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THE INDEPENDENT GUIDE TO TECHNOLOGY

SEPTEMBER 20, 2005

OUR ANNUAL READER SURVEY

Best & Worst

**WHO'S THE MOST RELIABLE?
YOU MIGHT BE SURPRISED!**



HELP

WHAT TO DO WHEN THINGS GO WRONG

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\$1049



HP Compaq nc6120

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- Memory: 512MB
- CD-RW/DVD-ROM combo drive
- 15" active-matrix display

Recommended accessories and services:
SimpleTech 512MB memory upgrade **\$117.59** (CDW 550316)
HP Care Pack 3-year, next business day, 9 x 5, onsite warranty **\$159.90** (CDW 519763)

ThinkPad T42

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor 725 (1.60GHz)
- Integrated Intel® PRO/Wireless 2200 Network Connection (802.11b/g)
- Memory: 256MB
- CD-RW/DVD-ROM combo drive
- 14.1" active-matrix display

Recommended accessories and services:
Kingston 512MB memory upgrade **\$129** (CDW 554573)
ThinkPlus USB fingerprint reader **\$79** (CDW 760444)
ThinkPlus 3-year, next business day, 9 x 5, onsite warranty upgrade **\$269.88** (CDW 784827)

\$1299 NOTEBOOK
CDW 699585
-200 TRADE-IN*
\$1099



Toshiba Tecra A5-S416

- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor 730 (1.60GHz)
- Integrated Intel® PRO/Wireless 2200 Network Connection (802.11b/g)
- Memory: 512MB
- CD-RW/DVD-ROM combo drive
- 14" WXGA active-matrix display

\$1149 NOTEBOOK
CDW 793396
-200 TRADE-IN
\$949

TOSHIBA



Sony® VAIO® T340 Notebook

- Intel® Centrino™ Mobile Technology
 - Intel® Pentium® M Processor ULV 753 (1.20GHz)
 - Integrated Intel® PRO/Wireless 2200 Network Connection (802.11b/g)
 - Integrated wireless Wide Area Network (WAN) technology
 - Memory: 512MB
 - CD-RW/DVD-ROM combo drive
 - 10.6" WXGA active-matrix display
- Recommended accessories and services:
Sony mobile optical mouse **\$40.44** (CDW 642238)
Sony Service Pack 2-year, 9 x 5, onsite warranty upgrade **\$199** (CDW 777927)

\$2049 NOTEBOOK
CDW 790094
-200 TRADE-IN
\$1849

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PROFESSIONAL



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- 60GB hard drive
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- 15" active-matrix display

\$799 NOTEBOOK
CDW 773520
-200 TRADE-IN
\$599

acer.



Recommended service:
Acer 3-year total coverage warranty upgrade **\$199** (CDW 522111)



Media sold separately

Gateway 4550BZ Notebook

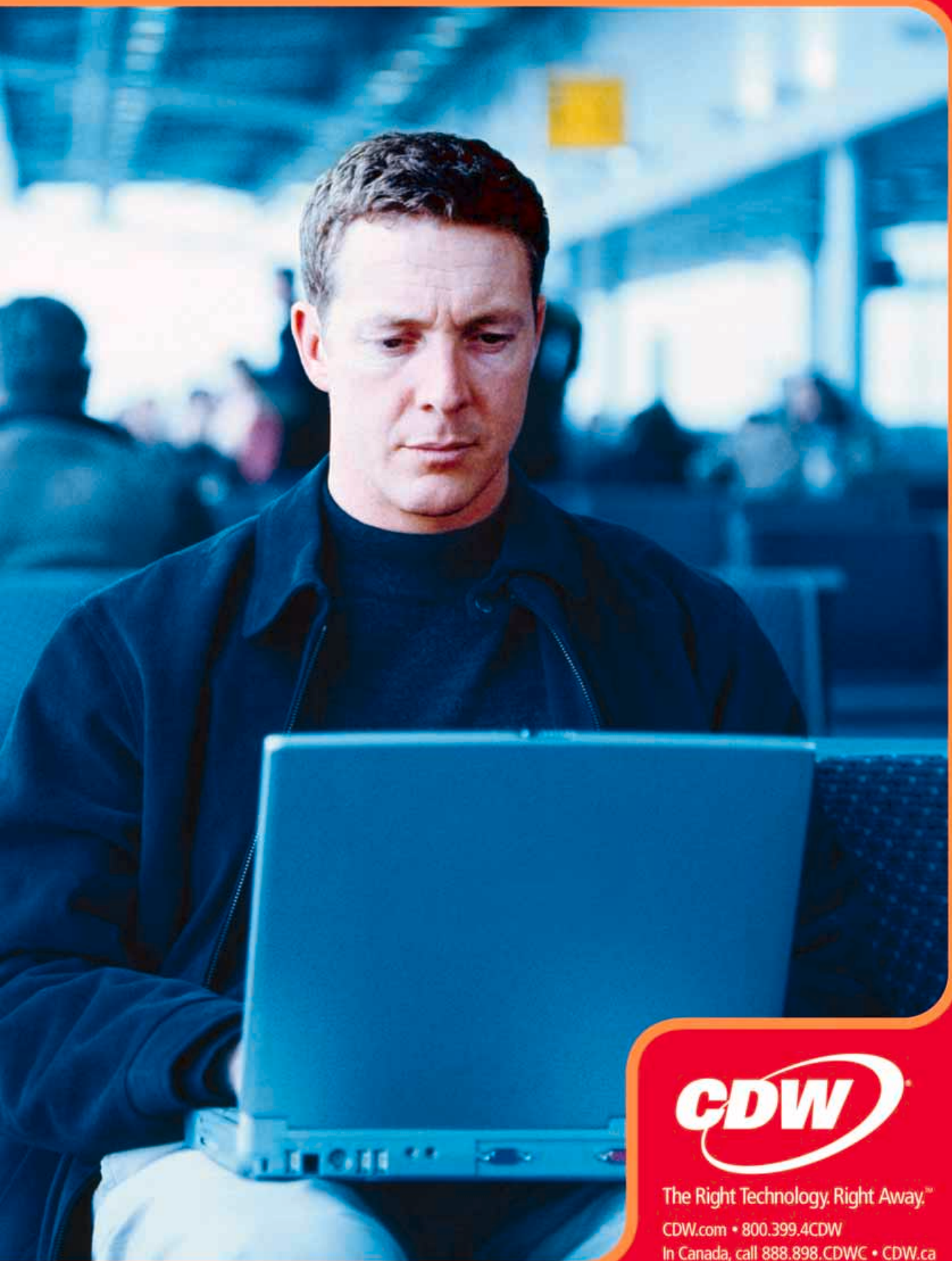
- Intel® Centrino™ Mobile Technology
- Intel® Pentium® M Processor 725 (1.60GHz)
- Integrated Intel® PRO Wireless 2200 Network Connection (802.11b/g)
- Memory: 512MB
- Approximately 1" thick
- 15" active-matrix display

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Toshihiko Suda

Senior Manager, Nissan Motor Company, Ltd.

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Forward Thinking



Tech Support: Still a Ways to Go

Every year around this time we report on the state of computer reliability and technical support. And every year we sigh. The industry still has a long way to go toward making PC reliability rock solid and improving technical support.

Over the past year, most of the major PC manufacturers have told us that they are working hard on improvements to their technical-support operations. But their ratings in our annual reader satisfaction survey aren't much better than they were a year ago.

Among Windows and Mac systems that are less than four years old, we see very little change over the past three years. Overall satisfaction with desktops and notebooks—as well as satisfaction with their reliability—is pretty good, but people are far less happy with the quality of technical support and repair services of PC manufacturers. Tech-support scores are up a bit after tumbling in 2004, but they're still much lower than scores on other measures.

I attribute the unimpressive tech-support scores partially to companies' moving the bulk of their tech support online. That's great when you can find the information you want but frustrating when you can't. And people who call tech support complain about technicians who, whatever their proficiency, are hard to understand, perhaps because they're based in other countries.

But there is some good news: The number of machines needing repair or support has decreased over the past few years, probably reflecting the increased use of Windows XP (which is more stable than previous versions of Windows) and the increasing standardization of components. This improvement, despite all the problems with spyware, is a good sign.

One standout in this year's survey is Apple, which remains head and shoulders above all the other manufacturers on nearly every measure, de-

spite a few more complaints about the iMac than other Apple products. I attribute Apple's impressive scores to the integration of its computers and to the fact that nearly all viruses and spyware target Windows machines, which have a much larger installed base than Apple computers.

Among the major manufacturers of Windows PCs, results were less stellar. Dell's desktop sys-

tems won our Readers' Choice once again, and the company's support scores actually showed some improvement over what they were in 2004. But its overall rating slipped a bit, and its notebook scores were still merely average. HP, which sells under both the HP and Compaq brands, continued to post unimpressive

scores overall, though it did improve its notebook ratings. Similarly, Gateway, including both the Gateway and eMachines brands, achieved unexceptional results.

Our survey did uncover some bright spots, though, with several big makers of Windows machines breaking away from the pack. Sony earned impressive satisfaction rates for desktops, though its tech-support scores were not good. And the IBM ThinkPad line, which China's Lenovo recently acquired, continued its streak with top notebook scores.

Three newcomers to our survey also turned in impressive scores. Alienware, known for its top-of-the-line gaming machines and cutting-edge designs, scored the best of all Windows makers for desktops, earning a Readers' Choice award in its first year out. Its machines are expensive, but readers say they get what they pay for. Averatec, a smaller maker of notebooks and tablet PCs, posted very good scores for a new vendor, even though it doesn't sell the most expensive products. And newcomer Shuttle also had impressive results.

For comprehensive survey results, see our story, starting on page 80.

The IBM ThinkPad line continued its streak with top notebook scores, while Dell's desktop PCs won our Readers' Choice once again.

READERS RATE THE INDUSTRY

Satisfaction with tech support and repairs lags far behind satisfaction with desktops and notebooks themselves.

	DESKTOPS*			NOTEBOOKS*		
	2003	2004	2005	2003	2004	2005
Overall	8.4	8	7.9	8.3	7.9	8.1
Reliability	8.4	8.1	8.1	8.4	8.1	8.2
Tech support	7.1	6.4	6.7	7.3	6.3	6.8
Repairs	7.5	6.8	7	7.4	6.6	6.8
% needing repairs	23%	18%	19%	23%	21%	22%

*Based on averaging all user responses; may not match brand averages.

Forward Thinking

MICHAEL J. MILLER

Why Your Computer Isn't Very Reliable

The huge surge in spyware and other threats has been the biggest problem with computers in recent years. We've always had a few viruses and worms around, but up-to-date antivirus software can keep most of them at bay. Now I run into people all the time who complain about their slow-running systems and annoying pop-up ads. These problems are due mostly to Internet downloading. I hear the most complaints from parents with teenage children.

According to the Pew Internet & American Life Project, almost 70 percent of home Internet users—about 93 million American adults—say

they have experienced at least one problem in the past year that is consistent with the problems of spyware- and virus-infested systems. Most of the respondents don't know what causes the problems, but 43 percent say they have had spyware or adware on their home computer. And nine out of ten Internet users say they have changed their behavior online to prevent software intrusions.

It's good news that people are protecting their systems, but the fact that the problems are so widespread is an indictment of Windows, of antivirus programs, and of all of us who try to educate users about the threats. We all have to do a better job.

The Real Problem with San Andreas



You've heard the fuss about Grand Theft Auto: San Andreas. Someone posted a mod on the Net that unlocks a scene known as "hot coffee," which shows some simulated sex. People were outraged, and Congress immediately started hearings to create tougher standards for video games.

The Entertainment Software Rating Board (ESRB) changed the rating to AO (Adults Only) from M (for Mature audiences, ages 17 and up), and many stores pulled the game from their shelves.

There are no heroes in Grand Theft Auto, and there are no heroes in this story either. Rockstar Games, which developed the game, and the publisher, Take-Two Interactive Software, were either negligent in not cutting the material or naive in

thinking they could ship the game with this content in it—even if the offending scenes were turned off—without provoking outrage. Rockstar should have known that someone would find these scenes.

Yet the reaction of some people in Congress and certain interest groups is overblown. They're concerned that children can download the mod, play the game, and after a few hours, get to the naughty bits. I almost hate to point this out, but anyone who really wants to can find far worse on the Internet in a lot less time. Changing the way games are rated isn't going to change that fact.

The more fundamental problem is that the content of the game—in which you play a criminal and get rewarded for antisocial behavior—is not suited for children. The same goes for 25 to Life, whose protagonist kills cops. The issue is a rating system that has become so arbitrary that most parents ignore it. The difference between M and AO is ill-defined at best. Almost no games are rated AO, because stores won't carry such games. (The same is true for X-rated movies.) Since games are rated voluntarily by the industries, more and more questionable content gets the M rating.

Wouldn't we be better off if such antisocial games were rated AO in the first place? For this to happen, a reasonable number of stores would have to carry such games, because otherwise the industry won't rate games AO. Then the ESRB would urge the stores not to sell to minors. Buying such games would be just like buying cigarettes or liquor. This isn't a perfect solution, but it makes a lot more sense than demonizing one game for some scenes that you can't even get to without hunting online for special codes.

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.

Gadget of the Month

Global positioning system (GPS) receivers are modern-day wonders, but we rarely stop to think about the potential the technology holds. I took the Garmin StreetPilot c330 with me on my summer vacation; it's the smallest, least expensive GPS device I've seen that can store maps for the entire country. It doesn't have all the features an experienced GPS user might want, but it gave me the directions I needed. And it made me think about how this technology will soon appear in all sorts of products. I wouldn't be surprised

if GPS units were soon available for the mass market, built into all cars and mobile

phones. The GPS may also become a critical tool in law enforcement, enabling police officers to track a car's route and location. Get ready for GPS devices finally to come of age.



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■ 1&1 Photo Gallery	✓	✓
■ 1&1 Dynamic Content Catalog	✓	✓
■ PDF2Web Converter	✓	✓
■ DynamicSiteCreator	✓	✓
■ Graphic archive	✓	✓
■ Software suite worth \$600	✓	✓
■ FrontPage extensions	✓	✓
■ CGI library	✓	✓
■ Active Server Pages	–	✓

DOMAIN NAMES

■ Included Domains	1	1
■ Subdomains	10	10
■ Run multiple independent sites	✓	✓
■ Full DNS management	✓	✓

E-MAIL

■ E-mail accounts, 1 GB space each	200	200
■ Aliases, auto-responders, forwarding	✓	✓
■ 1&1 WebMail	✓	✓
■ Spam filtering for all accounts	✓	✓
■ Virus protection for all accounts	✓	✓

SECURITY FEATURES

■ Protected by up-to-date firewall	✓	✓
■ Daily backups	✓	✓
■ Password protected directories	✓	✓
■ Dedicated SSL Certificate	optional	optional

SUPPORT

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■ 24/7 e-mail support	✓	✓



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– Microsoft packages

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COVER STORY

80

18th Annual Reader Satisfaction Survey

See which desktops, notebooks, and printers are tops this year among the nearly 14,000 readers who responded to our annual survey. Find statistics on which makers' products need the most repairs, whose are the most reliable, who provides the best support, and much more.

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FINDING HELP

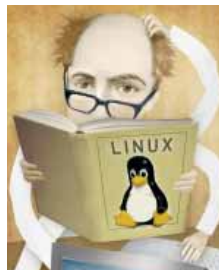
95 Who You Gonna Call?

Software's crashing, hardware won't work, pop-ups taking over? You need help! We called five tech support services and found some were a waste of time and money. Which geeks are the geeks to call when your PC is up a creek?

OPERATING SYSTEMS

103 D.I.Y. Linux

Looking for a challenging project? If you are a do-it-yourself type and have an old PC at home, you might consider creating your own Linux box. Follow our step-by-step instructions on how to install and customize a new system.



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ULANOFF ONLINE

► And each Wednesday, Lance Ulanoff puts his own unique spin on technology. Visit

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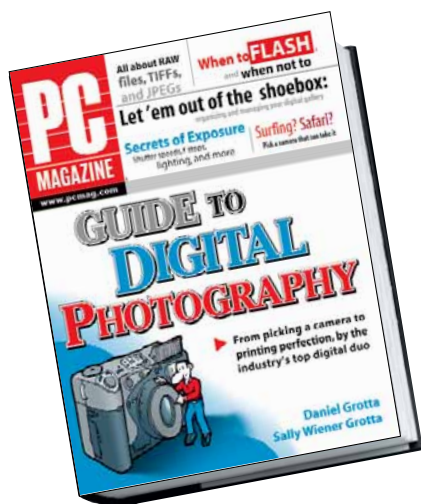
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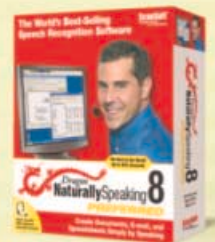
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Watson, I Need You

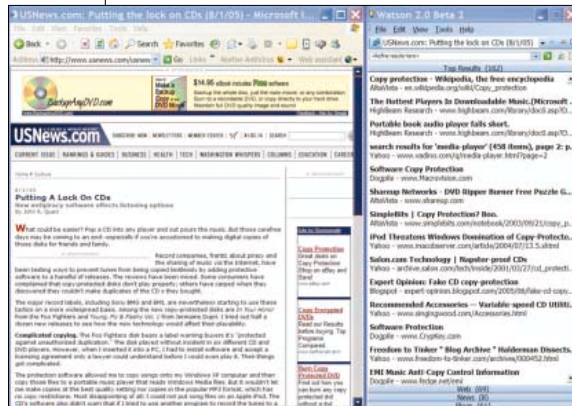
Intellex's smart search tool watches over you as you work.

HAVE YOU EVER worked all night on a PowerPoint presentation, only to discover that a coworker had already created the same presentation and put it on the company server? A new intelligent search tool could help you avoid those Homeresque "D'oh!" moments.

Version 2.0 of the context-sensitive Windows search tool called "Watson," developed by Chicago-based Intellex, will debut this fall. The application monitors what you are working on—be it in PowerPoint, Microsoft Word, or a Web page—and automatically conducts searches in the background. It scours search engines, documents on your PC, and even the corporate server to uncover relevant information.

"Say you're working on a presentation on global warming," explains Intellex CTO Jay Budzik, "Watson will watch what you're doing and find news items, reports from the EPA, and any related items on your desktop."

Watson differs from personal search tools, such as Google Desktop Search, in that it does not build an index or record your behavior. Watson's algorithm reads only what you are immediately working on when it creates its search-engine queries of 10 to 15 words. In



informal tests we conducted, results suggest that users will be happy to pony up the \$10 monthly subscription fee. Motorola has installed the first version on 60,000 desktops to tap 5 terabytes of data.

The program works only with popular applications, such as Word and Outlook, but Budzik hopes that a Watson-like tool will eventually solve more complex mysteries. "No matter what you're doing, this kind of software could help you, say, by watching what you're watching on TV and offering relevant services," he says. And you thought TiVo's suggestions were annoying.—*John R. Quain*



Color Splash

If you're prepared to shell out the money, NEC has a new breed of display for you. The company's 21.3-inch Spectra-View LCD2180WG monitor is the first desktop display to use red, green, and blue light-emitting diode (LED) back-lighting instead of the fluorescent tubes found in typical LCD monitors. Three years in the making, the \$6,999 display offers 1,600-by-1,200 resolution and is expected to exhibit an extremely broad color gamut.

"Eventually, we'll be able to bring this technology to a wide range of products," says Andres Maldonado, an NEC director of product marketing. "The prices will come down." For the time being, the target audience is high-end users in fields such as graphic design. Look for our review in an upcoming issue.—*SR*

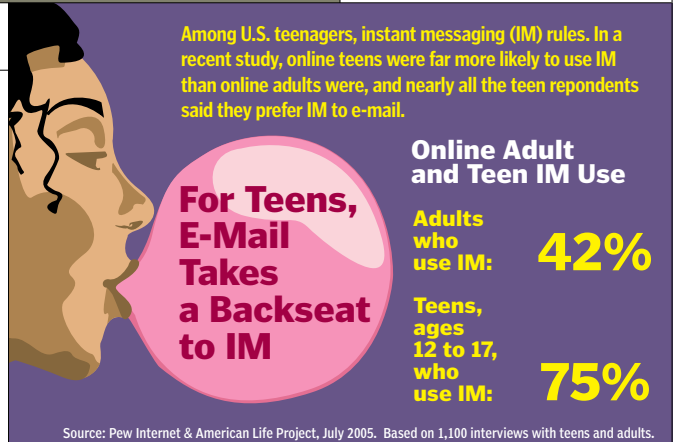
GLOBAL GAMERS Online gaming is on a tear, especially in Asia. Subscribers to online games in the Asia-Pacific region outside Japan spent over \$1 billion in fees last year, according to IDC researchers. That's up 30 percent from the year before.

More Memory for Your Pix



IS YOUR SD CARD all loaded up with photos and songs? Fret not. Pretec Electronics, based in Fremont, California, has released what it claims is the highest capacity SD card yet, storing 4GB of content with an access speed of 20 MBps. But at \$699 list, the cards aren't cheap; many 1GB cards cost less than \$100.

SD cards work in many types of portable devices, including cell phones and digital cameras, and Pretec's is based on the SD 1.1 specification. Several other manufacturers are expected to ship 4GB SD cards by year's end, which should lead to healthy price competition.—*Sebastian Rupley*



Yahoo! Eyes Widgets

Widgets—pop-up software applets that graphically deliver targeted information such as local maps—have already dropped anchor in Apple's Mac operating system, but now they're setting sail for Yahoo! territory. The company's late June acquisition of Pixoria, overseers of the popular widget application Konfabulator, will give the cross-platform program access to all of Yahoo!'s online content. Following the release of Kon-



fabulator 2.1, the hope is that widget creators will create Yahoo!-specific content.

"Widget creators see it as sort of a way to build the next generation of the Internet, and in their mind, part of that isn't necessarily tied to a Web browser. With widgets, you can get online content, but it's on your desktop," says a Yahoo! spokesperson.

While Yahoo!'s integration of current widgets is just beginning to accelerate, the company is planning an official launch of its adaptation of Konfabulator later this year.

Yahoo!'s acquisition has also turned Konfabulator into a free download. If you bought version 2.0 or greater, browse the forums at www.konfabulator.com to find out how you can get your \$20 registration fee refunded. —David Murphy

Virtual Sociology

ARTIFICIAL LIFE FORMS inhabiting virtual worlds are nothing new to fans of computer games like *The Sims*, but rewiring artificial life for scientific research is a new frontier. The New and Emergent Worlds Through Individual, Evolutionary and Social Learning (NEW TIES) project is developing a computer-simulated society, observed by experts, which may eventually benefit information technologies, computing systems, AI, and linguistics.



Backed by a group of European universities, NEW TIES will place 1,000 *agents* in a simulated world on a 50-node network, with the goal of seeing them evolve a culture. "The project can help us find out about the factors necessary for certain attributes of society to come into being," says Professor Ben Paechter of Scotland's Napier University.

Paechter adds that agents will start with few skills and will need to learn how to acquire food and to communicate. Their language will evolve from scratch, says Dr. Paul Vogt of Tilburg University in the Netherlands.

As to how NEW TIES might benefit real societies, Paechter posits that it makes otherwise impossible experiments possible. For example, the agents could be stripped of key resources in their environment, and the effects of the hardship studied in ways that would be inappropriate in a real society. You can track the virtual culture at www.new-ties.org. —Karen Jones

SOUND SEARCHES

Yahoo! has debuted the prerelease version of its Audio Search service, and you can try the free offering at <http://audio.search.yahoo.com/audio/learnmore>. It allows you to search for popular and hard-to-find music tracks, podcasts, interviews, speeches, newscasts, stand-up comedy acts, sound effects, and more. Publishers of audio content can submit audio to the index through Media Really Simple Syndication (Media RSS). Yahoo! has also formed partnerships with eMusic, Napster, Real Networks' Rhapsody, and others for music searches. Over 50 million audio files are currently indexed.

Shades of *Blade Runner*

AT FIRST GLANCE, the woman depicted here may look like just that: a woman. But she's not. She is an android named Repliee Q1 (androids in the movie *Blade Runner* were called "replicants"), and she is seated next to her creator, Hiroshi Ishiguro. Unlike robots primarily designed to do tasks, Repliee Q1 is designed to look and move like "an average Japanese woman," according to researchers at Osaka University's Intelligent Robotics Laboratory, directed by Professor Ishiguro.

Ishiguro's lab created Repliee Q1 in conjunction with Kokoro with the focus of



making her motions and responses human-like. Although she is built on a metallic skeleton, her skin is made of silicone so its appearance and feel are like a human's. Skin sensors are attached to her body in 11 places, including her brow, cheeks, and palm. The sensors allow her to respond to touch as a person might,

and she flutters her eyelids and shifts her weight naturally. She also simulates breathing and has limited speech capability.

Repliee Q1's joints are controlled by air actuators, which help eliminate jerky movements. The sensors and actuators are programmable.

