: 01030-S40711y

#### Recommended Upgrades:

- 3-Yr Same-Day 4-Hour (5x10) On-Site Service, add \$199
- 19" Dell™ UltraSharp™ 1901FP Digital Flat Panel, add \$699

The latest technology for less. Easy as



Click [www.dell.com/pcmag](http://www.dell.com/pcmag) Call 1-800-433-8099