"Natural communication with humans in everyday situations is one of the most important functions of humanoid robots," reads Ishiguro's lab mission statement. Researchers have also created an android named Repliee R1. She's a 5-year-old Japanese girl. Even androids like a little company. —SR

SEARCH ANYWHERE AOL has launched a prerelease version of its Mobile Search Service for WAP-enabled devices. The new service facilitates Web browsing and searching, including shopping searches and AOL's search service. Find it at <http://beta.aol.com>.

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—*Sebastian Rupley*

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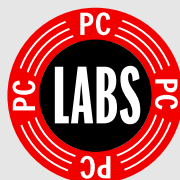


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New Ways to Web

THE MAGAZINE
WORLD'S LARGEST
COMPUTER-TESTING
FACILITY



BY RICK BROIDA

The Web is a wondrous resource, but the vast majority of visitors simply use it to check e-mail, catch up on the news, and maybe find some bargains. But new online services make it possible even for casual users to do much more. In the following pages we review three ways to establish a Web presence easily, without knowing the first thing about HTML coding. We also test two sites that help groups coordinate their busy schedules via the Web.

Bubbler

The dirty little secret about building Web sites is that it's really no easier today than it was ten years ago. For the most part, you still have to register a domain name, find a hosting service, buy design software, and learn at least a little HTML.

Enter Bubbler, a soup-to-nuts Web publishing service that carves out a domain, hosts your site, and makes content addition a drag-and-drop affair. In roughly the time it takes to read this review, you could create an attractive home page stocked with files, photos, links, and bloglike posts. Indeed, Bubbler's multimedia-savvy publishing capabilities could easily find an audience among realtors, podcasters, small-business owners, and even parents who just want to photo-blog about their kids. It's an ingenious concept, and a very strong effort for a Version 1.0 release.

Signing up for Bubbler entitles you to hosted space on the company's servers (giving you

a "bubbler.net/yourdomain" address), though you can also publish on your own domain. After choosing a subscription plan—as low as \$5 per month for 10MB of storage and ranging to \$100 per month for a 4GB site—you download the Bubbler client software and start building your site. First step: Choose a template. Bubbler offers 28 of them, all divided into categories like Enterprise, Small Business, and Personal. They're an aesthetically pleasing lot, reminiscent of the templates available on Google's Blogger service, with styles ranging from basic white to photographic backgrounds. The only preview you get, however, is a small thumbnail; to see how your page will really look, you have to select any given template and view it in your browser.

This simple act of sift-

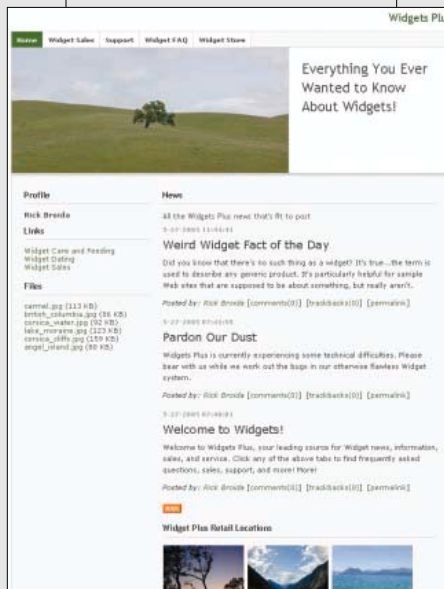
ing through the available styles demonstrates Bubbler's unique approach to Web publishing. When you pick a template and click Update, your Web site—not your local browser, but your

actual site—instantly reflects the change. Likewise, when you drag a note or photo to the Bubbler client, the item immediately appears. This real-time, joined-at-the-hip method of content addition and modification can be truly liberating, since it lets you focus on the guts of your site without getting bogged down by the mechanics.

Each template includes fixed-content sections—Notes, Links, Photos, and so on—that correspond with tabbed content windows in the Bubbler program. You compose notes—blog entries, essentially—within Bubbler proper; its editor provides word processor-style formatting tools, so you're not limited to raw text. There's also a separate editor, Reporter, that lets you input a stream of time-stamped, instant message-like

posts. This could come in handy for, say, blogging "live" from an event.

Although Bubbler lets you rename any content section, you can't add new sections within a page. You can, however, create unlimited additional pages, for which Bubbler automatically creates a tabbed navigation system. It's a brilliant way of avoiding all the messy page linking that normally goes into site design. HTML-savvy users can also modify the template itself, adding extras like search forms and custom graphics. Thankfully, enabling RSS feeds requires no such tinkering; all it takes is a few clicks in the Bubbler



BUBBLER TAKES THE BLOGGING concept to a new level. A Bubbler site is as easy to set up and maintain as a blog, but is much richer.

USEFUL KEYBOARD SHORTCUTS for navigating digital magazines

PAGE DOWN flip to next page

PAGE UP flip to prior page

ENTER zoom in on left page

SHIFT+ENTER zoom in on right page

ENTER zoom back out to full-page view

C flip to Table of Contents

HOME flip to front cover

END flip to back page



USEFUL KEYBOARD SHORTCUTS for navigating digital magazines

PAGE DOWN flip to next page

PAGE UP flip to prior page

ENTER zoom in on left page

SHIFT+ENTER zoom in on right page

ENTER zoom back out to full-page view

C flip to Table of Contents

HOME flip to front cover

END flip to back page



LOOKS

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

44 HP Compaq nx6125
45 Our Top Notebooks
46 Motorola E815, Nextel i355
46 Nextel i605, i836; Nokia 8801
47 Our Top PDAs and Phones

48 HP dx5150 Business Desktop
48 HyperKore HK-Xtreme
50 Our Top Desktop PCs
51 OurPictures 2.0 Deluxe
51 PhotoShow Deluxe



54 ViewPoint Photos
54 Photofiddle.com
55 Shutterfly Collections

RED denotes Editors' Choice.

client to add the familiar orange "bug" to any section.

The service provides some useful collaboration tools. Based on your subscription plan, you can invite (via e-mail) a specified number of other users to join your site, thus enabling them to contribute their own files, photos, and the like. The Bubbler client retains a version history for public files and shows posting activity for all contributors. It can even notify you via phone or e-mail when changes have been made.

The client software, though small and simple in its design, could use some tweaks. The option to enable password protection, for instance, inexplicably resides in the Rename Page window. The template selector lets you drag in a photo or two (say, a company logo or a picture of yourself) to give your page a personalized look, but not all the templates have spots for them. In those that did, our dropped-in photos rarely fit the available space. But Bubbler doesn't provide the necessary dimensions, so plan on lots of trial and error. Also, Bubbler lacks a local Save feature. While copies of your files and photos are automatically stored in a My Documents subfolder, notes aren't preserved.

Bubbler's subscription plans range from \$5 per month (\$49 annually) to \$100 per month (\$999 annually), with à la carte options available for adding storage space, bandwidth, and contributors as needed. All plans let you create an unlimited number of pages on your site, as well as multiple sites (with different subdomains)

within your account.

Bubbler has all the makings of a hit. It's like Web-site-in-a-can, a spray-on creation tool that spares users the rigors of HTML. It may have taken years to happen, but creating pretty, versatile Web sites just got a whole lot easier.

Bubbler

Plans start at \$5 per month, or \$49 annually. Bubbler, www.bubbler.com.

●●●●○

Homestead QuickSites



True to its name, Homestead QuickSites whips up Web sites in a hurry. As with Bubbler, you can establish an attractive, functional Web presence without knowing the first thing about Web hosting or HTML. But whereas Bubbler uses a blog-tool-on-steroids approach (operating entirely from a local client), QuickSites is better thought of as a full-blown—though approachable—Web site creation tool and hosting service.

QuickSites caters to individuals and small-business owners, providing everything you need: a hosted domain, an e-mail address, 100MB of server space, and blissfully easy site-building tools. Just choose from hundreds of themed templates, mix in your own text and graphics, and—presto!—you are online.

Such quick-and-dirty Web

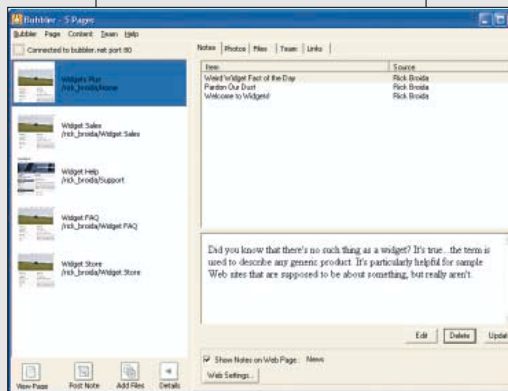
publishing services aren't new, but QuickSites surpasses most of them. Without so much as an e-mail address, you can browse Homestead's collection of 800-plus templates, select one, and start editing it. Before your credit card ever comes out of your wallet, you can see exactly how your finished site will look and even get a temporary URL for it. Contrast this with services that require you to subscribe before you get any hands-on time with templates and design tools. QuickSites lays all its cards on the table, thus reducing the potential for unpleasant surprises later on.

The only potential "gotcha" is that use of the templates is not free. In addition to the standard hosting fee (\$24.99 per

al" templates cost \$49, while business and service templates, which represent the bulk of the library, sell for \$99 and up. Paying more, however, doesn't necessarily net you a flashier design or more features; some of the \$49 offerings look just as snazzy and offer the same functionality as the \$199 selections. Only at \$299 do you gain anything tangible—namely, a few animated site elements. All told, considering what you'd pay a freelance Web designer for the same results, the prices are very reasonable.

The templates span a broad range of categories, from architecture to day care to catering. To simplify searches, Homestead lets you type in keywords or browse the index. After you choose a template, you can immediately start adding content via the browser-based QuickSite Editor. Click on any text box to add copy, or any photo box to replace the default image with a locally stored graphic or a stock photo from Homestead's extensive library. Your site can include up to ten pages, any of which can be renamed or reordered within the navigation toolbar. In short, QuickSite

Editor is surprisingly capable. It's also surprisingly easy. Move your cursor over any modifiable item and a help box appears to explain what it's for and how to change it. More hand-holding comes in



THE CREATION PROCESS for Bubbler sites is exceedingly easy: Start with a template, then simply type in text and drag in photos, and you're done.

month; less if you forgo certain options), Homestead charges between \$49 and \$299 for the use of its templates. Thankfully, they're priced according to audience: Baby, Resume, Wedding, and most other "person-

the form of online training videos and classes conducted by live instructors, both free. Equally impressive, the company's toll-free support number appears prominently in QuickSite Editor, as though Homestead actually wants you to call. Alas, free phone support expires after 30 days.

If you need to outfit your site with more advanced features, like a blog or a storefront, you'll need to graduate to Homestead's QuickSite Builder application. This free download provides a wealth of tools (far exceeding what you get with Bubbler's client), all organized within a convenient, friendly interface. Available features include chat rooms, RSS feeds, user-downloadable files, and much more. But you can't use your template as a starting ground; you're literally starting with a blank page in Builder.



HOMESTEAD QUICKSITES lets small businesses and individuals create professional-looking Web sites, with no coding required.

As a hosting service, Homestead provides all the usual amenities. You can modify your plan as necessary, adding or subtracting features like e-mail addresses, extra bandwidth, and so on. All told, QuickSites delivers on its promise of fast, versatile, ef-

fortless site building. It should be the first stop for any small business that hasn't yet staked a claim on the Web.

Homestead QuickSites

\$24.99 per month, plus one-time fee of \$49 to \$299 for a template. Homestead Technologies Inc., www.homestead.com.



JotSpot

Not sure what to make of JotSpot? Think of it as "WikiSpot" and you'll gain a clearer picture. The service, currently in public beta, puts you at the helm of a Wiki, a site where multiple users can collaborate on anything—even the site itself. You might use such a locale to share and revise materials for a marketing project or stake out a virtual meeting ground for a sales team. JotSpot aims to simplify the creation of such sites by giving you a WYSIWYG toolset and a selection of prefab application templates. It's Wiki in a jiffy.

After you create an account, JotSpot provides you with a "yourwikiname.jot.com" address. It's at this destination, and within your browser, that you construct, edit, and interact with pages. JotSpot's default editor includes a familiar, Microsoft

The Web as Organizational Tool

BY JANET C. RUBENKING

One of the best things about the Web is that it's an easily accessible resource for nearly everyone. A slew of new services are cropping up to exploit that fact, and we tried out two—Trumba OneCalendar and GoDaddy Online Group Calendar—that provide families and other groups with online calendars to track and coordinate busy schedules.

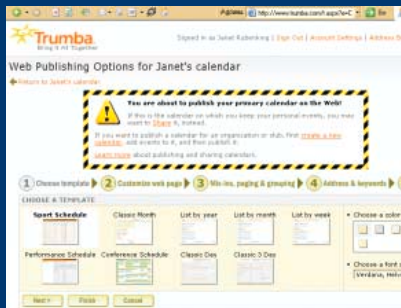
TRUMBA ONECALENDAR

Where are your kids supposed to be next Thursday at 6:00? And does it conflict with where you're supposed to be? Probably, but to know for sure, you likely have to check your Microsoft Outlook calendar as well as the photocopied calendar page stuck on the fridge. And it's the sweet that your wife still uses that Coach leather DayTimer you got her for your first anniversary, but her entries there do you no good at work. Indeed, keeping track of multiple agendas and coordinating with others is a Herculean task. Trumba OneCalendar may solve these problems.

Trumba is a Web-based social-networking calendar service for families and orga-

nizations. You can create private and public calendars; share your calendar with friends, family, and colleagues; and even synchronize with your calendar in Outlook. You can add events and appointments online, send alerts through e-mail or mobile phone, and access your schedule from any computer.

Trumba is easy to use and gives you multiple calendar options. You can then view your calendars by day, in three-day segments, in a week-at-a-glance view, in a monthly view, or as a list of all upcoming events. Calendar entries can include image



WITH TRUMBA ONECALENDAR, groups can share and update one central calendar.

files (BMP, GIF, JPEG, PNG, and TIFF are supported), and each calendar entry form includes a description of the event, its location, a start date and time, an end time, notes, and a Web link. Just as in Outlook, you can set recurring events and mark your time as free, busy, tentative, or traveling. You can invite non-Trumba members to view a calendar via an e-mail message and link.

Web-based calendars aren't new. Yahoo! has a respectable (and free) calendar for anyone with an account. It shares many of the same features as Trumba, but you are limited to one primary calendar, and there are no subcalendars. (Trumba supports unlimited subcalendars—a desirable option for an organization with multiple commitments.) Both services let you print, but Trumba's calendars are easier to read and include a bit more detail. Best of all, in Trumba you can subscribe to multiple calendars and see events from other calendars on your primary calendar.

Of course, the service works well only if all members of your family or organization use it. But the intuitive interface and Web-based model make forcing the habit easier.

Word-like set of toolbars, though you can also edit using Wiki markup code or XML.

Once you've cobbled together a home page consisting of text, images, links, and even tables (impressive ones at that), you can integrate any of two dozen application templates. These range from simple extras like call logs and to-do lists to more sophisticated tools for project management, recruitment, CRM, and so on. To give your site more of a community feel, you can also add blog, forum, and knowledge-base templates. JotSpot lets you modify any template as needed, but you'll need some experience with markup languages.

With one or more pages ready to go, collaborators can post comments, share and revise files, add new pages, and so on. The really killer feature: Every page gets its own e-mail address, so users can post new



JOTSPOT'S EASY TABBED INTERFACE lets you (and others) share and collaborate on just about anything. The WYSIWYG editor is approachable, though linking pages requires some Wiki knowledge.

information just by messaging to that address. We also liked the option to import Word and Excel documents, though doing so replaces any existing content on a page. On our tests, JotSpot inexplicably inserted several extra line breaks between paragraphs.

Although the WYSIWYG editor makes JotSpot initially accessible to rookie Wikimasters (and potential collaborators),

the learning curve becomes more difficult after you complete that first page. For instance, the vital function of creating links between pages requires you to understand some Wiki parlance and methodology. It's not rocket science, but it can be daunting at first, especially to users with no previous Wiki or markup experience.

And note that, though the beta is available to use, JotSpot

is still a work in progress. For example, the interface lacks a few obvious features, like a link-list of newly created pages. New users must be added or invited one at a time; there's no way to bring them aboard en masse or send bulk invitations. And if you set page permissions to allow noninvited guests to view your Wiki, they'll see grayed-out editing tools—not exactly a professional look. For now, we'd keep the customer base away and use JotSpot for company intranets, private extranets, and the like.

Put to work in those areas, JotSpot leverages the inherent power of the Wiki like no other service. Once a savvy administrator gets done crafting an intuitive site, teams large and small will benefit from its fast, flexible collaboration tools.

JotSpot

Free for personal use; business accounts start at \$9 per month. JotSpot Inc., www.jotspot.com. ●●●●○

If you're tired of finding out at 5:45 that you need to be at the soccer field at 6:00, give Trumba a look.

Trumba OneCalendar

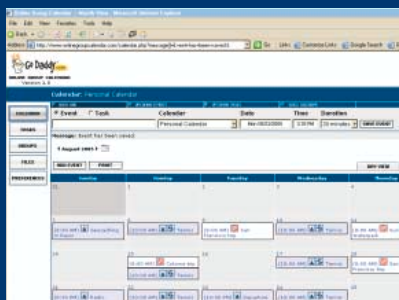
\$39.95 per user per year. Trumba Corp., www.trumba.com. ●●●●○

GODADDY ONLINE GROUP CALENDAR

Low-cost Web hosting giant GoDaddy has also entered the online calendar arena with its Online Group Calendar service. It's an affordable alternative, albeit with fewer features than pricier options like Trumba.

Online Group Calendar offers three levels of service, depending on your needs. The family-oriented Economy Edition (\$9.95 per year) lets up to 5 users share an online calendar. The Deluxe Edition (\$19.95 per year) supports up to 25 users and is ideal for small businesses and organizations. Larger groups will need the Premium Edition (\$29.95 per year), which allows up to 100 users. As with Trumba, your calendars are available wherever you find an Internet connection.

It's easy to get started with Online Group Calendar. Each account member logs in to establish his or her personal calendar. You can set preferences, such as time zones, time and date format, and day start and end, and establish access to your calendar



ONLINE GROUP CALENDAR can show daily, weekly, or monthly views of events.

for other account members. In the Calendar view, you can set the display mode to daily, weekly, monthly, yearly, or as a list of upcoming events. You create group calendars by inviting other members to join, and you can even invite Online Group Calendar users not specifically in your account to see (and optionally edit) your calendars. This is a clever convenience for, say, extended families that want to maintain one calendar for their family unit but may need access to the calendars of relatives.

Adding events to your calendars is simple. A pop-up form lets you enter details (date, time, name of the event, location, and important notes). E-mail invitations are sent automatically to the larger group using a

given calendar. Accepting an event adds it to each invitee's personal calendar. As with Trumba, you can send event e-mails to anyone, including non-Online Group Calendar members. But nonmembers will be notified only about the event; they can't see your calendar online. You can set events to be recurring and send reminders by e-mail. Need to cancel an event? That's no problem with Online Group Calendar. E-mail alerts are sent right away.

Some tasks are more difficult in Online Group Calendar than with Trumba. The only way to add the events of others to your personal calendar is by accepting e-mail invitations or manually inserting them. And while both services let you import your calendar entries into your Outlook calendar, Trumba will also send cell phone text messages. But Online Group Calendar offers features not seen in Trumba. For example, you can add attachments (such as documents) and list resources for groups.

Online Group Calendar is a respectable entry into Web-based organizational tools. It has a different feel from that of Trumba but will appeal to those looking to save some money.

GoDaddy Online Group Calendar

\$9.95 per year and up. GoDaddy Software Inc., www.godaddy.com. ●●●●○

Web Conferencing: Be Here from There

BY LEON ERLANGER

The Web conferencing and collaboration space has heated up recently, with scores of new services joining the latest revisions of existing products. Here we take a look at a total of five new offerings—four new versions of services we've seen before (Citrix's GoToMeeting, Microsoft Office Live Meeting, and Raindance Meeting Edition and Seminar Edition) and one new service (Conferral).

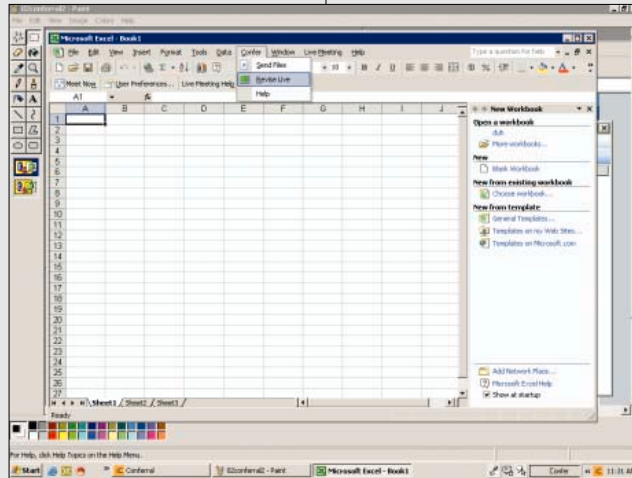
Microsoft Office Live Meeting and Raindance Seminar Edition are geared toward larger organizations, meetings, and seminars, as they contain a bevy of tools for setting up meetings, polling, Q&A, meeting controls, and administration. Raindance Meeting Edition, Conferral, and GoToMeeting lean toward smaller, more informal group-collaboration sessions, though GoToMeeting Corporate Edition has some administration features.

Based on our testing, we can say that the conference category is maturing. All of these services provide a workable set of collaboration features and meeting controls, and setting up and running meetings was relatively easy in all cases. GoToMeeting maintains its Editors' Choice status, as does WebEx Meeting Center (go.pcmag.com/Webex; 5/24/2005, page 38). But each of the others also has its strengths. Which service you choose depends on whether you're looking for a corporate seminar or team collaboration solution, and on your preferences regarding pricing and features like video conferencing, audio, and Microsoft Office integration.

Conferral

If you're looking for a simple way to fire up a team collaboration session from an Office application, Conferral can pro-

vide it for a one-time bargain charge of \$199 without any ongoing service fees. Once you install Conferral, you can set up instant meetings from within any Office application or document, or schedule meetings directly from Microsoft Outlook. Participants don't need any client software, just a Java-enabled Web browser.



TO FIRE UP an application- or document-sharing session from within Office, you simply click on Revise Live in the Conferral drop-down menu. You can also send the file you're working on.

This is a basic package that will work just fine, provided it's all you need. You won't get video conferencing, slide animations and transitions, polls, audio integration, or any of the other great bells and whistles you'll find in full-scale conferencing packages like WebEx and Raindance. But it works wonders if you want just an easy, inexpensive way to do some basic document sharing, or the ability to show a presentation to a group of up to ten online participants. You can also use Conferral to show short videos, provide remote access to files on your PC, or post files to a Conferral Web site that users can access from e-mailed links.

The interface is simple. Conferral puts a drop-down menu in your Office applications. To fire

up a meeting and application-sharing session, you simply click on Revise Live. You can also choose to present your current PowerPoint presentation live or put it into the library for showing on demand. And you can upload video files to a video library or fire up SSL-encrypted meetings from within the Conferral application.

Your system also has to be on for someone to access the stored files remotely. You can post the files you're working on to a Web site from within the application, by using a button in Outlook, or from within the Conferral application interface. You can then send a link to the files via e-mail.

It's all very basic and simple, and it works; our complaints are few. Response in Screen Confer was often slow for attendees that were granted control. The service allows you to choose between 24-bit and 8-bit color to balance quality with performance, but it didn't make much difference in our testing.

Presentations sometimes looked a little choppy on screen, though they were perfectly visible, and there's no other way to bring people into a conference besides e-mail. It sometimes took a while for our e-mail to arrive at the other end, which can be a pain if you want to hold an immediate meeting. But aside from these quibbles, Conferral is a bargain, a cinch to use, and just enough for basic collaboration.

Conferral

\$199 direct. XFormx Inc.,
www.conferral.com. ●●●●○

GoToMeeting, GoToMeeting Corporate



Version 1.1 of GoToMeeting received our Editors' Choice for its smooth operation and excellent ease of use.

Version 2.0 manages to keep both while adding some welcome new features. Perhaps the most important, for its privacy value, is the program's ability to share a single document or application rather than your entire desktop. When you click on the Show My Screen button, a little drop-down menu shows the applications you're running and lets you



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choose the one you want to share. You also have the option of showing your entire screen with the icons, background, and taskbar hidden.

As before, there's no need to upload PowerPoint presentations: GoToMeeting uses straight screen-scraping, so you simply share your PowerPoint presentation live, with excellent performance, transitions, and embedded video, though no audio. (You may have to tweak your video hardware acceleration settings in the Control Panel to get embedded video to work.)

Also new to the program is a recording capability that you can activate by choosing Show Recording Pane under Preferences and clicking the Record button. The meeting is recorded from the attendee's point of view, showing presentations and screen sharing, but no chat—although attendees can save chat sessions as separate files. You can choose to save the recording in GoToMeeting format, which requires a special codec, or you can save it straight to Windows Media format, though the processing takes longer and the quality is a little lower.

The phone portion of the conference is not recorded, so you must speak into a mic plugged into your PC's audio input to record audio, or use a device that records directly from your phone. You can also use a speakerphone, though the quality will suffer. GoToMeeting has no audio integration or video-conferencing capability from the Web, unlike Raindance, but you can mute attendees from your phone.

Other neat new additions are a one-click Meet Now capability that launches you right into a conference after you click on the GoToMeeting icon in the system tray, integration with Lotus Notes, an API to integrate GoToMeeting into corporate applications, and an unlimited-event license for 200 users.

And you now get a decent set of drawing tools. Unlike most other conferencing services, attendees don't see blank boxes, hash marks, or your GoToMeeting control panel when you open them on top of your shared applications.

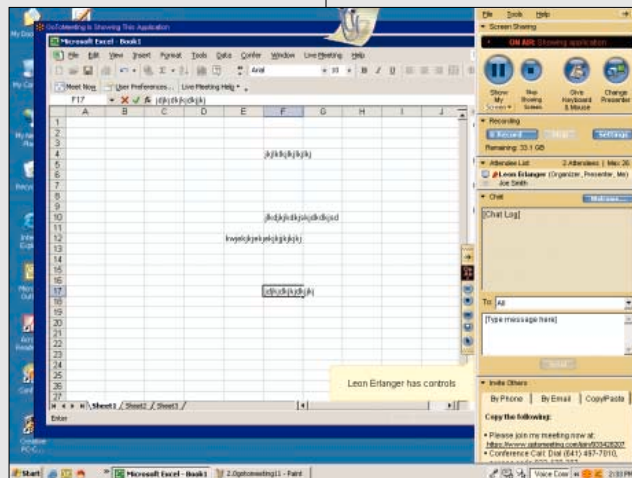
initiate meetings from quick-launch buttons within MSN and Yahoo! Messenger. Oddly, you can no longer do so from within AIM. We couldn't even send an AIM instant message with a pasted meeting link.

The program's monthly price-

and other seminar features, audio integration, or the ability to set up a meeting from an Office application, but you do get the essential features and incredible ease of use.

GoToMeeting

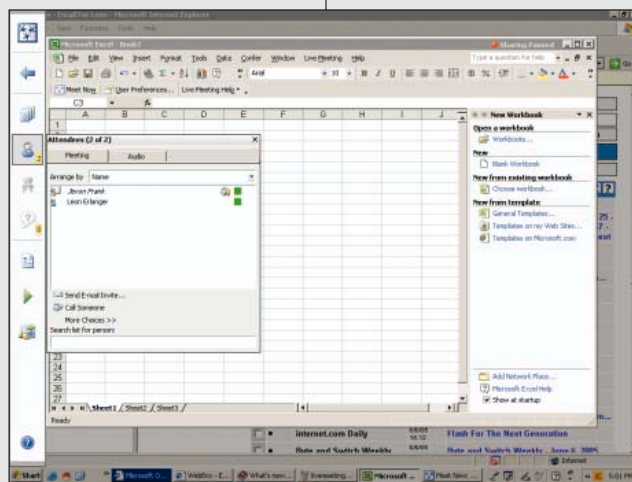
\$49 per month per user. Citrix Online LLC, www.gotomeeting.com. ●●●●●



CITRIX'S GOTOMEETING now lets you record your conferencing sessions simply by clicking the Record button. If you have a microphone or some other audio-capture device plugged into your PC, you can even capture the audio portion of a meeting.

As with the former version, you get very good collaboration controls, allowing you to grant control of the keyboard, drawing tools, and mouse to other attendees, and to change presenters and organizers during a conference. Outlook integration is also excellent, and you can

ing is low, and we also like the administrative interface, which makes it easy to set up user groups and monitor use in medium or large organizations. This is a very elegant service for small-team collaboration, if you don't need video conferencing. You don't get polling



MICROSOFT OFFICE LIVE MEETING now has full audio integration when you use one of its voice-conferencing partners, letting you mute participants via the Web.

Microsoft Office Live Meeting

Microsoft has made a lot of improvements to Live Meeting, and the result is a smoother, less-glitchy meeting experience. It starts with meeting setup, which can be done a number of ways. Outlook integration is excellent and includes the ability to set up meetings off-line and have the appointment automatically placed in the recipient's Outlook calendar. With additional plug-ins, you can also initiate application- and document-sharing sessions from within Office applications by using a Live Meeting drop-down menu.

When you move the mouse to the upper left-hand corner of the screen, a menu sidebar appears to the left of the application-sharing session that lets you see who's attending, switch to a presentation or another application, pause sharing, and assign control to other attendees. You can also initiate meetings from Microsoft's new Office Communicator, Windows Messenger, or MSN Messenger.

Microsoft doesn't provide its own audio-conferencing service but instead has partnered with MCI, Intercall, and BT to provide full audio integration. When we tried it with MCI, we could see the names of the other participants in the audio conference on-screen and those of mute callers, as necessary, from the Windows display. We no longer had to guess or remember which participant went with which telephone number, though we did have to click on a separate audio tab to get this information. As in pre-

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Connecting People

vious versions, members can assign colors to themselves to tell the presenter to slow down or speed up or that they want to ask a question. Presenters and participants can chat with each other and ask questions if the presenter allows.

Meeting controls are no longer an all-or-nothing proposition. The meeting organizer can now assign another participant to be a presenter, either during the meeting setup process or during the meeting itself. You can also assign control to another participant during an application-sharing session. And while sharing applications, you can choose between sharing your whole desktop, a single application, or just a small piece of your display, by sizing a small Snapshot frame over the data you want to share.

The presenter can tell exactly what is being shared, as the rest of the display is grayed out. There's also a zooming feature that lets the presenter expand a corner of the display. Another nice feature is the ability to lock the meeting to all subsequent participants. If they wish to attend, they'll sit in a waiting room until the presenter grants them access.

Recording (available only in the Pro version) is now easier, as the administrator or organizer can set up a default telephone number for recording audio and use that number for subsequent recording sessions. Once recording is set up in meeting options, it's easy to record a session by clicking on a Record button or via the Tools or Audio menu. With the Professional Editions, presenters and users have the alternate option of one-way Internet broadcasting using VoIP—no telephone required.

As with previous versions, the interface is excellent and the administration tools are strong. The program lacks video conferencing and the ability to integrate video and

audio in PowerPoint presentations. Otherwise, Microsoft has done everything possible to put Live Meeting near the top of its class.

Microsoft Office Live Meeting

\$3,000 one-time fee, 35 cents per minute. Microsoft Corp., www.microsoft.com/livemeeting. ●●●●●

Raindance Meeting Edition, Seminar Edition

The last time we reviewed Raindance Meeting Edition, we were very impressed by the great leap the service interface had made from functional but

co-moderator. Recordings of the entire meeting, including multimedia, are activated by hitting a Record button. Then, moderators can store recordings on a central site and provide users with password-protected access, download the recordings, and e-mail them, or just send them on CDs. Moderators can also store meeting documents on a central server and provide participants with password access.

As before, the first-rate Windows interface and task panes make it a breeze to create, join,

right-clicking on users' names. Uploaded PowerPoint presentations show transitions, but not integrated audio and video. Presenters can force a full screen during a presentation and even zoom in on a piece of the presentation for participants during the conference.

Seminar builds on all these features, though it drops the Follow Talker feature. To take the anxiety and frustration out of setting up large conferences and seminars, the program provides an excellent Web-based conference setup wizard that walks you step by step through the process of setting up the conference, audio bridge, and meeting materials.

The program also guides you through a more advanced registration process that requires participants to answer questions and get approval before registering, and can generate the appropriate e-mails automatically. You can create reusable question sets for this process or for meeting polling. There's also a practice mode that allows moderators to log on at any time and run a practice version of the conference, which is locked to participants until the moderator decides to unlock it.

One appealing new feature: There's also a "lite" version of both services. The stripped-down offerings allow participants to join a meeting or event without installing any Raindance software. Instead, they load a browser-based Java applet and are given limited access to features.

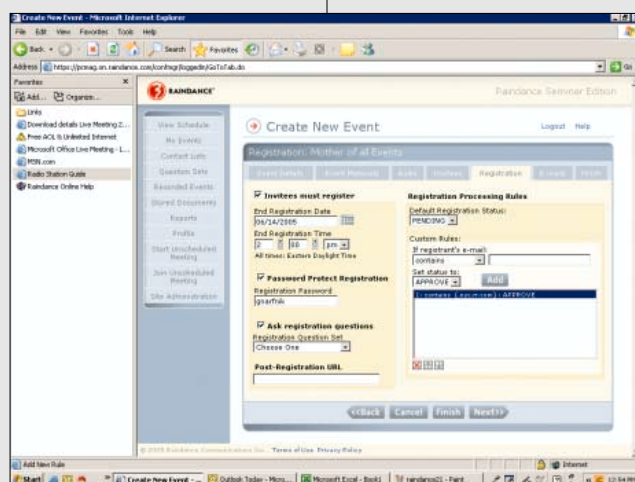
In all, Raindance is the service for you if ease of use and video conferencing are high on your list of requirements. You don't get the ability to activate conferences from Office or to use VoIP, but you may not care.

Raindance Meeting Edition

30 cents per minute (or \$100 per month) per seat.

Raindance Seminar Edition

38 cents per minute (or \$125 per month) per seat. Raindance Communications Inc., www.raindance.com. ●●●●●



RAINDANCE Seminar Edition has the same great interface as Meeting Edition, plus a useful seminar setup wizard that takes the anxiety out of setting up large conferences.

uninspiring to the best and easiest we'd seen for small-meeting use. Since then, Raindance has added a few features to Meeting Edition and released a Seminar Edition with the same outstanding interface and additional top-notch seminar setup tools. As before, the emphasis is on ease of use and, as with Meeting Edition, Seminar shines in this area. What you don't get is the ability to launch a meeting from an Office application or document.

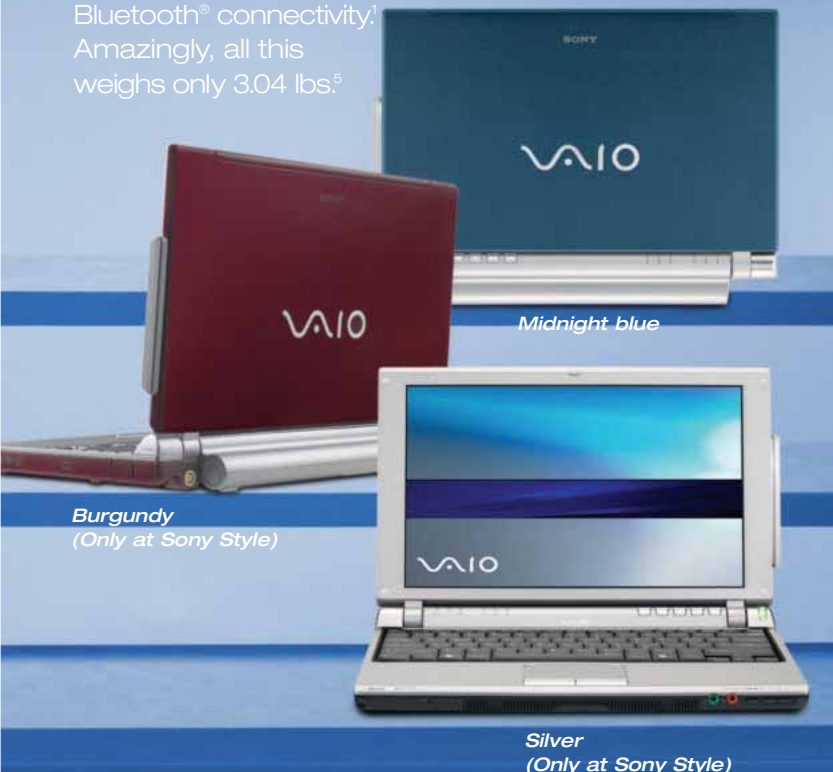
Meeting Edition has added a few nice features, including polling, easy recording, and good post-meeting reports. There's also a dedicated Q&A capability that allows a moderator to delegate questions to a

run, and participate in meetings. When you join a Web meeting, Raindance asks for your phone number and dials you up. The program's unique Follow Talker feature switches the live video to whoever is talking at the time, making it feel as if conference attendees are actually talking in person. Audio/Web and Outlook integration are also superb, allowing you to mute and unmute callers from the Web and create meetings in Outlook while off-line.

Meeting controls are excellent, with very fine-grained control over the rights of moderators, presenters, and participants, and the ability to assign presenters and grant access to shared applications simply by

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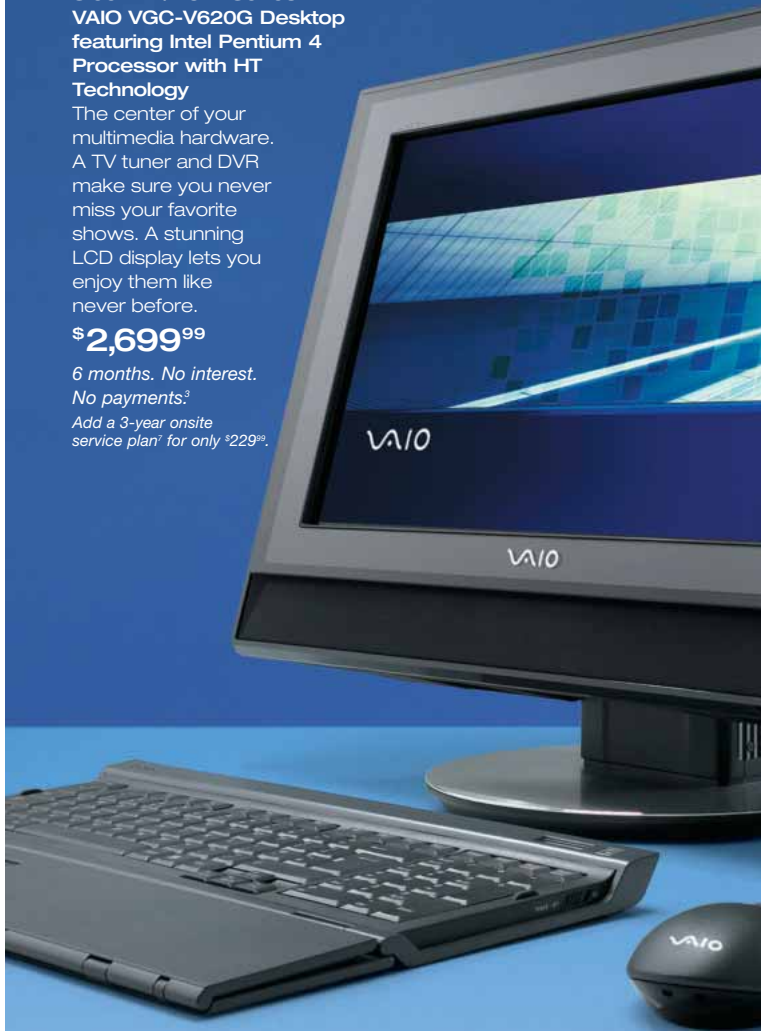
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Send PUPs to the Pound with VirusScan 2006

BY NEIL RUBENKING



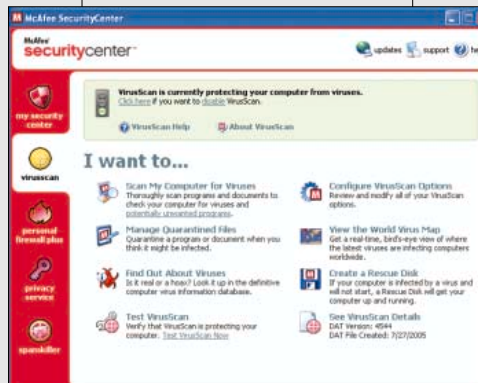
The new **McAfee VirusScan 2006** protects your computer from viruses and PUPs ("Potentially Unwanted Programs"—McAfee's term for spyware) with minimal fuss. It downloads virus signatures daily and scans files on access. In our testing, it also effectively removed PUPs it found on our system and prevented the installation of new ones.

VS 2006 installs within McAfee's Security Center, which replaces the Windows XP Security Center and provides access to support, including help wizards, e-mail support, discussion forums, and live 24/7 chat (free) or phone (paid) support.

ICSA Labs has certified VS 2006 for virus detection and cleaning. Related products received certifications from Virus Bulletin and West Coast Labs,

which haven't yet tested this version. VS 2006 will scan on schedule, on demand, or on any access: Just opening a folder triggers a scan of the files. ScriptStopper protection blocks scripts that manipulate files or the Registry, and WormStopper blocks suspicious e-mail activity, such as too many messages in a short time or e-mails sent with too many recipients.

On our test system, VS 2006's antivirus and PUP scan took about 25 minutes; the fastest standalone antispysware tools we've tried took less than 5 minutes. However, VS 2006's thorough scan detected all 12 PUPs in our test set and removed all but two. When we tried installing the PUPs with VS 2006 already in place, it



THE MAIN VirusScan page provides access to features such as on-demand scans, quarantined files, virus information, and the interactive Virus Map.

blocked every single one, deleting some threats even before the download finished. Of the four keyloggers, it completely missed two but removed and blocked the others.

VS 2006 offers no hijack protection or other behavior-based spyware blocking, and it does not scan the Registry (though

it does remove Registry traces of known PUPs). It deletes the worst threats automatically during the scan. You can choose to clean, quarantine, or delete the rest; if VS can't perform the selected action on some of the PUPs, it will suggest the other two actions. But we found its real-time notifications annoying and repetitive. Even during a scan, it frequently ran through the same se-

ries of pop-up notifications, reporting on the same PUPs over and over.

But all told, VirusScan 2006 is easy to use, and its antivirus protection goes beyond simple signature-based scanning.

McAfee VirusScan 2006

\$39.99 direct. McAfee Inc., www.mcafee.com. ●●●●●

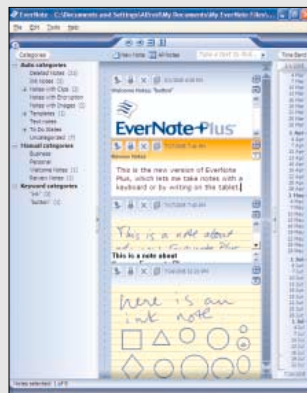
Note-Taking for the Digital Age

BY ALFRED POOR

Getting organized and staying that way is a major undertaking. **EverNote Plus 1.0** can help. You'll have to commit to its way of doing things, but its free-form nature lets even disorganized pack rats find what they're looking for. We first reviewed the public beta of EverNote, and the standard version of the official 1.0 release is still free. The \$34.95 Plus version (which we tested) adds a few features that die-hard devotees will find worth considering, but for most users the free version should suffice.

The key to EverNote is that it uses a continuous, scrolling tape as its organizational metaphor. When you add a note, it is automatically time- and date-stamped and added to the end of the tape. You can create

notes using the keyboard or electronic ink; the program supports a wide variety of input pens and digitizers and works well with Tablet PCs. (EverNote is developing versions for both Pocket PC and Palm OS platforms.) You can



EVERNOTE PLUS lets you store and search handwritten notes.

also drag a variety of file types from Windows Explorer and drop them into notes, or grab content from a Web site.

At this point, you may be thinking that this design is a recipe for chaos, and it certainly would be if it weren't for the program's excellent search features. EverNote automatically categorizes some notes according to their characteristics, and you can assign a category as you create the note. Unlike the hierarchical structure used by the Windows folder system and most e-mail clients, EverNote's system lets you assign a note to more than one category at a time. So when you write a note about a task you need to do for a certain job, the note is automatically added to your To Do category, the client category, and the job category.

EverNote Plus adds some extra features. You can use the shape recognition feature to clean up your drawings of squares and circles and arrows. And this version can also recognize words in handwritten notes, making them immediately available for searching.

EverNote is not as powerful as Microsoft's more ambitious, more expensive (\$99) OneNote (go.pcmag.com/onenote). That program features a tabbed-notebook metaphor and tight integration with Microsoft Office applications, plus the ability to associate audio and video clips with a note—and much more. In addition, it has strong outlining abilities that the current version of EverNote lacks. But if you don't need that much power, EverNote is certainly worth a spin.

EverNote Plus 1.0

\$34.95 direct. EverNote Corp., www.evernote.com. ●●●●●

HP's Photo Printer Hits the Mark

BY M. DAVID STONE



Even a quick glance at the **HP Photosmart 8250** makes it clear that this is a photo printer first. If the PictBridge connector for cameras, slots for memory cards, and dedicated 4- by 6-inch photo paper tray don't give it away, the 2.5-inch color LCD for previewing photos certainly will. Yet despite the obvious photo-centric features and the noteworthy photo speed and quality, the 8250 also handles text and graphics well, truly making it an all-purpose printer.

Each of the six inks comes in its own cartridge. Performance on our business applications suite (timed with QualityLogic's hardware and software, www.qualitylogic.com) was impressive. The 8250's total time of 15 minutes

1 second is not only faster than the times turned in by its two most direct competitors—the \$180 Epson Stylus Photo R320 (28:49) and the \$200 Canon Pixma iP5000 (16:09)—it's the second-fastest time we've seen from an ink jet printer. The 8250 also did well on photos, averaging 1:07 for 4-by-6s (compared with 1:59 for the Epson R320 and 2:06 for the Canon iP5000).

Output quality is another strong point. Most of the 8250's

test photos qualified as true photo quality, with a sprinkling of decidedly minor flaws. Text output is good, not great, but should prove fine for typical documents.

Definitely worth mentioning is that if you use the recommended HP Advanced Photo paper with the 8250, the photos are both smudge- and water-resistant. They aren't as fully smudge-proof and water-proof as output from other printers we've seen (notably the Epson PictureMate family), but they are a big improvement over HP's older combinations of ink and paper. Even better, HP says its \$34.99 packs of bundled ink and paper will print 150 photos, which works out to less than 24 cents each.



HP's 8250 is adept at both photos and reports.

HP Photosmart 8250 Printer

\$199.99 direct. Hewlett-Packard Development Co., www.hp.com.

OVERALL ●●●●○ Text ●●●●○ Graphics ●●●●○ Photos ●●●●●

Brother MFC-420cn

Pros: Rich feature set.

ADF. Prints directly from memory

cards. High-quality photos. Scans and faxes over network.

Cons: Slow performance.

Limited paper capacity.

Bottom line: The Brother MFC-420cn is aimed at users who don't print a lot of pages. But it offers maximum functionality—to print, scan, fax, and copy—in a minimal amount of space and at a minimal price.

\$150 street. Brother International Corp., www.brother.com. OVERALL ●●●●○

Text ●●●●○ Graphics ●●●●○ Photos ●●●●●



HP Color LaserJet 2840 All-in-One

Pros: High-quality output. Four-function

AIO for printing, scanning, copying, and faxing. Includes

50-page ADF.

Cons: Exceptionally slow performance for a color laser.

Bottom line: HP got almost everything right here. Output quality is among the best we've seen for a color laser at any price, and the scan, fax, and copy features cover all the important bases. But the speed lags that of other color lasers.

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

OVERALL ●●●●○ Text ●●●●○ Graphics ●●●●○ Photos ●●●●○



Epson's Adventure in Color Lasers

BY M. DAVID STONE



Epson isn't new to laser technology, but until now, the company has concentrated on ink jets in the U.S. and sold its lasers elsewhere. With the introduction of the **Epson AcuLaser CX11NF**, all that changes. The big news here is not just that Epson is selling a color laser all-in-one (AIO) in the U.S., but that the CX11NF, with its fast performance and high-quality output, is one of the strongest contenders yet for small-office or personal use.

The CX11NF offers most of the features you are likely to want in an AIO for a small office or a busy home office. It can work as a standalone fax machine and color copier; it will let you print or scan over a network from programs on

your PC; and it includes a 50-page ADF for scanning multi-page documents. Network setup is not automatic; if you're not familiar with network printer setup, you might need to call Epson for help.



EPSON

KNOWS lasers, too, as the CX11NF MFP proves.

Built around a Fuji-Xerox engine rated at 25 pages per minute for monochrome and 5 ppm for color, the CX11NF completed our business applications suite in 18 minutes 30 seconds—far faster than competitors such as the Canon MF8170c (29:29) or the HP 2840 (43:19).

Output quality was very good or better across the board but not as sterling as the printer's speed performance. We found most fonts easily readable at 5 points, with none needing more than 8. Graphics are good enough for any internal business use and marginally good enough for output for a client you want to impress.

Epson AcuLaser CX11NF

\$799.99 direct. Epson America Inc., www.epson.com. OVERALL ●●●●○

Text ●●●●○ Graphics ●●●●○ Photos ●●●●○

Konica Minolta magicolor 5450

Pros: Superb photo quality for a laser.

Graphics quality is above average. Good speed. Ample, 600-sheet input capacity.

Cons: Text quality is a bit uneven for a laser printer.

Bottom line: Offers a reasonable balance of speed and output quality.

\$1,799 direct. Konica Minolta Printing Solutions U.S.A. Inc., <http://printer.konicaminolta.com>.

OVERALL ●●●●○ Text ●●●●○ Graphics ●●●●○ Photos ●●●●○



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

Our Top Printers

Visit go.pcmag.com/printers for the full reviews of these and scores of other printers.

PHOTO PRINTERS	PROS	CONS	BOTTOM LINE	SPECS AND SCORES
Canon i9900 Photo Printer \$499.99 list 	Fast printing on photos. True photo-quality output. Direct printing from PictBridge cameras. Fast enough to serve as an all-purpose printer.	No memory card slots.	Eight ink colors give the Canon i9900 true photo-quality output; 6,144 nozzles enable it to print photos at breathtaking speeds.	Photo or all-purpose ink jet; 8 colors; 13x19; direct printing from cameras. 4x6 photo: 0:30.
Epson PictureMate Deluxe Viewer \$249.99 direct 	Prints from computers, memory cards, PictBridge cameras, and USB drives. True photo quality. Color LCD to preview images.	Limited to a maximum photo size of 4x6.	This PictureMate offers high-quality output, plus the ability to preview images on a color LCD before printing. It can even run on battery.	Photo ink jet; 6 colors; 4x6; direct printing from cameras and memory cards. 4x6 photo: 1:30.
NEW HP Photosmart 8250 \$199.99 direct. 	High-quality output. LCD screen. Separate 4- by 6-inch tray makes it easy to switch between printing documents and photos.	Text quality, while good, is low for a photo ink jet. Photos are water- and smudge-resistant, not water-proof or smudgeproof.	For photos, the HP 8250 offers fast printing and very good quality. It also handles text and graphics well, making it a good all-purpose printer.	Photo or all-purpose ink jet; 6 colors; legal size; direct printing from cards and cameras. Business app suite: 15:01. 4x6 photo: 1:07
ALL-PURPOSE INK JETS				
Canon Pixma iP4000 \$149.99 direct 	Fast performance for photos and business applications. Direct printing from cameras. Duplex printing. Two input paper trays.	No memory card slots.	The iP4000 is a good choice thanks to its speed, very good output quality, and unusually sophisticated paper handling for an ink jet.	All-purpose ink jet; 4 colors; legal size; direct printing from cameras. Business app suite: 15:48; 4x6 photo: 1:05.
ALL-IN-ONE PRINTERS				
Canon Pixma MP760 Photo All-in-One \$299.99 list 	Good to very good print quality. Fast performance. Transparency adapter for slides and 35-mm film. Can print directly from slides.	No ADF. No fax features.	Equipped with a transparency adapter, the MP760 can scan and print directly from slides and film.	Print, scan, copy; photo or all-purpose ink jet; direct printing from cameras and cards. Business app suite: 15:27; 4x6 photo: 1:08.
NEW Epson AcuLaser CX11NF \$799.99 direct. 	Fast performance and good output quality. Prints and scans over a network. Standalone copier and fax machine. Includes 50-page ADF.	Can't fax from a PC. Network installation isn't as smooth as it should be.	Epson's first U.S. color laser delivers fast performance, good-looking output, and most of the features you need in an all-in-one printer.	Print, scan, copy, fax; color laser; 25 ppm mono, 5 ppm color; legal size; Ethernet. Business app suite: 18:30. 4x6 photo: 0:57.
HP Officejet 7410 All-in-One \$499.99 direct 	Fast. Very good graphics and photos. Ethernet and wireless networking. 50-page ADF. Prints from memory cards and cameras.	Text quality is acceptable for most users but less than ideal for those who need extremely small type.	The 7410 offers fast performance, good to very good quality, a 50-page ADF, and Ethernet and 802.11g wireless connections.	Print, scan, copy, fax; 6-color ink jet; legal size; direct printing from cameras. Business app suite: 16:11; 4x6 photo: 1:51.
MONOCHROME AND COLOR LASERS				
Dell Laser Printer 1100 \$99 direct 	Low price. Excellent text. Better graphics than most monochrome lasers. Reasonable speed for a personal printer.	Low input capacity (150 sheets) is both standard and maximum. Starter toner cartridge prints only about 1,000 pages.	For less than \$100, the 1100 delivers excellent text quality, better-looking graphics than most printers, and reasonable speed.	Monochrome laser; 15 ppm; legal size. Business app suite: 10:49.
HP Color LaserJet 2600n \$400 street 	Low price. Good performance. Excellent text. Includes Ethernet connector.	Output quality for photos and graphics is slightly below that of more expensive color lasers.	With its low price, the 2600n could readily replace an ink jet as a personal printer. It could even serve a few users on a network.	Color laser; 8 ppm mono and color; legal size; Ethernet. Business app suite: 21:09; 4x6 photo: 0:31.
HP Color LaserJet 4650n \$2,099 direct 	Fast performance. Excellent text quality, near-excellent graphics, and good to very good photos.	Claimed 1.6 cents per monochrome page is a higher cost than that of an equivalent monochrome printer.	The 4650n delivers fast performance, good to excellent output quality, and good paper-handling options.	Color laser; 22 ppm mono and color; legal size; Ethernet; optional duplexing. Business app suite: 9:27; 4x6 photo: 0:53.
Ricoh Aficio AP410 \$530 street 	Excellent text quality. Fast performance. Default 600-sheet input capacity.	No network connection or duplexing in the tested version (and both of those options are relatively expensive).	The AP410 marries fast performance to excellent text quality. It's a good match for a small office or an individual power user.	Monochrome laser; 28 ppm; legal size; optional Ethernet; optional duplexing. Business app suite: 5:45; 4x6 photo: 0:08.
Samsung ML-2250 \$230 street 	Compact size. Excellent text quality. Good performance. Ample paper handling for a personal printer.	Photo quality is at the low end for inexpensive monochrome lasers, though it's acceptable for news-letters and the like.	The ML-2250 is faster than most personal monochrome lasers, and the 550-page maximum capacity is enough even for sharing the printer.	Monochrome laser; 22 ppm; legal size; optional networking; optional duplexing. Business app suite: 8:09.
Xerox Phaser 5500DN \$3,399 direct 	Blazingly fast. Outstanding output quality. Paper-handling capacity and options suitable for departmental printing.	Paper-handling options turn it into a floor-standing unit.	The 5500DN offers high speed, high quality, and heavy-duty paper handling.	Mono laser; 50 ppm; tabloid size; Ethernet; duplexing. Business app suite: 3:51.

The Perfectly Balanced Portable

BY CISCO CHENG

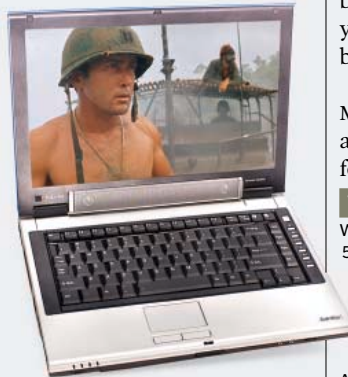


Finding a PC with the right balance of portability, features, performance, and price can be a difficult task, but the **Toshiba Satellite M55-S325** has made your search easier. The M55 is the ideal notebook for the multimedia-savvy and for campus cruisers, thanks primarily to its luggable frame, roomy 100GB hard drive, and very good processing power.

The M55 weighs 5.1 pounds; with the AC adapter, the travel weight is a still-manageable 6 pounds. The 14.1-inch TruBrite widescreen looked amazing as we watched a DVD of *The Incredibles*. The M55's Harman Kardon speakers enhance the movie-watching experience and are surprisingly good for such a small system. To the right of the full-size keyboard, a set of DVD playback controls (Play/Pause, Stop, Fast Forward, and Rewind)

and two quick-launch buttons are available. It also has a Quick Play feature, which lets you play DVDs or CDs without booting up your system. The 100GB hard drive provides plenty of storage space for aspiring video editors and digital media fanatics. The M55 smartly incorporates four USB ports and a 4-in-1 card reader.

Performance is another



TOSHIBA'S media-savvy notebook hits the mark.

strong suit. What helps the M55 is the faster (5,400-rpm) hard drive; most notebooks have 4,200-rpm models. Graphics power is delivered by Intel's Graphics Media Accelerator 900 GM, not the fastest solution out there but good enough for most multimedia tasks (barring high-res 3D games). Battery life was good, at 3 hours 17 minutes. The 12-cell battery upgrade is a bit expensive (\$145 direct), but if you travel extensively, the extra battery will come in handy.

All told, the Toshiba Satellite M55-S325 is lightweight, reasonably priced, and a solid performer in its class.

Toshiba Satellite M55-S325

With Intel Pentium M 740 (1.73 GHz), 512MB DDR SDRAM, 100GB hard drive, Intel Graphics Media Accelerator 900 GM, 14.1-inch widescreen (1,280-by-768), Intel Pro Wireless 2200 802.11g, Microsoft Windows XP Home Edition. \$1,399 street. Toshiba America Inc., www.toshiba.com.

OVERALL ●●●●○ Music: 68 (out of 100); Photos: 68; Video: 35; Gaming: 27.

Acer Ferrari 4000

Pros: Design worthy of the Ferrari name. Carbon fiber cover. Fast graphics.

Cons: Noisy mouse buttons.

Bottom line: Through a partnership with the legendary carmaker, the thin-and-light Ferrari 4000 has a dazzling new design and new components for extra kick under the hood. It delivers all the flash of a high-end boutique machine, at a mass-production price.

\$1,999 list. Acer Inc., www.acer.com. OVERALL ●●●●○ Music: 60 (out of 100); Photos: 71; Video: 47; Gaming: 55.



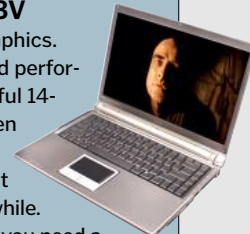
AsusTek W3V

Pros: Good graphics. Compact. Good performance. Beautiful 14-inch widescreen display.

Cons: Gets a bit warm after a while.

Bottom line: If you need a lightweight yet powerful laptop, the W3V offers the whole package. The 5.5-pound carbon-fiber chassis is easy to carry, and you'll love the big screen for DVDs and games. It even comes with a bag.

\$1,899 list. AsusTek Computer Inc., www.asus.com. OVERALL ●●●●○ Music: 59; Photo: 67; Video: 60; Gaming: 45.



Sony's Powerful Notebook

BY CISCO CHENG

The **Sony VAIO VGN-S470P** offers an impressive combination of power, sleekness, and portability. If you're looking for a very lightweight notebook that can efficiently handle tough workloads, this is the system for you.

The 4.3-pound laptop houses a 13.3-inch XBrite widescreen. The 1,280-by-800 resolution is good for graphics, movies, basic office apps like spreadsheets, and composing e-mails. We were impressed with the inclusion of the dual-layer DVD±RW drive, which will let you record up to 8.5GB of data, music, and video. The 80GB, 5,400-rpm hard drive is also extremely attractive for such a small system, capable of handling all your music and movie

files, as well as adding a performance boost. The card reader will read only Memory Stick and Memory Stick Pro formats—typical of Sony.

The nVidia GeForce Go 6200 GPU can run graphics-intensive applications, and delivered good numbers (for a



THIS SONY has substance.

portable) on our 3DMark05 (739) and gaming tests (26 frames per second in Halo, at 1,024-by-768). Its SYSMark 2004 SE overall score of 137 shows that this machine can handle typical productivity workloads just fine. Battery life (2 hours 42 minutes) did suffer a bit because of the discrete graphics.

Still, the VGN-S470P is a wonderful blend of style, power, and portability that will please commuters and business travelers alike.

Sony VAIO VGN-S470P

With Intel Pentium M 740 (1.73 GHz), 512MB DDR2 SDRAM, 80GB 5,400-rpm hard drive, nVidia GeForce Go 6200 graphics, 13.3-inch widescreen LCD (1,280-by-800), dual-layer DVD±RW drive, Intel Pro Wireless 2200 802.11g wireless, Microsoft Windows XP Professional. \$1,899.99 direct. Sony Electronics America Inc., www.sonystyle.com.

OVERALL ●●●●○ Music: 58 (out of 100); Photos: 63; Video: 35; Gaming: 47.

HP Compaq nx6125

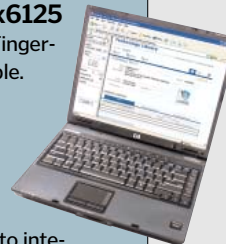
Pros: Affordable. Fingerprint reader. Durable. Solid performer.

Cons: No Trusted Platform Module (TPM). Allocates too much of

system resources to integrated graphics.

Bottom line: The HP Compaq nx6125 is ideal for those who don't want to drop a bundle on the IBM ThinkPad T43 or HP Compaq nc6230. It's a quality notebook with good performance, features, and security.

\$1,249 direct. Hewlett-Packard Development Co., www.hp.com. ●●●●○



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

Our Top Notebook PCs

Visit go.pcmag.com/notebooks for the full reviews of these and scores of other portable PCs.

BUSINESS	PROS	CONS	BOTTOM LINE	SPECS AND SCORES
HP Compaq nc8200 \$2,699 direct 	Durable design. Light, despite a 15.4-inch widescreen display. Good battery life.	Client software is not as rich as that of IBM's ThinkVantage.	Even with a 15.4-inch screen, the nc8200 is well suited for the road. It's lighter and less bulky than you might expect.	Intel Pentium M 760 (2.0 GHz), 512MB RAM, 60GB hard drive, 15.4-inch widescreen. 6.2 pounds. SYSmark: 140. BatteryMark: 4:53.
Lenovo/IBM ThinkPad T43 \$2,199 direct 	Next-generation Centrino. Terrific typing experience and security options. Top-of-the-line management utilities.	Only two USB ports. No memory card slots.	Next-generation Centrino components and the robust security suite make the T43 the perfect business tool.	Intel Pentium M 750 (1.86 GHz), 512MB RAM, 60GB hard drive, 14.1-inch screen. 5.5 pounds. SYSmark: 134. BatteryMark: 4:49.
ULTRAPORTABLE				
Lenovo/IBM Thinkpad X41 \$1,899 direct 	Good performance. Full-size keyboard.	External optical drive. Hard drive only 40GB.	The ThinkPad X41 is a very good ultraportable, with improved security and performance—plus great battery life for this class.	Intel Pentium M 758 (1.5 GHz), 512MB RAM, 40GB hard drive, 12.1-inch screen. 3.2 pounds. SYSmark: 105. BatteryMark: 5:05.
Sony VAIO VGN-T350P \$2,299 direct 	Built-in EDGE modem delivers high-speed wireless within Cingular's EDGE coverage area. Great little screen.	Smallish keyboard.	The VGN-T350P is a mobile dream. It's ultralight and can connect wirelessly via the EDGE network, as well as in 802.11 hot spots.	Intel Pentium M 753 (1.2 GHz), 512MB RAM, 60GB hard drive, 10.7-inch screen. 3.0 pounds. SYSmark: 95. BatteryMark: 6:20.
Toshiba Libretto \$1,999 list 	Fingerprint reader. Excellent battery life and 60GB hard drive. Terrific little widescreen display.	Poor placement of the pointing stick. Small keyboard.	It looks like a clamshell PDA, but inside the Libretto you'll find a full Windows XP PC.	Intel Pentium M 753 ULV (1.2 GHz), 512MB RAM, 60GB hard drive, 7.2-inch widescreen. 2.8 pounds. SYSmark: 96. BatteryMark: 3:57.
Toshiba Portégé R200 \$2,099 direct 	Supersleek and light design. Improved battery life. New security suite. Fingerprint reader.	External optical drive.	The R200 lightens your load while letting you stay productive on the road.	Intel Pentium M 753 (1.2 GHz), 512MB RAM, 60GB hard drive, 12.1-inch screen. 2.7 pounds. SYSmark: 100. BatteryMark: 3:32.
MULTIMEDIA AND GAMING				
Dell Inspiron XPS Gen 2 \$3,318 	Top-of-the-line graphics. Programmable lights.	Pointing stick is gone. Mouse buttons are a bit loud.	The XPS Gen 2's cool look and super set of cutting-edge mobile components make it the ultimate gaming machine.	Intel Pentium M 770 (2.13 GHz), 1GB RAM, 80GB hard drive, 17-inch widescreen. 8.5 pounds. SYSmark: 172. BatteryMark: 2:13.
NEW Toshiba Satellite M55-S325 \$1,400 street 	Roomy 100GB hard drive. Good performance. Light weight for a multimedia portable. Customizable covers and four USB ports.	Somewhat pricey additional battery option (\$145).	The M55-S325 has the ideal blend of portability, features, performance, and price. It's a very good choice if you want a multimedia-centric PC.	Intel Pentium M 740 (1.73 GHz), 512MB RAM, 100GB hard drive, 14.1-inch widescreen. 5.1 pounds. SYSmark: 142. BatteryMark: 3:17.
Toshiba Qosmio G25-AV513 \$2,999 list 	Multitude of A/V features. Designed for A/V rack. Terrific screen. Large hard drives.	Heavy. Shiny chassis prone to fingerprints and dust. Below-average battery life. TV-in dongle.	The G25-AV513 is the best multimedia laptop we've seen, especially when it comes to integrating A/V features.	Intel Pentium M 760 (2.0 GHz), 1GB RAM, two 60GB hard drives, 17-inch widescreen, 9.4 pounds. SYSmark: 145. BatteryMark: 1:59.
VALUE				
Dell Inspiron 6000 \$1,024 direct. 	Great battery life. DVD±RW drive. Latest-generation Centrino technology.	Price varies according to Dell's specials at a given time.	The 6000 is a feature-rich desktop replacement model. It delivers top-end components for an aggressive price.	Intel Pentium M 730 (1.6 GHz), 512MB RAM, 60GB hard drive, 15.4-inch widescreen. 7.0 pounds. SYSmark: 130. BatteryMark: 5:52.
Gateway M250X \$1,170 direct 	Good performance and features for the price. Good portability.	Battery life could be better. Not built for gaming.	The M250X rides the line between ultraportable and thin-and-light notebook. It's not flashy, but delivers solid value for the money.	Intel Pentium M 740 (1.73 GHz), 512MB RAM, 60GB hard drive, 14.1-inch widescreen. 5.1 pounds. SYSmark: 142. BatteryMark: 3:16.
TABLET PCs				
Lenovo/IBM ThinkPad X41 \$1,900 street 	Lightest convertible tablet. Fine pen-on-paper feel. Fingerprint reader. ThinkVantage security system.	No built-in optical drive. Only 1,024-by-768 maximum resolution.	Lenovo/IBM's first tablet is the lightest convertible around, and the screen has a perfect paper-like feel for writing.	Intel Pentium M 758 (1.5 GHz), 512MB RAM, 40GB hard drive, 12.1-inch screen. 3.2 pounds.
Motion Computing LE1600 \$2,199 direct 	Superior screen. TPM security suite. Improved components.	Needs an optical drive in the dock. No FireWire port.	The Motion Computing LE1600 offers improved components, a superior screen, and an airtight security suite.	Intel Pentium M 758 (1.5 GHz), 512MB RAM, 30GB hard drive, 12.0-inch screen. 3.3 pounds.

Plenty of Features, Plus a Low Price

BY SASCHA SEGAN



With its powerful combination of excellent features and a reasonable price (\$299.99 list, but as low as \$99.99 with service contract), the Motorola E815 is a real winner. If you're a Verizon customer looking for a lot of bang on a modest budget, this is the handset to grab.

The E815 is a long slab of a phone (3.7 by 1.9 by 1.0 inches, 4.6 ounces). We got excellent reception; in fact, the phone usually displayed a stronger signal than the LG VX8100. Voice quality through the earpiece was a touch harsh. The speakerphone was quieter than that of the VX8100 but fine for indoor use. Battery

life was impressive, with 4 hours 43 minutes of talk time.

The large, bright internal and external screens can look a bit washed-out indoors. But outdoors in sunlight, you can read the time on the outside of the phone better than you can on handsets that use a richer color palette.



Bluetooth usage includes headsets and contact/calendar syncing but not file transfer or dial-up networking.

We do like the excellent built-in voice-command software from VoiceSignal. We were also excited to find that the phone has native support for Apple's iSync. This allowed us to synchronize our contacts and calendar effortlessly, using Apple's Address

Book and iCal applications between the phone and a Mac over Bluetooth. (PC owners will have to buy Motorola's Mobile Phone Tools software.)

A TransFlash memory card fits into the top of the phone, so you can store pictures, videos, and MP3s beyond the 64MB of built-in memory. The built-in MP3 player isn't that easy to use, but it does support playlists. We found the sound quality through the speaker and a standard wired headset to be quite good. The 1-megapixel CMOS phone camera takes 1,280-by-1,024 shots with decent brightness, sharpness, and color balance, though performance in low light is generally miserable. Still, at this price, we're happy to see MP3 and photo support at all.

Motorola E815

\$299.99; as low as \$99.99 with service. Motorola Inc., Verizon Wireless, www.verizonwireless.com. ●●●●●

The E815 is Verizon's most powerful handset.

Nextel i605

Pros: Excellent battery life. Big screen for e-mail and GPS. Bluetooth.

Cons: Expensive. Bulky.

Bottom line: The Nextel i605 is a costly, rugged, powerful handset that will be too big and expensive for many users. Nextel has other more reasonably priced solutions that don't have all of the i605's features, but may be better for some people. Still, it has several excellent features that make it worth a look.

\$449.99; as low as \$299.99 with service. Motorola Inc., Nextel, www.nextel.com. ●●●●●



Nextel i836

Pros: Sleek case.

Powerful speaker.

Good GPS.

Cons: Odd design choices inside. Poor battery life.

Bottom line: We're lukewarm on the i836.

Nextel's best-looking phone adds features but suffers from design flaws and very short battery life. This is analogous to a sleek Italian sports car in need of some servicing.

\$349.99; as low as \$199.99 with service. Motorola Inc., Nextel, www.nextel.com. ●●●●●



Phone and Walkie-Talkie in One

BY SASCHA SEGAN



The ultimate wilderness phone, the Nextel i355 combines a GPS device, cell phone, and walkie-talkie in a rugged, water-resistant package. And it costs under \$100 with a service plan (\$249.99 without).

Basically an upgrade of the i315, the i355 has a color screen, an improved keyboard, support for Nextel's new Group Connect and Java-based mobile e-mail features, and a new version of the TeleNav GPS software. It even has a flat bottom so you can stand it upright.

Like the i315, it's built to take a beating. You can freeze it, toss it at a wall, or carry it in the

rain (just don't dunk it completely under water). The headset jack and battery port are protected by tough rubber plugs. The only flimsy bit appears to be the antenna.

We also found the i355's keys less rubbery and easier to press than the i315's. And although the 130-by-130 screen is a bit dim, it's fine for displaying GPS maps. The unit's 9 hours 58 minutes of talk time was on a par with the i315's generally good result. Its sound is loud and clear.



The i355 includes Direct Talk, Nextel's off-network walkie-

The i355 will appeal to outdoor types.

talkie system, enabling you to chat with other i355 owners even if you're far from any working cell towers. In tests last November, we got up to 3.5 miles of clear coverage over water, 1 mile through trees, and about three quarters of a mile in the city. The included GPS works with both road-oriented, network-dependent TeleNav software and Trimble Outdoors, which lets users download cached maps to use while out of signal range.

With its rugged design, true walkie-talkie capabilities, and built-in GPS receiver, the i355 is a powerful communication aid that should be in every backpack and on every tool belt.

Nextel i355

\$249.99; as low as \$99 with service. Motorola Inc., Nextel, www.nextel.com. ●●●●●

Nokia 8801

Pros: Excellent feel.

First U.S. phone to stream stereo music over Bluetooth. Luxurious materials.

Cons: The stainless-steel case attracts fingerprints. Poor battery life. Poor EDGE speed. Expensive.

Bottom line: Despite its good looks and ability to stream stereo music over Bluetooth, Nokia's luxury phone costs too much for the relatively slim set of features you get.

\$699.99 direct. Nokia, www.nokiausa.com. ●●●●●



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Our Top PDAs and Phones

Visit go.pcmag.com/handheld for the full reviews of these and scores of other PDAs and phones.

PDAs	PROS	CONS	BOTTOM LINE	SPECS
Dell Axim X50v \$499 list 	Media Player 10 performance is amazing. New accelerated graphics architecture promises high-res gaming and video. Excellent value.	Few programs support new graphics architecture. Our tests show slower performance than with other 624-MHz Pocket PCs. So-so battery life.	An attractively priced VGA Pocket PC, the X50v has excellent multi-media features and promises a super gaming experience.	Pocket PC OS, 624-MHz CPU, 64MB RAM, 3.7-inch 640-by-480 display, 802.11b, Bluetooth, SD and CF slots, 6.2 oz. Battery life: 3:10.
palmOne LifeDrive \$499 direct 	Vast storage. Big screen. Excellent desktop and handheld software suite.	So-so battery life. Occasional crashes. No support for DRM media.	Nearly endless storage makes this a convenient device for toting and viewing lots of files.	Palm OS 5.4, 416-MHz CPU, 64MB RAM, 3.8-inch 320-by-480 display, Bluetooth, SD/MMC slot, 6.8 oz. Battery life: 4:06.
palmOne Zire 72 \$300 street  	First PDA with 1.2-megapixel camera. Video recording. Nice display.	No 802.11b wireless. A little slow in accessing and exiting the camera menu.	The Zire 72 delivers great PDA functionality and audio playback capability. It's a strong choice for people who want more.	Palm OS 5.2, 312-MHz CPU, 32MB RAM, 3.0-inch 320-by-320 display, 1.2MP camera, Bluetooth, 4.8 oz.
PHONE/E-MAIL DEVICES AND SMARTPHONES				
Audiovox SMT 5600 \$199.99 with one-year contract  	Smallest Windows smartphone. Excellent music and video support. Excellent battery life. Great design.	Can't play music or video over Bluetooth headset. Poor camera.	The SMT 5600 phone is your best option for taking Outlook PIM data and many kinds of music and video on the go.	GSM, GPRS, Windows Smartphone OS, 200-MHz CPU, 2.2-inch display, 0.3MP camera, Bluetooth, miniSD slot, 4.2 oz. Talk time: 8:23.
Nokia 6682 \$350 street  	Excellent voice quality. Good camera with bright flash. Symbian third-party software available.	Small keys. Battery life could be longer.	The 6682 is a powerful, flexible smartphone that never forgets it's first and foremost a phone.	Symbian OS, 220-MHz CPU, 10MB RAM, 2.2-inch 176-by-220 display, 1.3MP camera, MMC Mobile slot, GSM/EDGE, 4.6 oz. Talk time: 7:28.
palmOne Treo 650 from Cingular \$549.99 direct  	Good battery life. International voice and data roaming. Fast EDGE modem.	Service plan costs more than that of Sprint's Treo 650. No dial-up networking—yet.	The Treo 650 performs better on Cingular's network than on Sprint's, but you'll pay more for the speed.	Palm OS 5.4, 312-MHz CPU, 32MB RAM, 2.6-inch display, 0.3MP camera, Bluetooth, SD slot, GSM, GPRS/EDGE, 6.3 oz. Talk time: 7:33.
RIM BlackBerry 7100t \$199.99 direct  	Looks and feels like a cell phone. First BlackBerry to include IM and full Web browser standard. Excellent push e-mail.	Small keys. Small type on screen. Few games or downloadable applications.	A new approach for RIM, the 7100t is the first BlackBerry device to work equally well for e-mail, IM, Web browsing, and as a phone.	RIM BlackBerry OS, 32MB RAM, 2.1-inch 240-by-260 display, Bluetooth, GSM, 4.2 oz. Est. talk time: 4:00.
PHONES				
NEW Motorola E815 \$299.99 list  	Excellent reception. Very good battery life. MP3 player. Good price (as low as \$100 with service contract). Mac support.	Can't use phone as PC modem. Unusual predictive text system.	The E815 is the most powerful, flexible Verizon handset, with very good reception and an attractive price.	CDMA, EV-DO, 2.2-inch 176-by-220 display, 1.3MP camera, 64MB RAM, 4.6 ounces. Talk time: 4:43.
Motorola Moto Razr V3 \$299.99 with contract 	Absolutely gorgeous. Thin as its name.	Screen attracts grease. Not a great camera.	The Razr V3 is the ultimate see-and-be-seen phone for style mavens.	GSM, GPRS, 2.2-inch 176-by-220 display, 0.3MP camera, 5MB RAM, Bluetooth, 3.3 oz. Est. talk time: 7:06.
Motorola V551 \$209.99 direct  	Bright, sharp screen. Good camera. Built-in IM client.	No external photo caller ID or speaker-independent voice dialing.	For making calls, sending pictures, and occasional laptop Internet access on the Cingular network, the V551 is your best choice.	GSM, GPRS, 2-inch 176-by-220 display, 0.3MP camera, 6MB RAM, Bluetooth, 4.3 oz. Talk time: 8:27.
NEW Nextel i355 \$249.99 list  	Good price (as low as \$99 with service contract). Off-network walkie-talkie. Very rugged.	Bulky.	The i355 is a very good communication tool for those who work (or play) outdoors.	iDen 800, Direct Talk 900, 1.5-inch 130-by-130 display. 6.9 ounces. Talk time: 9:58.
Sprint MM-5600 by Sanyo \$429.99  	Spectacular screen. Loud speaker and speakerphone. Excellent PC connectivity. Good voice recognition.	Big. No e-mail. PC syncing requires third-party software. Photos show compression artifacts.	A big phone with big sound and a big feature set, this is Sprint's most powerful phone outside of its smartphone line.	CDMA, AMPS, push-to-talk, 2.1-inch 320-by-240 display, 1.3MP camera, 3MB RAM, miniSD slot, 4.5 oz. Talk time: 4:09.
WIRELESS HARDWARE AND SERVICE				
Kyocera KPC650 from Verizon \$99.99 with contract  	Fastest EV-DO card on the market. Swiveling antenna.	At \$79.99 per month, the service is expensive. Works only in metro areas that have Verizon's EV-DO coverage.	Especially where signals are weak, this card delivers reasonable performance.	CDMA 1xRTT EV-DO, 850/1900 MHz.

HP's 64-Bit Business Desktop

BY JOEL SANTO DOMINGO

These days, most of the corporate PCs we see have the "Intel Inside" logo on them, but occasionally we do come across an AMD-powered business desktop from a major manufacturer. The affordable **HP dx5150** (\$915 direct) is such a system, a decent business performer with the added benefit of having a variety of future-proofing features built in, such as AMD's Athlon 64 3500+ processor and an ATI Radeon Xpress 200 graphics chipset.

In addition, the dx5150 comes with 512MB of 400-MHz DDR SDRAM, a 40GB 7,200-rpm SATA hard drive, and a CD-RW drive. It comes with one VGA/analog and one DVI/digital port for dual-display support. This is somewhat rare in an integrated solution, particularly in a diminutive business desktop. Typically, you need an

add-in AGP or PCIe card.

Corporate IT staffs that need to stay on top of technology will likely buy a few Athlon 64-based systems in preparation for 64-bit computing. HP's commitment to providing



THIS SMALL PC
features a 64-bit processor.

Microsoft Windows XP Pro x64 and the requisite drivers means that the dx5150 will make a good development platform for 64-bit computing as well as the eventual move to Windows Vista. Until then, it will be a nice addition for those platforms that are running the current 32-bit edition of Windows XP. The only downside here is that the machine probably can't use your company's current standard hard drive image.

All the requisite serviceability features are here, such as green-marked toolless tabs for replacing components like PCI cards and hard drives. One nice feature is that the case door screw and PCI card retention bar are captive: They cannot be removed and subsequently lost. The dx5150 uses half-height PCI and PCIe slots due to its small size, but this shouldn't be

a problem for most users, since so much is built into the system. Our tested system was a good, if not stellar, performer, notching a 135 on the Office Productivity portion of the SYSmark 2004 benchmark test and 179 on the Internet Content Creation test.

For IT development and testing staff, the HP dx5150 makes a strong candidate as an x64 test bed, as well as a small-business PC for those who want the security of a machine from a large system manufacturer, along with the future-proofing and hardware-based virus protection that the AMD Athlon 64 platform offers.

HP dx5150 Business Desktop

With AMD Athlon 64 3500+ (2.2 GHz), 512MB 400-MHz DDR SDRAM, 40GB 7,200-rpm SATA hard drive, 64MB ATI Radeon Xpress 200 graphics, CD-RW drive, Microsoft Windows XP Professional, \$915 direct. Hewlett-Packard Development Co., www.hp.com.
OVERALL ●●●●●

HK-Xtreme: Subtle It Ain't

BY JOEL SANTO DOMINGO

The **HyperKore HK-Xtreme** is undoubtedly aimed at the 16- to 35-year-old male gamer—or at anyone who doesn't want a boring-looking box. And with the creepy, scary clown graphics decorating the side panel, the HK-Xtreme is not for the coulrophobic (yes, that means "scared of clowns").

Thankfully, the system is available with a multitude of other standard side-panel graphics, including the iconic Bruce Lee, the Batman logo, and game logos like those of Half Life 2 and Unreal Tournament 2004. But for all its uniqueness and flash, there are faster choices out there in this price class.

The HK-Xtreme's case is a solid, meaty one, and its front

lock and included keychain evoke an automotive feel. Inside, you'll find plenty of room for more hard drives and memory, and the case opens easily for access to the expansion slots. The WD Raptor primary hard drive is a little light on space, at 74GB, but it's fast



WHAT THE
heck is looking at me?

(10,000 rpm), and there's a lot of room on the included 250GB data drive.

The HK-Xtreme's healthy scores on our gaming tests (41 frames per second on Doom 3 at 1,600-by-1,200 and 45 fps on Halo) are on a par with those of comparable high-end gaming systems with single-card graphics. Its SYSmark performance was very good, also on a par with systems at this level. Compared with the Dell XPS Gen 5 (\$3,999 as tested), one of our current Editors' Choice picks among gaming systems, the HK-Xtreme lags just a bit on graphics; the Gen 5's ATI Radeon X850 XT card is faster than the HK-Xtreme's nVidia GeForce 6800 GT GPU.

Although the HK-Xtreme is visually different, this level of

computer costs a lot of money. You'll get much more value from a similarly configured system from another vendor (the ABS Ultimate X6 and the Velocity Micro Gamer's Edge PCX come to mind).

Still, the HK-Xtreme is a fair choice. And if you dare bring this PC to a LAN party, you better make sure you have flashy gaming skills, because with this crazy clown on the side, all eyes will be on you.

HyperKore HK-Xtreme

With Intel Pentium 4 Extreme Edition (3.73 GHz), 1GB 533-MHz DDR2 SDRAM, 74GB 10,000-rpm SATA hard drive, 200GB 7,200-rpm SATA hard drive, 256MB GeForce 6800 GT graphics, dual-layer DVD±RW drive, DVD-ROM drive, Creative Labs Sound Blaster Audigy 2 ZS sound card, Microsoft Windows XP Professional, \$3,806 direct. HyperKore Inc., www.hyperkore.com.
OVERALL ●●●●● Music: 77 (out of 100); Photos: 62; Video: 61; Gaming: 83.



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Our Top Desktop PCs

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GAMING/MULTIMEDIA	PROS	CONS	BOTTOM LINE	SPECS AND SCORES
Dell Dimension 9100 \$2,799 direct 	Dual-core power for multitasking. Quiet design. Easy to open and service. Bright 20-inch widescreen LCD.	Limited internal drive expansion. No HDTV tuner. Could use a wireless keyboard and mouse at this price.	If you crave an upgrade from that aging PC sitting on your desk, the 9100 can take your audio/video/photo hobby to the next level.	Intel Pentium D 840 (3.2 GHz), 1GB RAM, two 160GB hard drives, nVidia GeForce 6800, 20-inch widescreen LCD. Doom 3 (10x7): 80 fps.
Dell XPS Gen 5 \$3,999 direct 	Too many to list, but here are a few: dual-core processor, dual TV tuners, good gaming performance for a single-card solution.	When the case is upright, it's annoying to open because the kickstand can get in the way.	If you're ready for high-end computing, the XPS Gen 5 should be near the top of your list.	Intel Pentium EE 840 (3.2 GHz), 1GB RAM, two 250GB hard drives, ATI Radeon X850 XT PE graphics. Doom 3 (10x7): 87 fps.
Falcon Northwest FragBox 2 \$3,225 direct 	Compact gaming case. More gaming performance for much less money than our previous FragBox 2. Good hardware mix.	Still a lot of money for a system without a monitor.	The FragBox 2 gives gamers exactly what they want: hot gaming performance for a price that doesn't require a trust fund.	AMD Athlon 64 4000+ (2.4 GHz), 1GB RAM, 600GB hard drive, nVidia GeForce 6800 Ultra graphics. Doom 3 (10x7): 103 fps.
Velocity Micro Vision 64 \$5,375 direct. 	Smashes most of our 3D benchmark test records to date. Latest nVidia graphics. Not as flashy as some gaming PCs.	Not as flashy as some gaming PCs. Not cheap.	The Vision 64 is a monster gaming system that scored off the charts on our tests. Subtle in design, it's not for the faint of heart.	AMD Athlon 64 X2 4800+ (2.6 GHz), 1GB RAM, three drives (398GB), dual nVidia GeForce 7800GTX, 19-inch LCD. Doom 3 (10x7): 117 fps.
MEDIA CENTER				
HP Digital Entertainment Center z545 \$2,000 street 	Excellent execution of a living-room Media Center PC. Quiet. Connects to legacy audio and video devices. Dual tuners.	Requires separate amplifier (or powered speakers). No HDTV tuner (yet).	The z545 is everything you'd want in a Media Center PC for the living room. It replaces the DVD player, CD changer, FM tuner, and DVR.	Intel Pentium 4 530 (3.0 GHz), 512MB RAM, 200GB hard drive, 160GB removable drive, ATI Radeon X300 SE graphics, MCE 2005.
HP Media Center 7070n Photosmart PC \$1,249.99 direct 	Camera and iPod docking port. HP Media Drive hard-drive slot for unlimited expansion. 250GB drive standard. Good price.	Internal drive expansion limited. No monitor or speakers. Wired (not wireless) keyboard.	The 7070n is a solid midrange system that can serve as a multimedia PC or a Media Center for home entertainment.	Intel Pentium 4 640 (3.2 GHz), 1GB RAM, 250GB hard drive, ATI Radeon x300 graphics. SYSmark: 184. Doom 3 (10x7): 14 fps.
Sony VAIO VGC-RA830G \$1,799 direct 	Liquid cooling means a quiet tower PC. Large storage capacity for videos. Better 3D performance than with other Media Center PCs.	Tower chassis is less living room-friendly than models designed like AV gear. No HDTV tuner.	The VGC-RA830G is a near-silent desktop that can serve as both a PC and the central repository of your digitally connected home.	Intel Pentium 4 550J (3.4 GHz), 1GB RAM, two 160GB hard drives, nVidia GeForce 6600 graphics, MCE 2005. Doom 3 (10x7): 50 fps.
ALL-IN-ONE				
Apple iMac G5 \$2,103 direct 	Simple, stunning design. Quiet. Just one cord (for power), thanks to optional Bluetooth keyboard and mouse. Gorgeous 20-inch screen.	Can't upgrade graphics. Built-in speakers don't deliver much bass.	Apple has another design coup on its hands with the iMac G5. It's about time someone designed a computer like this.	PowerPC G5 (1.8 GHz), 512MB RAM, 160GB hard drive, nVidia GeForce FX 5200 Ultra graphics, 20-inch widescreen LCD, DVD-R drive.
Sony VAIO VGC-V520G \$2,699.99 direct 	Bright widescreen display. Great TV tuner. Wireless keyboard with built-in touch pad. Wireless mouse. Lots of included software.	A little pricey. No HDTV support. Needs TV/volume controls on the PC/TV case bezel.	In the spirit of the Apple iMac, the PC components reside behind the VGC-V520G's 20-inch LCD. But Sony adds a TV tuner and a DVR.	Intel Pentium 4 (3.2 GHz), 1GB RAM, 250GB hard drive, nVidia GeForce FX Go5700 graphics, 20-inch LCD. SYSmark: 174.
VALUE AND MIDRANGE				
Dell Dimension 5100 \$999 direct 	Quiet design. Dell Media Experience is like Media Center Edition. Memory card slots (finally!).	No FireWire ports. We would prefer a 17-inch LCD at this price point.	The forward-looking technology, quiet design, and low price should please general users, budding multimedia mavens, and students.	Intel Pentium 4 531 (3.0 GHz), 512MB RAM, 160GB hard drive, ATI Radeon X300 SE graphics, 15-inch LCD. SYSmark: 167.
Polywell Poly 2800NF2-MX \$699 direct 	Dual-layer DVD±RW drive. Large-capacity hard drive. Plenty of room for upgrading.	No built-in modem, FireWire port, or memory card reader. Mediocre processor.	A solid value machine with some great features, the 2800NF2-MX is upgradable for taking multimedia to the next level.	AMD Sempron 2800+ (2.25 GHz), 512MB RAM, 120GB hard drive, nVidia GeForce4 MX440 graphics. SYSmark: 133.
Velocity Micro Vector SX-V \$999 direct 	Better-than-average graphics card. Motherboard supports the latest technologies. Loaded with multimedia features.	Only one optical drive.	The Vector SX-V offers the latest technologies, a wide upgrade path, and enough horsepower to satisfy gamers and multimedia enthusiasts.	Intel Pentium 4 540 (3.2 GHz), 512MB RAM, 120GB hard drive, nVidia GeForce 6600 graphics. SYSmark: 188.
BUSINESS				
NEW HP dx5150 Business Desktop \$915 direct 	Windows XP x64-capable. PCI x16 slot for graphics upgrades. AMD-enhanced virus protection. Quiet. Built-in dual-display capabilities.	Half-height slots. May not fit your current disk image directives.	The dx5150 benefits from the future-proofing and hardware-based virus protection that the AMD Athlon 64 platform offers.	AMD Athlon 64 3500+ (2.2 GHz), 512MB RAM, 40GB hard drive, ATI Radeon Xpress 200 graphics. SYSmark: 155.

Photo Managers Keep Track of Your Images

BY CADE METZ

Windows' My Photos folder is a handy repository for your digital images. That is, until you actually need to store a lot of pictures. Then it becomes the digital equivalent of a shoebox crammed with snapshots: You can find what you're looking for, but only by sifting through the clutter. So we recommend that anyone with a digital camera commit to using a photo-management utility too. These three new entries help you store, find, and share images with just a few clicks. None supplant our current favorite desktop utilities, Adobe Photoshop Elements 3.0 and Picasa 2.0, but each presents a unique twist on photo management that might fit the way you want to use and share your images.

OurPictures 2.0 Deluxe

When OurPictures debuted (go.pcmag.com/photosharing), it was meant primarily as a tool for sharing photos with friends and family. As long as both you and your friend had its peer-to-peer-like client installed, the two of you could seamlessly send pictures to each other's desktops—without using e-mail. OurPictures 2.0 Deluxe still provides this nifty way to share, but the new version feels more like a full-fledged desktop photo manager. It has far more editing tools, as well as a built-in search tool. And it even lets you automatically back up photos on company servers.

Like the debut version, Version 2.0 uses a tabbed interface to let you easily move back and forth between two folders of pictures. One folder stores the pictures you've taken, and the other holds pictures you've received from other people. Within these folders, photos can be organized into virtual "albums," but that's the extent

of organizational tools. This simple setup doesn't work as well with large numbers of photos, but the addition of a search tool has made things much easier, as you can add keyword tags

tended recipients, and hit "Send." When you send images to other OurPictures users, the photos stream straight to their desktops, appearing in the app's Received Pictures folder.



OURPICTURES 2.0 DELUXE combines the original version's peer-to-peer sharing features with full-blown desktop photo management.

to each photo and search by one keyword or several ("vacation" and "kids" for example). You can also add captions.

The app's editing tools aren't nearly as extensive as you'll find in Photoshop Elements or even PhotoShow Deluxe (also reviewed here), but you can do the basics: rotate pictures, crop them, fix red-eye, and even add a few effects. The app is more effective when it comes to printing. You can print on your local printer or receive professional prints through the mail. And thanks to OurPictures' vast network of photofinishers, you can also send pictures to your local store for printing and pick them up at your leisure.

Where OurPictures might be more appealing than the leading desktop apps is in sharing photos. You simply select the photos you wish to share, enter the e-mail addresses of the in-

When you send photos to someone who isn't an OurPictures user, that person receives an e-mail message with a link to a temporary Web page. For the next 30 days, he or she can use this page to view, print, or download the photos.

Though this feels a lot like peer-to-peer technology, the pictures are actually going through company servers. Thus, it's easy for OurPictures to provide its new backup service, called PictureSafe. Anytime a picture is accidentally deleted, lost, or damaged, you

can restore it with the mere click of a button. If you purchase the Deluxe Edition (available for \$2.99 a month or \$29.99 a year), you can back up 500 photos, and you can purchase additional space for a small fee. The Deluxe version also provides a tool called OurPictures Mobile, which lets you automatically send photos to your desktop from certain cell phones. The free version of OurPictures has everything but the backup and mobile tools, and it limits the number of photos you can send to others.

If sharing photos figures into your idea of photo management, OurPictures may be right for you.

OurPictures 2.0 Deluxe

\$2.99 a month or \$29.99 a year.
OurPictures Inc., www.ourpictures.com.
●●●●○

PhotoShow Deluxe

As a photo-management tool, PhotoShow is more powerful than the other entries here. It handles both photos and video files. It provides all sorts of tools for building professional-looking slide shows and screen savers. And like Photoshop Elements and Picasa, it's particularly adept at organizing and tagging your photos.

When you launch PhotoShow, it doesn't take you into the app's primary tabbed interface. Instead, it displays a simple, wizard-like screen that has

only three buttons: Manage, Make, and Share. Each takes you directly to a tab within the primary interface where you can perform the appropriate tasks. If you choose Manage, for instance, you'll jump directly to the portion of the app where you can import, organize, edit, and search your digital photos.



PHOTOSHOW'S tabbed interface makes it easy to manage photos, share them, or create slide shows.

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The idea is to make things as simple as possible for novices, and it certainly does the trick. But more experienced users may be annoyed by this opening screen. The app is slow to load as it is, and this only makes things slower. On the plus side, using the app is typically a smooth ride. At installation, it automatically loads all the photos and videos from your My Pictures and My Videos folders and gives you all sorts of ways to browse and sort them. You can create a folder for pictures tagged with a certain keyword, for instance, and when you import such a picture, it will automatically wind up in that folder. But don't worry: You can still see how your photos are stored within the Windows file tree—which



THE "MAKE" TAB in PhotoShow gives quick access to options for creating projects with your photos.

isn't always the case with photo managers.

Similarly, the app's editing tools are extremely powerful yet quite easy to use. Not only can you perform common tasks (such as cropping, rotating, and fixing red-eye), but you can also add literally dozens of filters and effects, including everything from a sepia-tone color scheme to animated text and clip art. Likewise, there are just as many ways to customize

your slide shows. You can add all sorts of music, motion effects, and transitions. You can even include short video clips in a slide show, which many other slide-show creators don't allow. And if you're too busy to put everything together on your own, simply choose the One Click Style option and the app will apply a preset selection of menus and effects.

You can also e-mail photos to friends and family, burn photos to CD, order prints and gifts, and upload photos to the Web. Simple Star has a partnership with SnapFish, but it also runs its own Web service called PhotoShow Circle. Plus, you can trade slide shows among friends and family over a kind of ad-hoc peer-to-peer network.

The app has a nifty help interface that actually uses your

photos to illustrate various tools, but unfortunately, it's not searchable. And though the company claims that the app regularly checks your My Pictures folder and imports any new pictures it finds, that didn't always seem to be the case. But these are quibbles. PhotoShow does a wonderful job of balancing power with ease of use. As with OurPictures, there is also a free version (named PhotoShow Express), but it's extremely limited, providing only a few basic features. The Deluxe version is certainly worth the price.

PhotoShow Deluxe

\$39.99 direct. Simple Star Inc., www.simplestar.com. ●●●○○

ViewPoint Photos

The new ViewPoint Photos is essentially an expanded version of the ViewPoint Toolbar, an Internet Explorer add-on that lets you browse site thumbnails each time you search the Web. The new app still searches the Web, still dis-

Photofiddle.com Turns Photos into Art

BY JAMIE M. BSALES

Want another way to share and manage your photos? How about as art on your walls: The **Photofiddle.com** online service turns your digital images into custom artwork that mimics a range of styles—oil painting, watercolor, pencil sketch, pop-art poster, and dozens more.

Using the site is easy. The straightforward interface walks you through the process of choosing a design, uploading an image (only .jpg and .gif formats are currently supported), cropping the image, and previewing your creation (which takes about 2 minutes to render). Then you choose from a range of finishing options—artwork size, type of paper, framing options, and so on—and you're done. In addition to the artistic renderings, there's a host of cool photo collages to choose from.

The service is young, and there's some room for improvement. For example, there's no intuitive way to save a project midstream and come back to it at a later point. You need to get all the way to the

checkout stage, then leave the project in your shopping cart until you order it. That's good if you need to get someone else's approval before you pull the trigger, but we'd prefer a way to preview two different projects side-by-side (so you could compare how a particular photo looks as a pastel versus a watercolor, for example).

But we can't quibble with the results, which in our trials were nothing short of stunning. We ordered a 24- by 18-inch colored-pencil rendering, printed on canvas paper, under glass and framed in a simple wood frame. Our artwork arrived five working days later, very well packaged—right down to white cotton gloves inside to handle it with. The piece (created from a 1.2MB image from a 3MP camera) showed rich, vivid colors and plenty of detail.

And while it certainly was not cheap, the \$74.95 price is actually reasonable compared with buying a good-quality print or photo enlargement and having it framed at a local shop. If your budget dictates something smaller and less elaborate, an unframed art print on archival photo paper



"KATIE RU." Oil on canvas. Amy Weins (and Photofiddle.com), 2005.

starts at \$14.95 for an 8-by-12.

The only problem: Photofiddle.com might be addictive. Once you see how well your art turns out, you'll want to fiddle dozens of your pictures. But if you're always hard-pressed to find a gift for the grandparents or your spouse, put Photofiddle.com on your Favorites list.

Photofiddle.com

\$14.95 direct (and up). Photofiddle.com Inc., www.photofiddle.com. ●●●○○

plays site thumbnails, and still provides all sorts of other tools, including a pop-up blocker and a keyword highlighter. But it also includes a full photo-management application that handles everything from organizing and editing photos to printing and sharing them.

When you first install ViewPoint Photos, it looks like any other browser toolbar. But if you click on a button towards the end of the bar, the photo manager pops open in the main body of your browser, where you usually view Web pages. You can import photos with the click of another button, and each time you do, the app posts thumbnails to a virtual "film roll" that runs across the top of the window. You can easily scroll through this roll, choosing pictures you'd like to

edit, print, share, or organize into albums, and as you mouse over each one, it instantly expands to give you a closer look.

When you double-click on a thumbnail, the app opens it in full, just below the roll. There, you can use simple editing tools for cropping, rotating, or adjusting brightness and contrast. Then, you can send the photo to friends and family over e-mail, print copies on your local printer, or post to the Web. Friends and family can then view your photos online and order professional prints and gifts. For these services, ViewPoint partners with EasyPrints (which also handles



VIEWPOINT PHOTOS uses a filmstrip metaphor to help you scroll through images quickly.

prints and gifts for Yahoo!). Unlike many photo managers, ViewPoint lets you easily synchronize albums between the Web and your desktop—a welcome convenience.

The interface is surprisingly slick for a free application. There's even a video help win-

dow that runs along the left side of your browser, where a woman pops up and shows you how to use the app's many tools. But not everyone will be comfortable using a photo manager that runs inside a browser. If you visit a Web site, for instance, the better part of the app goes away—something that may confuse novices.

All told, the for-pay versions of the other apps here are more powerful. But if the browser-as-manager paradigm fits your working style, ViewPoint Photos' price can't be beat.

ViewPoint Photos

Free. ViewPoint Corp., www.viewpoint.com. ●●●○○

Shutterfly Collections Lets Families Share

BY CADE METZ



Our favorite photo printing and sharing service just got better. Shutterfly has unveiled a new feature that lets users create their own personalized Web sites—complete with personalized addresses. The new feature is called **Shutterfly Collections**, and like so much of this popular service, it's available free of charge.

Shutterfly has always been a Web-based service—a site where you could post digital photos, organize them, edit them, and order prints—but you couldn't set up your own Web address where friends and family could regularly come to view your latest pics. In the past, you had to send out a new link each time you posted an album of photos, and

these links typically used long, arcane URLs. With Collections, you can create a short, simple "vanity" URL that's easy to remember—"TheJonesfamily.shutterfly.com," for instance, or "SmithWedding.shutterfly.com." As you post pictures to this site, friends and family can visit at their leisure. And much as before, you can send e-mail notifications each time a new batch of photos goes up.



WITH SHUTTERFLY COLLECTIONS, families and groups can let others contribute to online albums.

That alone wouldn't be such a big deal. But Collections lets you open up your "site" to others. If you like, you can give friends and family the power to post comments or even add their own photos to albums. This is a boon for group events (reunions, weddings, parties, and the like) where a bunch of people will have photos to share with the group. (If you're worried about privacy, you have the option of adding password protection.) Shutterfly provides two URLs to members free of charge; alas, you don't yet have the option of purchasing more. To set up a third or a fourth, you'd have to set up a new account using a new e-mail address.

Even before the arrival of Collections, Shutterfly was among the slickest of the

Web-based photo-printing sites. A lightweight ActiveX control lets you quickly and easily load photos to the Web, and there are far more—and far more effective—editing tools than you'd expect from a Web-based service. Even its old method of sharing individual albums worked quite well, and if you prefer sharing this way, it's still an option.

Shutterfly makes its money by selling prints, and we've generally been impressed with print quality, even when enhancing and brightening dark photos. Prices range from 19 to 28 cents for 4-by-6s and from 79 to 99 cents for 5-by-7s. Both matte and glossy prints are available.

Shutterfly has always been one of our favorite photo services. Now, full-fledged (and group-enabled) sharing makes it even better.

Shutterfly Collections

Free. Shutterfly, www.shutterfly.com. ●●●●●

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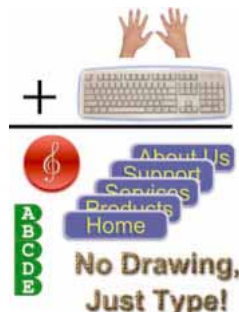


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FEEDBACK

“The use of the State Department to bring offshoring into the U.S. is common practice.”

THE VOLUNTARY DEINDUSTRIALIZATION OF AMERICA

Titled “Forward Thinking,” Michael Miller’s pseudo-think piece about the dearth of computer science students (“Where Are All the Computer Scientists?”, August 23, page 6) is a stunning act of amnesia. The boat Miller has missed was launched by Microsoft in the early nineties, with the use of H-1 visas to use foreign nationals for tech work at a fraction of domestic pay and benefits. Now matured into variants licensing many thousands of foreign workers, the use of the State Department to bring offshoring into the United States is common practice. Many tech job listings—the ones that remain after a generation of economic slaughter—now require such a visa as a qualification.

While we cannot know how the ongoing export of the U.S. economy affects the decisions of college entrants, this quite public trend in the tech economy is inexplicably absent from Miller’s article. Other nations are forward-looking in deciding they want a tech sector, funding it, and protecting it. Not so in the U.S., which may be the first nation in history to voluntarily deindustrialize (and please delete the rosy tones of “love [of] technology”—that has little to do with axing skilled workers). While I am not a white-eyed nativist, realpolitik demands consideration of these matters. I suggest that Miller tackle these in his next editorial, perhaps titled “Why Johnny Can’t Get a Work Visa.”

DAVID PATTEN

SBC DSL: A-OK

I saw Jim Louderback’s column “DSL Reconsidered” (August 23, page 59) and thought I’d add my own experience of SBC DSL. I’ve had SBC DSL for two years now, and it has only gone down about four times, for less than an hour each time.

Another great thing is that SBC’s promotional price lasts the entire year instead of three months, as with many providers. At the end of your year’s contract, SBC will send you a new offer for another year at its going price. If you’re in an area that SBC serves, there’s really no reason to stick with dial-up.

JACOB EHLERS

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SERIAL, PARALLEL PORTS: OBSOLETE?

In Inside Track (August 9, page 69), John Dvorak wrote, “I am now surprised to see a parallel or RS-232 port on a motherboard. I think it’s a waste of money to put these circuits and expensive connectors on any machine now.”

Although Mr. Dvorak has written lots of columns over the years, I don’t think he’s on the edge of knowledge concerning what is going on in the real business area. As an IT professional, I work a lot with serial and parallel connections. Mr. Dvorak should know that almost every cash register printer is serial or parallel, that most of the units that let him pay with his banking account at the local store run over serial connections, that most of the 911 systems are running on serial connections, and that the central station to which his home security system is connected is most likely running on serial connections, too.

Maybe they’re not the fastest connections around, but they mostly don’t need drivers, which are so often poorly written by the manufacturer. I hope we will have motherboards with those connections for a long time.

ALAIN CHAGNON

A STICKY WICKET?

Could you explain what Jim Louderback meant by “sticky DRM issues” on the iPod shuffle (August 9, page 71)? The shuffle can be used with songs in several different formats that don’t use any digital rights management.

CHARLES HANSEN

The iPods themselves don't default to the iTunes DRM, but they hide the music in hidden folders, which makes it really hard to move music onto and off the device—unlike the Memorex player and others, which look and operate just like removable hard drives. The Apple music software, iTunes, defaults to the Apple-specific AAC codec, and the MP4 format, when you rip your music. You'll need to go through hoops to get them to play on non-iTunes-enabled computers. That's what I meant by sticky DRM issues.

And if you buy into iTunes, you probably will end up buying songs via iTunes—songs that do have real and limiting DRM. That's why I prefer eMusic—unencumbered MP3 files that cost as little as a quarter each.—Jim Louderback

Corrections and Amplifications

■ In “Hands On with the Next Windows” (September 6, page 104), we reported that the beta of the application-compatibility toolkit for Windows Vista will ship concurrently with Beta 2 of Vista. Microsoft actually plans to ship it around the same time as Beta 2, not necessarily at exactly the same time.

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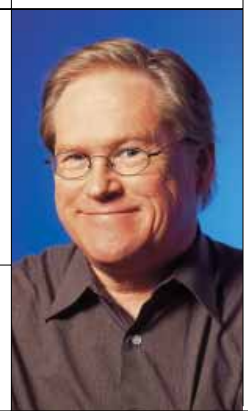
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I surf porn websites
from behind
my cubicle walls

I shop online
after closing
my office door

John C. Dvorak



Knowing Too Much

By now you know that when you surf the Net, you leave a trail of electronic breadcrumbs a mile wide. But you may not know that statistical-analysis software collects these breadcrumbs and lets site owners carefully analyze their traffic to see what you're looking at, where you're coming from, what browser you're using, and the last site you visited. Many of the analysis packages come an inch from actually identifying site visitors by name.

With the move to Internet Protocol, version 6 (IPv6), even more info about you can be collected. I imagine getting the following information about a reader of my blog:

David Smith visited the site for two minutes and looked at three articles, including your bio and the before and after pictures of Yasmine Bleeth. He lives in Columbus, Ohio, and runs a Pentium-based computer using Windows XP SP2. His IP address is 4.56.177.0, and his service provider is BellSouth. He's on a DSL line and uses an old 0.96 version of Firefox for a browser. He visited your site after being referred by Google when he did a search using the words "before," "after," and "actresses."

Well, that's almost exactly what I get, except for the name David Smith. Some of the newer analysis packages also bring up a map showing the general area where Dave lives. I can imagine this feature eventually linking to Google maps to show a satellite image of his house. There isn't much of a demand for that except from stalkers.

I don't use much in the way of site-monitoring software, but the blogging system I use, WordPress, maintains a list of all the IP addresses of people leaving comments, along with a direct link from their IP address to the ARIN database, which identifies the users' ISP and location.

There are proxy systems that let you surf anonymously. But only the most paranoid use them, as the rest of us are convinced that nobody really cares about all the details of every person who clicks on a link. So what if some Web site owner knows that I live in California after tracking my IP address?

More and more details about Web surfers are starting to surface. How long before we know where people work and what TV shows they watch? Unless something is done to stop everything and everyone from getting an IP address, this isn't far-fetched.

There are indeed some people advocating giving an IP address to every single gadget out there that has an electrical or wireless connection to any part of the Net or electrical grid. With IPv6, 2^{128} IP addresses are available, enough for every imaginable item in everyone's home, including light bulbs. The number of addresses available under IPv6 is so astronomical that you can be certain they will be assigned to everything possible, because they *can* be. Ridiculous, but true.

Everything is going to be monitored to such an extreme that not only will all the bloggers know that David Smith visited their blogs, but they'll also know what time he turns off the lights. How often he drinks coffee. What TV shows he watches. You can imagine that every single minute of every day could be extrapolated by analyzing the activity of all the IP devices surrounding us.

This will merge into a patchwork of indiscriminate data, essentially white noise. But where there are boatloads of data, there are people looking for ways to exploit it. As a civilization, we've already gone too far in impinging on individual rights, with shadowy institutions such as credit bureaus and insurance companies keeping secret dossiers on citizens. What's next? Whatever it is, it won't be good.

The U.S. has been slow to adopt IPv6, as we've cheated the IP addressing shortage with DHCP and NAT schemes to recycle, rotate, and reuse IP addresses. But the appeal among certain technologists who cannot see anything wrong with "IP Everywhere" philosophies is irresistible. This is going to happen. Maybe not tomorrow, but soon.

You'll be sitting at your computer at work and a message will come in from the Gas and Electric Company: *John, we've noticed that for the past couple of days the light in your basement has been on. The past patterns indicate that this is a mistake, and you forgot to turn it off. It would cost you \$3.14 in additional fees over your average yearly electrical expense if you continue to let this light burn. We can turn it off remotely. Would you like that? Proceed: yes/no?*

And we'll think this is just great. You saved three bucks by being under the watchful eye of the Gas and Electric Company. Oh, joy.

As a civilization, we've gone too far in impinging on individual rights. What's next? Whatever it is, it won't be good.

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

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Inside Track

Thanks for the Memories Dept. Look for yet another form factor for flash memory. This one is called the **minisd**, and SanDisk is shipping it in capacities as high as 1GB. The thing is **60 percent smaller** than an already-too-small SD card. I wonder when all this will end.

The best and most useful format is CompactFlash, which is **anything but compact**. All these other formats are **too easy to lose or break**. But there seems to be no stopping the shrinkage. When you need to use tweezers to install memory is when I give up on it.

Layer Wars Take the Cake Dept. If the battle between HD DVD and Blu-ray hasn't been laughable until now, shortly you can expect **a new twist to the lunacy**: more layers. The approximate capacity of the two formats was at issue as Blu-ray's 25 gigs topped HD DVD's 15 gigs. But HD DVD was going to be two layers for 30 gigs; then it could do **three layers** and top 45 gigs. Blu-ray, incensed, decided to layer up and do two layers for 50 gigs, when TDK came into the picture and said it could produce a disc that could handle **four Blu-ray layers for 100 gigs** on one side of a disc. Please make that technology writable!

All indications are that Microsoft, for a variety of reasons, will go with HD DVD for its new **Xbox 360**, which is due out by Christmas. The decision to choose a consumer-electronics format over the more sensible desktop computer technology with Blu-ray has baffled **a few folks**, since it is not what the company has been doing with the Xbox. But in this instance, because Sony, the company that makes the PlayStation, is so firmly behind Blu-ray, the decision seems both **political and smart for the short term**. Microsoft does not want to compete with Sony for components that Sony itself will be making.

The downside is that going with HD DVD may be riskier in the long run. I cannot imagine these **two formats both continuing** for long, although there is a lot of talk about multiple-read heads and multi-players that will be compatible with both formats. The situation is ridiculous.

Meanwhile, back at the ranch, Sony is promoting its **4,096-by-2,160-resolution LCD** technology using what is called Silicon X-tal Reflective Display (SXRD). Combine SXRD with a 10,000-lumen bulb, and you get what the folks in the movie business call a **4K projector**, to be used in theaters to compete with the DLP projectors used today. Smaller 5,000-lumen systems will be developed for smaller venues. Here are some details from the Sony press release:



If the battle between HD DVD and Blu-ray hasn't been laughable until now, shortly you can expect a new twist to the lunacy.

With SXRD technology, pixels are set at a pitch of 8.5 micrometers, from the center of one SXRD pixel to the center of the next, with an inter-pixel gap of 0.35 micrometers. "A narrower pitch and thinner gap translate into a quicker refresh rate to produce much smoother moving images," said Tom Mykietyn, director of content creation for Sony Electronics. "When an image is projected onto a large screen from a 4K projector, the typical 'cross-hatch' pattern just about disappears. For example, on a 27-foot wide, 16:9 screen, each pixel is only about the size of the letter 'e' in Liberty on a quarter."

Texas Instruments has developed a **1080p version of its DLP chip**, which, when used as a theater projector chip, was expected to generate a gorgeous big picture. But people who have seen this 4K job in person say that it's amazing.

The Hollywood studios, meanwhile, are trying to standardize everything they can about these digital systems, so they can feed **a single file to all of them** without worrying about compatibility issues. It's called the **Digital Cinema Initiative** and will be part of the eventual final transition from celluloid to bits and bytes.

Someone commented on TV that once the movie projector is gone and LEDs replace the incandescent light bulb, we'll be at **the end of the Thomas Edison era**, as we will no longer be using any of his many inventions. The irony is that this won't be true for a very long time. Edison, working with Henry Ford, **perfected manufacturing of the modern charcoal briquette**, as in those bags of briquettes sold by Kingston. The Edison-Ford methodology may have been based on—or perhaps managed to circumvent—a patented briquette process developed in 1897 by inventor Ellsworth B. A. Zwoyer. Whatever the case, they sell them at Safeway. Edison lives!

Here's Looking at You Dept. One of the hottest technologies right now is RFID (radio frequency identification). At a recent hackers' confab called DefCon, one group showed how you could probably pull the data from RFID chips from **60 feet away**, if not farther. Some scam has already turned up in Europe, where unauthorized individuals lifted data from RFID chips and used the information for nefarious purposes. **The U.S. passport will soon have an RFID chip** in it to help track the owner. Expect your driver's license to be RFID-enabled, too.

These things will be everywhere. My advice: Get **a piece of lead foil**, cut it to the size of your billfold, and just put it in your wallet like a dollar. That should keep snoopers at bay. And it makes a good conversation starter.

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Jim Louderback



Mouse Madness

Pity the lowly mouse. Early mechanical versions were fragile and unresponsive. Newer designs have been ridiculed as resembling everything from a Dove bar to a black Lab's forepaw. Many technologies have emerged to replace the "mouse ball," including the touchpads and pointing sticks that grace today's notebooks, along with pens, tablets, and other rolling surfaces.

I've owned a pack of rodentia, but until the LED-based optical mouse arrived in 1998 my experiences were less than ideal. I was perpetually cleaning the mouse ball and swabbing the roller pins with rubbing alcohol. Even so, none lasted longer than six months in my own mouse house of pain.

Optical mice changed all that. Finally, a mouse that works on almost any surface, with no moving parts to attract grime! They last a long time—but not forever. The buttons can become sluggish, or the glide pads wear out. But it's a great time to buy an optical mouse. In 1999, they cost more than \$50; today you can find one for less than half that.

How low can you go and still get a good mousing experience? To find out, I bought up the least expensive optical mice from a range of retail outlets. The cheapest was a \$7 BTC mouse on sale at Fry's for five bucks. For ten bucks I got a CompUSA house brand; the Micro Innovations mouse from Wal-Mart was \$10 too. Circuit City's \$13 version gave me pause—it came from Nexxtech, provider of the worst keyboard from my recent test. Best Buy's model, the Dynex, cost all of \$16.49.

We rounded up 16 human guinea pigs to test the mice for fit, feel, usability, and capability. Here's how they did:

With today's mice, white and beige are dead, as is the Dove bar. More curvaceous than a Ford Taurus, with two-tone color schemes to match, these mice at least aspire to fashion. Although none of them matches the curvy elegance of designer Philippe Starck's Microsoft Optical Mouse, the CompUSA model came closest. Clad in graceful silver and blue, the internal LED exuded a warm red glow when in use, though one tester said that "seeing the LED light through its body makes me think something is wrong." The least attractive mice of the group, from Dynex and Nexxtech, were drab by comparison: silver on top and black on the bottom.

The mice varied greatly in feel and grip. The best of the lot tapered in from front to middle, and also from top to bottom, making them effortless to grasp and move. The Nexxtech and CompUSA models were tops here. The BTC also scored well, although with less instep on the sides. It lacked convexity, but testers praised its resemblance to the \$30 Microsoft IntelliMouse we used for comparison.

Still, none of them felt firm and strong. Even the best "seemed cheap," and the testers singled out CompUSA's thin plastic as particularly flimsy. Each mouse had just two buttons and a combo scroll wheel/third button; more expensive mice have at least five. USB came on only the most expensive one; the others use the near-obsolete mouse port.

Mousing results were mixed. The CompUSA mouse "glides well across the surface," while the Micro Innovations was "especially nice for smaller hands." Each mouse got the job done and worked well on a variety of surfaces. Although sensitivity was low—around 400 dpi, tops—the mice seemed responsive enough for standard office tasks. None, however, should be used for serious gaming.

Best: It's a tie between the two least expensive entries. The CompUSA mouse is sleek, fashionable, and effective—for just under \$10. Many testers also liked the \$5 BTC, which will appeal to users who prefer a bit of heft below their palms. I was happy using either one for long bouts of computing, which proves that good mice can be found for less.

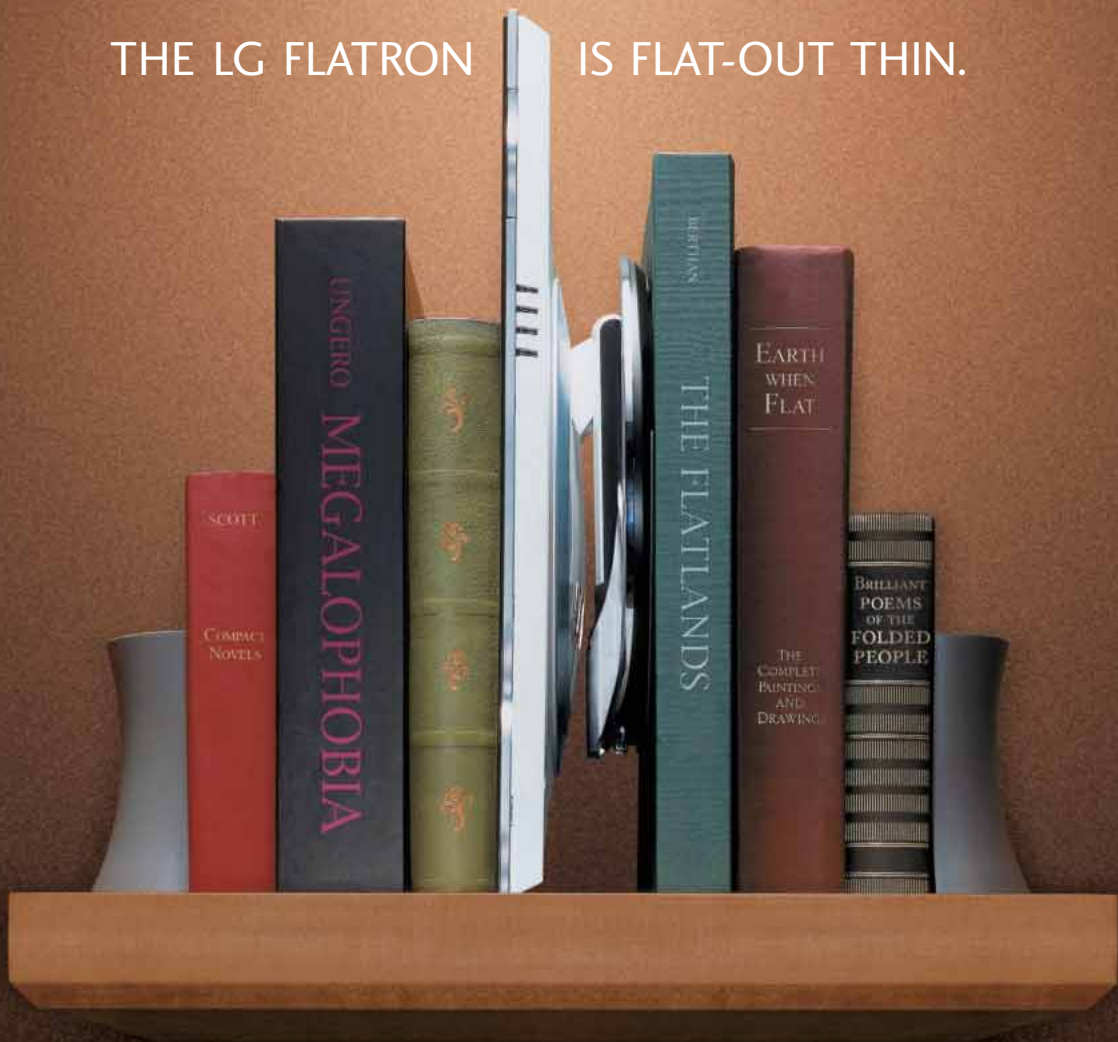
Worst: One mouse stood out because it was so bad. Nexxtech again delivered the worst of the test. With stiff buttons, a pedestrian design, and limited functionality, this is a poor alternative. "I wouldn't pay money for it" was one of the nicer comments from the testers. One of its few redeeming features: a 5-foot cord, matched only by CompUSA's mouse.

Cheap Geek Tip: Mini mouse. Looking for a tiny mouse to take on the road? The \$20 Kensington PocketMouse Mini has a permanent place in my travel bag. Its retractable USB cord minimizes snags, and it feels surprisingly good for its size. The clear alternative to touchpads! Want to splurge? Spend \$50 on the PocketMouse Wireless Micro—we gave it a near-perfect score in a recent review.

MORE ON THE WEB: You can contact Jim Louderback at Jim_Louderback@ziffdavis.com. For more of his columns, go to go.pcmag.com/louderback.

More curvaceous than a Ford Taurus, with two-tone color schemes to match, these mice at least aspire to fashion.

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WALL MOUNTED (front view)



SLIM SCREEN



INTEGRATED PORTS



90° TILT (auto image flip)



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80 Series model shown



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Bill Howard



Gadget Evolution

My laptop weighs 5 pounds. My laptop bag approaches 20 pounds. What gives? Well, a big chunk of the total weight comes from handheld devices that weigh well under a pound apiece, but collectively can add up to another 4 or 5 pounds. For a week-long jaunt, for example, I like to pack a laptop, a PDA, a cell phone, a portable media player or a hard drive music player, a flash music player for jogging, a camera, a Bluetooth headset, and a travel router so I can connect anywhere in my hotel room. Adding to the poundage are chargers that can't be replaced by a universal transformer from iGo, Kensington, or Targus.

It's time for consolidation, and products out now and coming in the next year will help. Here's my take on devices ripe for morphing.

Cell phones. The cell phone that's just a phone still has reason to exist: Maybe you received a free phone with your calling plan, or perhaps you want an ultrasmall phone. You should at least upgrade to a Bluetooth phone, though, to get a wireless earpiece and hands-free car connectivity.

One-megapixel phone cameras are stopgaps when you don't have a real camera along, but you may have to surrender the phone to security in public places where cameras aren't allowed.

The cell phone will likely become a music player as well, with the advent of affordable 1GB, 2GB, and 4GB memory cards. Or phones might incorporate small hard drives, which could prove to be one of technology's all-time dumb ideas: Rotating mass storage breaks when you drop it enough times, and who doesn't drop a cell phone? Flash memory can provide enough capacity for most people.

PDAs, smartphones. If you carry a PDA and a cell phone everywhere, why not combine them in a smartphone like the palmOne Treo 650 or a Pocket PC phone? Syncing your whole electronic address book is easier than programming even just a few numbers by hand into a standard phone. Typically, you can't sync your address book or your calendar to a traditional cell phone, and what synchronization you can do requires a \$50 cable that's bundled with smartphones.

Smartphones are expensive, though—\$400 to \$700—and data plans can approach \$1,000 a year, on top of what you pay for voice calling. If you

don't take the data plan, you may pay even more for the phone.

Portable Media Centers. Windows CE-based Portable Media Centers that play music and show photos and videos suffer two flaws: Most people under 25 expected that PMCs would also play games (they don't), and there's no easy way to port DVDs to the PMCs' 20GB hard drives, so you're stuck with recorded TV.

Of the handful of available devices, the Samsung YH-999 is smallest and handsomest—but it gets only 3 hours of battery life when showing video, half as much as the Creative and iRiver PMCs. A flash card popped into a PDA shows pictures too, and if you can figure out how to rip a DVD to a PMC, you can also rip it to a flash card and play it on a PDA.

Hard drive music players. I like the larger-capacity ones (20GB or more) because they double as portable hard drives for data. But most people find 4GB-to-6GB players have enough capacity.

Regardless, in the coming year, more players will have color displays so they can show photos. More players will have FM tuners, voice recording, support for WMA, and USB or flash-card connections, so you can off-load images from a digital camera without lugging a laptop around.

Flash music players. They weigh just an ounce or two, so why not carry one, even when a PDA or cell phone duplicates its features? For \$100 or even less, you can get 256MB and possibly 512MB, and for another \$25 you can have a 1GB player that holds 17 hours of music (encoded at 128 Kbps).

Laptops. The 12-inch ultraportable with cramped keys and a single drive bay may give way to the 14-inch widescreen notebook, with full keys, room for an optical drive or second battery, and 1,280-by-768 screen resolution. And users of 14-inch-LCD notebooks may go to 15-inch widescreens proportioned to tile two windows side by side. It's too bad there's no utility or hot key that lets you auto-arrange just those two windows, and also that more machines don't have a preboot OS that would let you play digital music with minimal battery drain.

MORE ON THE WEB: You can contact Bill Howard directly at bill_howard@ziffdavis.com. For more of his columns, go to go.pcmag.com/howard.

It's time for consolidation, and products out now and coming in the next year will help.

SOLUTIONS

MAKING TECHNOLOGY WORK FOR YOU

Inside the Virtual Machine

New CPU architectures should make it easy to run “guest” OSs safely and seamlessly under your main OS. **BY JEFF DUNTEMANN**

Imagine you're on help-desk duty, supporting your company's software product on all Microsoft Windows releases since 95, plus OS/2 Warp. Your workstation runs Windows XP, but when a customer calls with a problem running under Windows 98 SE, you double-click on a thumbnail, and in 10 seconds, Windows 98 SE is running in a window. Better still, your firm's product is already running right there with it.

Or you're doing Web research, and stumble upon a site that installs malware on your system through an Internet Explorer exploit. Not to worry. You save your bookmarks to a network share and close the copy of Windows that you were using. It's gone, and the malware is gone with it. The copy you closed was virtual, and your underlying Windows system is clean.

Or you're a developer, writing software for Windows, and a bug in your code corrupts the Registry. No matter. The copy of Windows that the code was running under is virtual. You close it, and the problem is gone.

A PC WITHIN A PC

Virtualization of operating systems is one of those things that is hard to understand until you have actually seen it work. Special software creates a CPU mechanism called a *virtual machine* (VM), in which Windows can run *under* Windows, in a window—as can Linux, OS/2 Warp, Solaris, or almost any other operating system written for x86 hardware. The virtualization software is called a *virtual*

machine manager (VMM) or *hypervisor*.

The virtual machine created by the VMM is an emulation of a completely independent PC. This emulation includes USB ports, video and sound boards, memory, and in some cases (say, to emulate an x86 PC on Mac hardware) the CPU registers and instruction set as well. A VM, along with the OS it carries and any software installed under the OS, can be saved out as a disk file, for archiving and

formance hit due to the emulation mechanism itself. But as processors get faster and memory cheaper, and as new CPUs with hardware virtualization support appear on the PC scene, virtualization will become as commonplace as multitasking is today.

NEW WAYS TO WORK

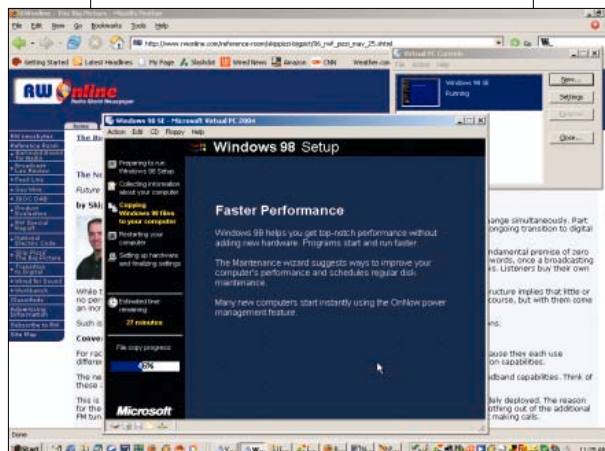
Like all true software breakthroughs, virtualization makes certain things possible that were impossible before—or were so slow that nobody bothered. Supporting several operating systems on one PC used to mean a separate disk partition for each, and the delay of booting into each partition to use its installed OS. Moving quickly between operating systems was impossible. Virtualization's implications for software developers, beta testers, and support professionals are immense: No more one-OS-per-PC, and no more waiting for an OS to boot up before use. An OS running in a VM is available instantly. A VM and its OS

held in suspension as a disk file can be restored in seconds, *with* running applications and utilities, right where they were when the VM was suspended.

The inherent isolation between VMs (and between VMs and the underlying “host” OS) makes certain risky tasks completely safe. Evaluating new software used to mean subjecting the test PC to nuisances like adware and hard-to-reverse Registry changes. Evaluators can now create a new VM, install a piece of software, and test it without risking a Windows reinstall. When the test is done, the entire VM state (including the software being evaluated) is simply archived

(generally to a server) or discarded.

Fighting viruses and other malware requires observing the malware in action and testing countermeasures. A VM is a very effective “sandbox” from which malware cannot escape—to other areas of your hard drive, at least. (When you're observing malware, it makes sense to disable the network port.) If the malware damages the OS in the VM, a “clean” snapshot file of the VM can be loaded and the work continued.



VIRTUALIZERS SUCH as Virtual PC allow users to install legacy OS products such as Windows 98 in a window under another host OS.

future use.

When you install an operating system as a “guest” OS inside a VM, it runs independently of—and with a high degree of isolation from—the underlying hardware and host operating system, as well as from other VMs. It's like having several separate PCs in the same box. As with multitasking, all VMs on a given system share that system's memory and processor cycles, and there is a small but not insignificant per-

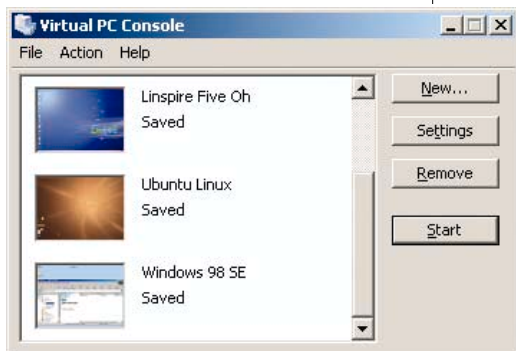
70 OFFICE:
Performing lookups
in Excel.

71 DIY: INTERNET:
Gmail file storage.

72 SECURITY WATCH:
External devices.

74 BUSINESS:
Google's AdSense.

76 USER TO USER:
Tips and tricks.



VIRTUAL PC's console displays thumbnails of the screen states of both running and suspended virtual machines.

Much of virtualization's power caters to software developers. Writing low-level utilities or OS components is tricky, because you're tinkering with the platform you're standing on. Testing software builds in a VM insulates your development machine from corruption by bugs. Furthermore, modern virtualization products allow you to create a sequence of snapshots of a VM, letting you revert to an earlier build, or even to an earlier machine state of the same build.

On the server side, several existing servers—each running on a separate PC—can be consolidated as VMs on a single PC. This saves both space and power and reduces heat and cable clutter. Both VMware and Microsoft offer virtual server as well as workstation products.

VIRTUAL PC

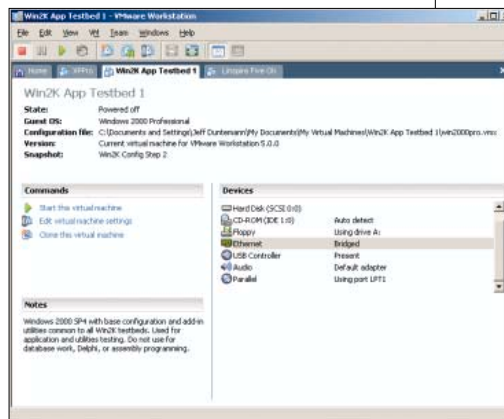
Microsoft acquired Connectix, along with its Virtual PC product for both Windows and Mac, in 2003. Virtual PC for Mac had long allowed Windows and Windows apps to run on PowerPC-based Macs. As befits its roots in Mac emulation, Virtual PC is relatively simple to install and easy to use. The x86 port is newer, and in its current (2004) release allows the VM installation of any Microsoft OS including DOS, as well as IBM-issued versions of OS/2. Each VM receives a unique MAC (media access control) address, and can request an IP address from an external DHCP server. For directly supported operating systems, Microsoft provides additional integration with the host OS that includes “seamless” mouse operation, file

sharing with the host PC, and improved performance.

Although not directly supported by Virtual PC's New Virtual Machine wizard, Linux distributions and other operating systems, including Solaris and Plan 9, can be installed with a little tweaking. Virtual PC VMs are “Samba-friendly,” and most Linux distros will connect to Windows LAN shares smoothly. X Window parameters must sometimes be changed in a text console before the GUI will run, and certain OSS that do run (BeOS, for example),

run poorly. For a third-party summary of OS compatibility with Virtual PC 2004 (●●●●○), see <http://vpc.visualwin.com>.

OS vendors usually require a separate license for each OS instance installed in a VM. Windows XP installed in a VM is considered a separate use and must be purchased and activated, just like any copy of XP in a physical PC.



VMWARE WORKSTATION 5 presents VMs as tabs, with each tab summarizing VM files and virtual hardware devices installed.

VMWARE WORKSTATION 5

Introduced in 1999, VMware Workstation (www.vmware.com) is targeted more at software developers and testers than at individual computer users. The recent Version 5 release (●●●●●) is installable under both Windows and Linux hosts. The New VM Wizard provides guest OS installation options for all versions of Windows since 3.1 (including the Vista beta), DOS, Net-

Ware 5 and 6, Solaris 9 and 10, and many Linux distributions.

Version 5 has introduced several important new features. It lets you create a hierarchy of related VMM snapshots and move quickly from one to another, under the control of an intuitive snapshot manager. You can quickly clone an existing VM to either an independent VM or a “linked” VM that is basically a description of the differences between the linked VM and the original. Linked VMs require much less space to store or move across a network.

Version 5 supports the “team” concept, in which a group of VMs is linked in such a way that virtual private LAN segments may be created between team VMs but kept isolated from all external networks. This allows testing of network applications within a team of VMs without risk to the physical network. And Version 5 employs memory sharing, which identifies identical memory blocks across several VMs and shares them to reduce total memory use.

VMware network support is extremely rich. VMs may be bridged through the host's physical network adapter to an external network, or connected in many different ways local to the host PC, through the use of virtual network adapters, switches, and NAT devices created by the VMware software.

XEN

The third major player in virtualization is the free, open-source, Xen (●●●●○), backed by titans like HP, IBM, and Sun. (See <http://wiki.xensource.com> for pointers to sites in the far-flung Xen community.) Xen differs from Virtual PC and VMware's products in that it provides *para-virtualization*, so called because it

doesn't provide a fully virtualized environment for its guest operating systems. In paravirtualization, the VMM acts as an intermediary between the hardware and operating systems, which must be modified specifically to work with the VMM.

An OS must be recompiled to work with Xen, but the upside is that an OS virtualized through Xen runs very reliably and nearly as fast as it would if it were in

full control of the PC. Because kernel changes are required, Xen works primarily with Linux, though Xen-aware ports of FreeBSD, Plan 9, and Solaris are also under way.

THE LORDS OF RING 0

A problem with the current generation of VMMs is that in a Pentium-class PC, there can be only one boss. When Windows, Linux, or any other modern protected-mode OS runs, it runs at the highest privilege level, often called “ring 0,” while applications and utilities are banished to ring 3. A VMM runs in ring 0, and its job is to manage and control operating systems that are also running in ring 0.

With host OS, VMM, and guest OS instances all running in ring 0, heroic (and slightly dicey) software techniques must be used to keep each guest OS isolated from the host and the other guests. A complex procedure called *guest depriving* is used to “demote” a guest OS to a less-privileged ring—without cooperation from the guest OS. The guest OS operates as though it were running in ring 0, and privileged machine instructions generate faults that are handled by the VMM’s code.

This can be messy—and potentially insecure against malware. The current state of the x86 architecture doesn’t allow for “clean” virtualization of software operating at ring 0. This has led both Intel and AMD to develop new hardware virtualization technologies, which will appear in their next-generation CPUs. Intel’s Vanderpool and AMD’s Pacifica technologies do roughly the same things, by adding new machine instructions and new powers for CPU memory managers. By introducing a whole new

GETTING STARTED WITH VIRTUAL MACHINES

1 Make sure you’re clear on the concept. It’s easy to misunderstand virtualization, especially the ways that virtual machines (VMs) interface with the underlying PC hardware. Talk to people who have VM experience, and read whatever you can find on the topic. Check out www.kernelthread.com/publications/virtualization. Books on VMware and Virtual PC are beginning to appear; search on Amazon.com.

2 Make sure all host PCs have enough cycles and RAM. For desktop VM use, the “512” rule of thumb is useful: Each VM should have 512MB of RAM and 512 MHz of processing power. That’s conservative; you can do with less, but performance will suffer. Where you have a choice, don’t skimp on memory.

3 Check to see if your applications require “exotic” hardware. Virtual machine managers currently offer very generic virtual hardware to each VM. If your apps require fancy graphics or custom hardware interfaces (like TV tuners), they may not run. Hardware that’s physically installed in a PC is not necessarily available to a VM!

4 Make sure you have enough software licenses. Most software vendors consider a virtual machine an entirely separate “seat” that must have a valid installation license. Running three VMs containing Windows XP requires three separately licensed copies, whether they’re all on the same PC or not. Make sure you have licenses (or can afford them) for any planned installs.

5 Decide where and how you’ll archive VM and snapshot files. VM work is disk-intensive. Each VM will take about 4GB of drive space. Beyond that, VMware snapshots require 200MB to 600MB *each*. If you’re going to create a lot of VMs or take a lot of snapshots, look closely at local or server space to ensure that you can back up all active VMs, and can retain snapshots needed for future reference.

CPU operating mode, the new hardware essentially creates a ring at a higher privilege level than ring 0 (ring -1?) from which a VMM can manage ring 0 software without compromising speed or security.

TOWARD “OS ON DEMAND”

These extensions to CPU hardware should begin to appear in late 2005 or early 2006.

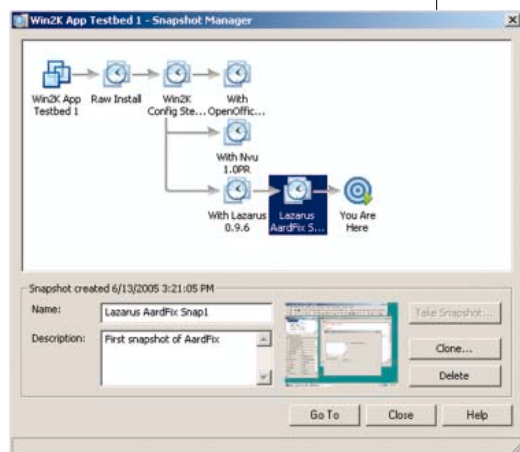
Because the new CPUs will be expensive, their initial impact will be felt on the server side, and it may be another two to three years before hardware virtualization support is mainstream on consumer PCs. The first appearance of a built-in VMM in a Microsoft OS will probably be with Vista Server, but Microsoft may yet surprise us by releasing one in Vista. At first, this VMM may run only on systems that support hardware virtualization, but we expect that Microsoft will eventually make it usable on machines with older CPUs as well.

All VMMs should be able to use the new virtualization-enabled CPUs, as well as existing

software-based techniques on older machines. This will trigger a change in the general perception of operating systems, which will come to be seen as just more software to be installed and run as needed. Users may install Linux under VMware for ordinary office work, and then run Windows in a VM only when they need to use a particular Windows app, like Adobe Photoshop or Visio. Fully configured “canned” VMs may be sold, with OS and application together and inseparable.

The new multicore CPUs should complete this transition to an industry in which there really *are* several PCs in a single box, all running over a hypervisor and hardware that are invulnerable to malware and even to most user mistakes. Imagine a VMM that takes a rolling snapshot of each VM session every hour or so, and an “oops!” button that rolls your current VM back to its last “good” state. Undo for the whole OS? That would be virtually perfect!

Jeff Duntemann is a technology writer and editor living in Colorado Springs, Colorado. His most recent book is Degunking Your Email, Spam, and Viruses.



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OFFICE

Performing Lookups In Excel

If you need to pull information out of spreadsheets, you need **VLOOKUP**. **BY HELEN BRADLEY**

The **VLOOKUP** function is a great tool for finding information in an Excel table, but it can be confusing. As you'll see, though, it's actually not so difficult.

Suppose you write purchase orders; to do so, you refer to a table that lists the products you order regularly, along with the product code, description, quantity, and so forth. To add an item to your purchase order, you enter the details from the table into a line in a purchase order form. The task is tedious and repetitive. And,

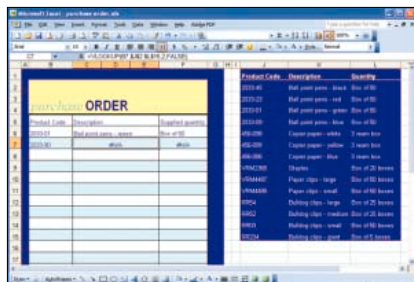


FIGURE 1: Where an exact match is required, use the **False** argument in **VLOOKUP**.

like any task that entails entering data manually, it's prone to error. Use **VLOOKUP** instead and you'll eliminate most of the work. All you need to enter is the product code and Excel will look up the other details for you.

To use **VLOOKUP**, you must lay out your data as a table. The data you're looking up must be in the leftmost column of the table; in our example, this is the product code. All of the related information follows in the columns to the right.

Let's assume that the purchase order and data are on the same sheet and the product codes are in the range **J2:J15**, with the descriptions and quantities in adjacent columns to the right, as in Figure 1. If our first product code appears in the purchase order in cell **B6** and we want the description in cell **C6**, the following **VLOOKUP** formula in

cell **C6** returns the description for the product code typed into cell **B6**:

```
=VLOOKUP(B6,$J$2:$L$15,2,False)
```

The syntax of the **VLOOKUP** formula is **=VLOOKUP** (value to look up, data table range, column to return data from, type of match). The *data table range* should be entered using absolute referencing, so the formula will work when copied down a column. The columns in the data table are numbered 1, 2, 3, and so on, so our formula will return the value from column 2—the product description.

The *type of match* is a logical value that indicates whether the match should be exact or approximate. The value can be **False** or **True**; if **False**, the formula will return only an exact match, and if one cannot be found, it returns **#N/A**. If the value is set to **True** or is omitted, the formula returns an exact match if one can be found and, if not, it returns the next nearest value that is not larger than the value being looked up. In such cases, the leftmost column (the product codes in our case) must be sorted in ascending order.

In our example, the formula for cell **D6** is the same as in cell **C6**, with a change only to the column number so it returns the quantity:

```
=VLOOKUP(B6,$J$2:$L$15,3,False)
```

Possibly the trickiest part of working with **VLOOKUP** is the situation where, when an exact match can't be found, you'd like to get the next nearest value. Consider the situation where you're grading test results—a result of less than 50 is a fail, a result of 50 but less than 65 is a pass, and a result of 65 or more is a credit. So your data table looks like this:

0	Fail
50	Pass
65	Credit

The test results are in ascending order, so when you write a lookup to check a result

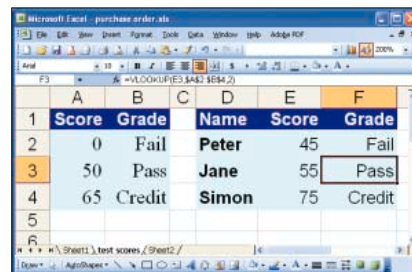


FIGURE 2: **VLOOKUP** is also useful for situations where a value can fall within a range.

of 45, the formula will return the next nearest value not larger than 45, which is 0—a Fail. If the data range is in cells **A2:B4** and the first grade to look up is in cell **E2**, this is the formula to write:

```
=VLOOKUP(E2,$A$2:$B$4,2)
```

True can be omitted, as it is the default. See Figure 2.

Let's go back to our purchase order example to see some helpful hints. Save yourself from dealing with absolute cell references by naming the data range using **Insert | Name | Define**, then use the name in the **VLOOKUP** function in place of the table range. For example:

```
=VLOOKUP(B6,ProductData,2,False)
```

If you want, you can place the data table on another sheet or in another workbook too. Here's how you refer to data on a different sheet and a different workbook:

```
=VLOOKUP(B6,Sheet2!$J$2:$L$15,2,False)
```

```
=VLOOKUP(B6,[productinfo.xls]Sheet1!$J$2:$L$15,3,False)
```

To manage an **#N/A** error better, combine the **VLOOKUP** with an **IF** function and the **ISNA** function, which returns **True** when **#N/A** appears in a cell. For example, this formula will display nothing if an exact match is not found:

```
=IF(ISNA(VLOOKUP(B6,$J$2:$L$15,2,False)), "", (VLOOKUP(B6,$J$2:$L$15,2,False)))
```

When your data is organized in rows rather than columns, don't forget to use the **HLOOKUP** function instead; it works the same way as **VLOOKUP**, but on horizontally arranged data.

Helen Bradley is a contributing editor of PC Magazine.

DIY: INTERNET

Space Available

Turning your Gmail storage into a virtual drive makes good use of 2GB you could never fill with e-mail. **BY PRESTON GRALLA**

The two gigabytes of storage you get with a Gmail account seems like an enormous waste of space for just e-mail. You're not likely ever to fill it; were you to come close, Google would no doubt have doubled the space by then. Wouldn't it be nice to be able to use some of that storage for something other than mail?

Well, you can. A free piece of software and the know-how to change a few Gmail settings are all you need to turn your Gmail storage into a virtual hard drive you can access any time you're connected to the Internet. (If you don't yet have a Gmail account, ask someone you know who has one, or anyone who sends you a message from one, for an invite. Gmail is still technically beta and invitation-only.)

First, get the GMail Drive shell extension from <http://www.viksoe.dk/code/gmail.htm> and install it. Download the ZIP file, extract all the files into a folder, then run setup.exe. (Note: The GMail Drive shell extension works only with Internet Explorer, Version 5 or above.)

After you install the software, run Windows Explorer. Under My Computer, you'll see a new drive called GMail Drive. When you click it, type in your Gmail password and username. If you don't want to have to log on every time you click the drive, check the box next to *Auto Login*.

You can use the GMail Drive as you would any other folder on your hard drive,

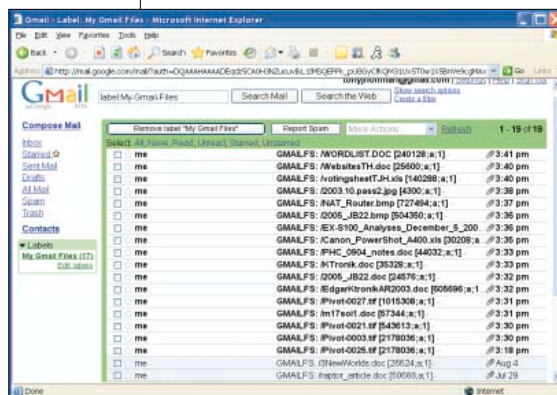
so you can copy files to it using Windows Explorer, and create subfolders as well. Although the GMail Drive looks like any hard drive in Windows Explorer, it's a virtual drive and you're connected to it over the Internet, so you can transfer files to it only at the speed of your Internet connection. On a dial-up connection, this will be exceedingly slow.

When you copy a file to your GMail Drive, you're actually creating an e-mail and posting it to your account. It will appear in your inbox, with the file as an attachment. To open one of the files from inside Gmail, click the e-mail to view it, and then click the *Download* button. The file will be downloaded to the PC you're on. Note that Gmail will send or receive messages only up to 10MB in size; using the drive does not change this.

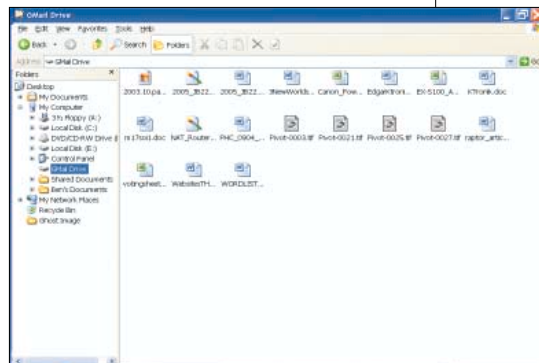
Using Gmail as a virtual drive can make your inbox pretty messy, because all the files you transfer to it show up as e-mails, with "GMAILFS:/" in the subject line followed by the filename. Mixing files with your normal e-mails makes for difficult reading and tricky mail and file management. But you can set up a filter that will route the files straight to your archived mail folder, bypassing your inbox. Click *Create a filter* from the top of a Gmail screen. In the *Subject* box, type *GMAILFS*, check the box next to *Has attachment*, then click *Next Step*. Check the box next to *Skip the Inbox (Archive it)* and click *Create Filter*; now all of your files will be sent to your archive.

You can also create a label for them, an even more effective form of file management. A label is the Gmail equivalent of a folder, so when you

do this, you'll be able to see all your files by clicking that label. To do this, create the filter as above, but after checking the box next to *Skip the Inbox (Archive it)*, also check the box next to *Apply the label*. From the drop-down box next to it, select *New label*, and from the screen that appears, type in the label name (such as *Hard Drive*), and click *OK*. From the drop-down list, choose your new label. Now click *Create Filter*. The files will be archived, but will also have the label next to them, so you can easily view only your files by clicking the *Hard Drive* label (or whatever you name it) when you log on to Gmail.



CREATING A LABEL for your files makes it easy to browse through them in Gmail.



THE GMAIL DRIVE automatically shows up as a new drive in Windows Explorer.

A couple of caveats: It's not a good idea to use Gmail as your hard drive if you use POP3 to retrieve your e-mail from Gmail. If you do that, whenever you retrieve e-mail from Google you'll also retrieve all the files you've copied to Google, which can be hundreds of megabytes. Also, upgrades to the Gmail system have at times broken GMail Drive's ability to function. GMail Drive Version 1.0.6 was released to overcome the latest changes. There is no guarantee that Google won't actively block the tool's use at some point.

The GMail Drive is particularly well suited for those who travel or who use two computers, one desktop and one laptop. You can copy files from your desktop to the GMail Drive, and then retrieve them as needed when you travel.

Preston Gralla is the author or coauthor of more than 30 books, including Windows XP Hacks, Internet Annoyances, and Windows XP Cookbook.

SECURITY WATCH

Big Threat from Little Devices

Physical security has taken a back seat in recent years, but it's time to focus on it once again. **BY LARRY SELTZER**

The avalanche of network security concerns today make it easy to lose focus on securing physical access to PCs. Don't. Sensitive data may be walking out your front door.

Our sister publication, *eWeek*, recently reported (www.eweek.com/article2/0,1895,1840141,00.asp) that vulnerabilities in some Windows USB device drivers could allow someone with physical access

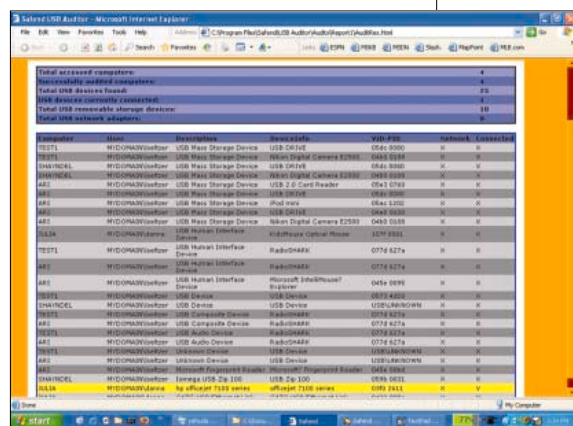
run a program from the key with whatever rights and privileges you have. The program might steal files, install spyware, send spam using your e-mail account, or do anything for which you have privileges. Sure, there's a chance your antivirus app will see the program if it's malware—but suppose it's not. Suppose the program simply copies files from your computer to the key or from the key to your network, or sends e-mail using your connection, or a million other undesirable things. You might never know of the intrusion.

How am I going to insert a USB key into your computer without your knowing it? It's not hard. If I'm the cleaning crew working at night, you won't be there to object. If I claim to be the exterminator looking for signs of pests, you'll move right aside and let me crawl around under your desk. I could install almost anything back there. I could install a removable hard drive to collect data and come

back in a day to collect "the traps I set." What sets today's devices apart is how tiny they are—and how much they can hold.

A major concern for businesses is the unauthorized removal of data. If a user were to attempt to e-mail data to himself, administrators could likely monitor it and trace it back to the user. But local device access isn't logged, so it's easy for an individual to walk out the door with a pocketful of sensitive information. Companies that build policies around this concern are not just being paranoid; contracts and law, such as HIPAA (the Health Insurance Portability and Accountability Act), often require companies to take precautions against the compromise of confidential data.

USB keys are probably the major cul-



AS SAFEND'S AUDITOR program shows, your PC may have more devices attached than you ever imagined.

to a computer to compromise it. And USB is not the only way; FireWire, Wi-Fi, Bluetooth, PC Card, and the like may pose potential threats as well. Regardless of protocol, PCs face a threat from the myriad devices that may be attached to them, legitimately or otherwise, especially since Autoplay, the feature that automatically runs a program from a CD when the disk is inserted in the drive, is also enabled by default for USB and FireWire media.

So when you're not looking, if I insert a USB key in your unlocked computer, I can

THE LOOKOUT

PRIVACY PIONEER PROMISES SECURE VoIP

Phil Zimmermann, the celebrated cryptographer who created PGP (Pretty Good Privacy) for e-mail encryption, is taking a shot at securing VoIP communications. Zimmermann took the stage at the Black Hat Briefings in Las Vegas in July to show off Zfone, a prototype application that encrypts Voice over IP calls to thwart man-in-the-middle eavesdroppers. According to Zimmermann, "There is a genuine need for voice encryption. There are programs that record VoIP phone calls, organize them, save them as MP3 files. There are snooping programs. It is possible to intercept a VoIP call, and, for businesses, encrypting those calls is going to be important."—*Ryan Naraine*

prits right now, but iPods may not be far behind. Companies have been hesitant to forbid employees to connect iPods to their office PCs, because a PC connection is the only way to charge the battery. But an iPod is a remote hard drive for the computer to which it is attached, and is thus a perfect vehicle for moving data in and out of a corporate network on the sly.

A number of companies are focusing on solving endpoint device security problems. Safend (www.safend.com) has a new enterprise management tool called Safend Protector for auditing and controlling local devices on networked Windows PCs. The company also has single-user protection products, including a free auditor.

With SmartLine's DeviceLock products (www.deviceclock.com), a central administrative console manages access to a variety of connections to PCs, including USB, FireWire, Bluetooth, and Wi-Fi, and allows you to set who can access which devices.

SecureWave (www.securewave.com) takes a whitelist approach with its Sanctuary Device Control. User access is prohibited to all devices unless specifically enabled, and access is controlled by device type, not by the connection. SecureWave also provides control over the times when devices may be accessed—so you can say "no iPods between 5 P.M. and 9 A.M."

Securing access to the PC has gotten scant notice in recent years. But if you really want to protect your systems, you can't just look at the network. Threats could be walking in and out the door every day.

Larry Seltzer is a contributing editor of PC Magazine.



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INTERNET BUSINESS

Google's Ad Network Spreads the Wealth

Here's how Google's AdSense program can make money for your Web site. **BY DAVID MURPHY**

Keeping Kuro5hin members happy is easy. As a collaborative discussion site on technology and culture, with members numbering in the tens of thousands, Kuro5hin has a community that moderates itself. When a user submits an article to the site, it eventually has to run the gauntlet: All Kuro5hin's members have the opportunity to vote yea or nay on whether and where the article will appear on the site. But try to advertise to Kuro5hin members and the response may be less structured. "Our community is one of those where if there was going to be any opposition to an ad format, they would let you know about it," says Rusty Foster, Kuro5hin's founder. "A lot of them are rabidly opposed to advertisements."

Still, Foster turned to Google's AdSense program in late 2003 as a way to increase revenue for the site, and the text-based advertisements—still running today—have paid off in more ways than one. In general, members have accepted the ads, which are now an important facet of Kuro5hin operations alongside the site's in-house text advertising and blog ads.

Kuro5hin is just one of thousands of Web sites that participate in Google's AdSense, an advertising program that helps even the smallest sites bring in revenue through clicks on site-placed advertisements from Google's massive ad network. "It's good. It's definitely an essential piece of the overall strategy. I know a lot of people rely on it entirely for their revenue, but I'm wary of that," says Foster.

After you set up an AdSense account, you just copy and paste a block of Google HTML and targeted ads start showing up on your Web site. You can elect to run ads based on content or to establish an advertisement-filled Google search on your site. If your Web site is about cars, for example, the AdSense software is smart enough to display advertisements about cars. Or, if you set up a Google search box on your

site, the results of visitors' searches will also feature advertisements matched for relevance. When a user clicks on an ad, you get paid. Google is mum about exactly how much money per click it pays sites.

The money comes from the dollars advertisers spend in Google's AdWords program, which is designed for Web advertisers. AdWords members' advertising campaigns are based on keywords; members decide on the amount they're willing to pay Google every time their keyword advertisements get clicked. They can increase

pany spokesperson Barry Schnitt.

Though Web sites are adopting AdSense in increasing numbers, "click fraud" is a growing cause for concern with the AdWords system. Users can fraudulently click on a competitor's advertisements to jack up its advertising costs—and possibly force the ad off-line, if the cost of the day's clicks hits a set limit.

"Competitor A wants to stick it to competitor B just out of spite, and that can be in a small mom-and-pop type competitive landscape, or that can be some of the biggest Fortune 500 companies out there," says Jessie Stricchiola, president of the search-engine marketing firm Alchemist Media. "Every time they visit Google, they just want to search and click once or twice on a competitor's ads, just to stick it to them."

It's estimated that at least 10 to 20 percent of all clicks are fraud-based. Google detects and refunds money lost from fraudulent clicks, but advertisers who in-

Making Cents With AdSense

Google's AdSense advertising program lets Web site publishers display relevant Google ads and earn money when people click on them.

1 Copy and paste a block of HTML into your Web pages.

```
<script type="text/javascript">
google_ad_client = "pt-
google_ad_width = 728;
google_ad_height = 90;
```

2 Your Web site starts accessing ads from Google's giant advertiser base.

USED CARS

3 Relevant Google ads show up on your Web site.

Ads by Google
Discounted Auto Parts
All major manufacturers, auto parts, accessories and more all available at rock bottom prices!
www.auto-parts.com

4 Add a Google search box and relevant ads show up with search results.

Ads by Google
BMW Heaven
1,000s of vintage BMWs!
www.bmw-heaven.com
Vintage BMW
BMW cars and motorcycle from the 1930's

5 Each click on an ad earns you money, and Google provides you with

Google AdSense
Reports Ad Settings
Ad Performance

Totals	128,905	1,439	1.1%	\$7.55	\$972.94
Averages	18,415	205			\$138.99

the advertisements' potential by increasing the amount they're willing to fork over. For example, if you pay Google \$50 a click, your advertisement will be more likely to appear than if you pay \$0.05 a click. But the ad's success will still depend on its keywords and overall click-through ratio.

"By showing relevant ads, Google ensures that users continue to find them useful, continue to pay attention to the ads, and continue to click when they are interested in products and services," says com-

pendently monitor AdWords' performance have found additional activity that costs them money.

As Google works toward increasing the competitiveness of its advertising programs, it plans to intensify its efforts at combating click fraud. Advertisers and aspiring moneymakers end up choosing AdWords and AdSense for the strength of the programs, says Schnitt; in the Google model, he adds, click fraud will eventually correct itself.

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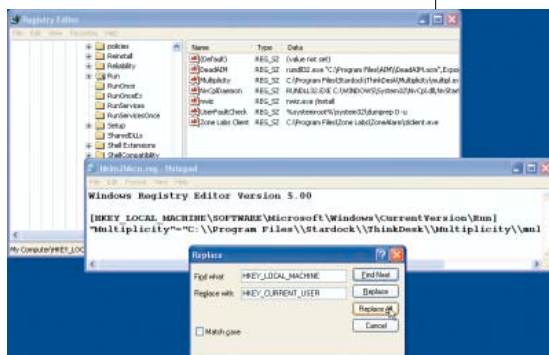
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USER TO USER

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YOU CAN CHANGE an All Users start-up item into one for just the current RegEdit user.

Per-User Control of Start-Up Programs

Is there a way to control what programs load at start-up depending on which user signs on to the machine?

ROGER W. REININGER

Microsoft Windows checks a number of different locations to identify programs that should launch at start-up. Some of these locations are shared by all users, while others are user-specific. To some extent you can control which programs launch for which users by moving the corresponding start-up items.

Windows launches program shortcuts found in the folder C:\Documents and Settings\All Users\Start Menu\Programs\Startup when any user logs on. Shortcuts in C:\Documents and Settings\username\Start Menu\Programs\Startup launch only when the particular user logs on. To make a one-user shortcut into an All Users shortcut, use Windows Explorer to move it from its current location into the corresponding All Users Startup folder. Make sure that no other individual users have that same shortcut in their Startup folders, or else the program will launch twice for them. To take an All Users shortcut and make it launch only for one specific user, move it into that user's Startup folder.

Windows also looks at two specific Registry locations for start-up items. Those in HKEY_LOCAL_MACHINE\Software\Microsoft\Windows\CurrentVersion\Run

are launched for all users, while the items in HKEY_CURRENT_USER\Software\Microsoft\Windows\CurrentVersion\Run take effect only for the current user.

To change an All Users start-up item into one for just the current user, begin by launching RegEdit from the Start menu's Run dialog. Navigate to the HKEY_LOCAL_MACHINE\...\Run key, right-click it, and choose *Export* to export just this key to a REG file. Open the REG file in

Notepad. You should see the key name in square brackets near the top of the file—change HKEY_LOCAL_MACHINE to HKEY_CURRENT_USER. Below it you'll find a number of lines having the form “name”=“program.exe”. Delete all of these except the one that corresponds to the start-up item you want to move. Then delete all lines after that line. Save the REG file, close Notepad, and double-click the REG file. Confirm that you want to merge the file's information into the Registry. Back in RegEdit, verify that the program in question now appears in the HKEY_CURRENT_USER\...\Run key, then delete it from the HKEY_LOCAL_MACHINE\...\Run key.

There are other locations from which Windows launches start-up programs, but it's not necessarily safe to move items from those locations.

If you don't mind shelling out a few bucks, you can make your life easier using a utility like *PC Magazine's Startup Cop* or F-Group Software's *Absolute Startup* (see our review of the latter at go.pcmag.com/startup).

—Neil J. Rubenking

Data Execution Prevention

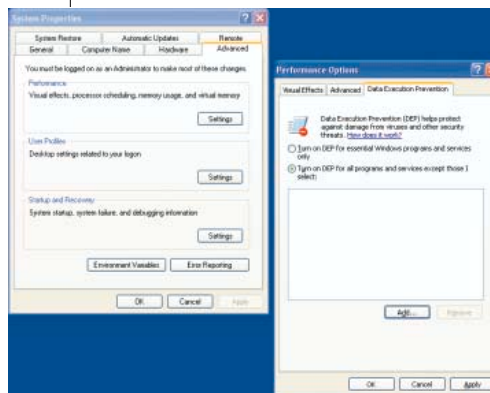
When I loaded my street-mapping program, I got a peculiar message from Microsoft Windows: “Data Execution Prevention. . . To help protect your com-

puter, Windows has closed this program.” What is this? How can I prevent the problem from reoccurring?

ART HAWLEY

You must have a modern PC with a cutting-edge CPU. Data Execution Prevention is a feature of Windows XP SP2, but it has no effect unless the CPU supports it. When a program attempts to execute code that's stored in an area of memory marked as nonexecutable, DEP prevents it. This blocks many types of attacks that viruses and other malicious software use to breach your security.

It can also, however, block programs that simply use nonstandard programming techniques such as self-modifying code. Here's how to bring this feature under control. Right-click on My Computer, choose *Properties*, click the *Advanced* tab, click the *Settings* button in the *Performance* panel, and



DATA EXECUTION PREVENTION can help prevent attacks by malicious software, but it can also block certain programs. To avoid this, add their names to the DEP exception list.

click the *Data Execution Prevention* tab. The default setting is *Turn on DEP for all programs except those I select*. If you run into DEP trouble with multiple programs, you could change that to *Turn on DEP for essential Windows programs and services only*. Initially, however, you'd do better to click the *Add* button and just add that mapping software to the list of exceptions. And hey! Enjoy your new computer. —NJR

Windows looks at two specific Registry locations for start-up items.

It's harder to move a blocked-sender list from one OE account to another, but it is possible.

Transfer Blocked Senders

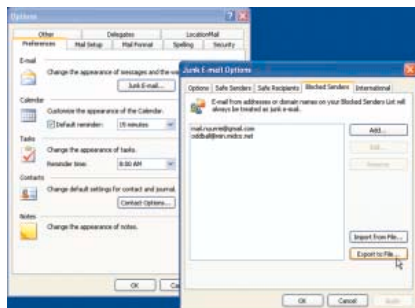
Is there a way to import or export the blocked-sender list from one e-mail account to another?

ROB EDWARDS

If you're using Microsoft Outlook 2003, the procedure is fairly easy.

- From the *Tools* menu select *Options*.
- Click the *Junk E-mail* button on the *Preferences* tab.
- Click the *Blocked Senders* tab in the resulting dialog.
- Click the *Export to File* button.
- Transfer that file to the computer with the other account.
- Repeat, but this time import the file.

It's much harder to do this in Outlook Express, but it is possible. Launch the Registry Editor by entering *Regedit* in the *Start* menu's *Run* dialog. Navigate to the key HKEY_CURRENT_USER\Identities. Below this key, you'll find one or more identity code subkeys



IT'S EASY TO MOVE a blocked-sender list from one Outlook account to another.

consisting of letters and numbers in curly brackets {}. If there's more than one, click each in turn and examine the User name value in the right-hand pane to find out which corresponds to the Outlook Express identity you normally use. Leave that one highlighted and open its subkey Software\Microsoft\Outlook Express\5.0\Block Senders—the number 5.0 is valid even if you're using OE6.

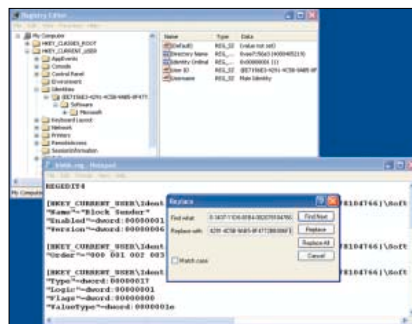
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IF YOU'RE USING OE, you need to edit the Registry to move your blocked-sender list from one account to another.

Right-click this key and choose *Export*, exporting just the selected branch to a REG file. Transfer the REG file to the computer containing the other e-mail account.

On the target computer, repeat the process of identifying which subkey of HKEY_CURRENT_USER\Identities is the one corresponding to the main Outlook Express identity. Launch WordPad and use it to open the REG file. Use Find/Replace to replace the old identity code with the code for the new account. Save the REG file and double-click to launch it, confirming that you want to merge its contents into the Registry. Launch OE and choose *Tools | Message Rules | Blocked Senders List* to confirm that the transfer worked.—NJR

Microsoft Access Mystery

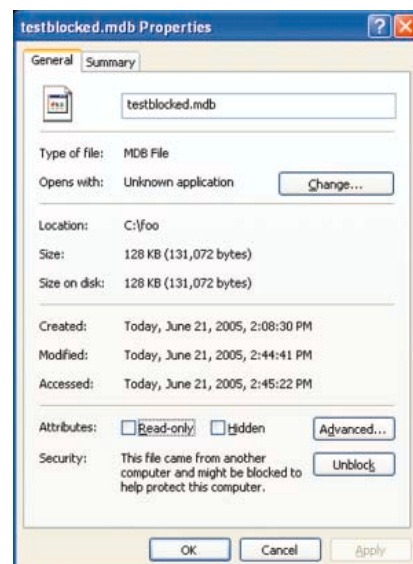
On my new HP system running Windows XP, Microsoft Access tells me that I can't open a normal MDB file because of the following error message: "Microsoft Access cannot open this file. This file is located outside of your intranet or on an untrusted site. Microsoft Access will not open the file due to potential security problems. To open the file, copy it to your machine or an accessible network location."

I am not on a network. My system is a standalone desktop running XP. I am the only user. The MDB file that I want to open was created and e-mailed to me by the previous administrator of our nonprofit organization. It is in the same directory as the backup copy of my other database, which opens up fine. I have tried to relocate the new file just about everywhere on C: and it still won't open. Is there something in the new imported database file itself that limits its use?

PAUL CECHOVIC

You'd never know it from the error message, but the problem here lies in the fact that the file was e-mailed. The Attachment Execution Services feature in Windows XP SP2 marks files received as attachments with an attribute that identifies them as having come from a non-secure zone. This stigma causes Access to reject the file. The security warning is the same as you get when you choose to run a program from the Internet.

Fortunately, unblocking the file should be easy. Just right-click on it in Windows Explorer and choose *Properties*. You'll notice an unfamiliar button titled *Unblock* at the bottom of the *Properties* dialog—click it. That should remove the attribute that prevents Access from accepting the file. If by some mischance this technique doesn't



IF YOU CAN'T OPEN a file that was e-mailed as an attachment, you should be able to after clicking the *Unblock* button in the *Properties* dialog box.

work, there's another possibility. The attribute that identifies "foreign" files is specific to the NTFS file system. It's lost if you copy the file to a drive formatted with some other file system. So, try copying the file to such a drive, deleting the original, and copying it back. You could use any FAT32-formatted disk partition, a writable CD, a USB flash drive—even a floppy disk, if the file is small enough.—NJR

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\$379 E-VALUE Code: 04794-S50839m

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- 15" Dell™ E153FP Flat Panel Display, add \$229



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- Monitor Not Included

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Recommended Upgrade:

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- 3-Yr Economy Service Plan (Ltd. Warranty,* On-Site Service,* Tech Support)
- Monitor Not Included

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support graphics, depending on system memory size and other factors. **Shared Memory for OptiPlex GX520:** Up to 224MB of system memory may be allocated to support graphics, depending on system memory size and other factors. **Gigabit Ethernet:** This term does not denote actual operating speed of 1GB/sec. For high-speed transmission, connection to a Gigabit Ethernet server and network infrastructure is required. **1100MP Lumens:** Based on ANSI/NAPM IT7.228-1997 tests of 73 units, December 2004, with average ANSI Lumens 1406. Bulb brightness degrades with usage. Dell recommends replacing your bulb after 2000 hours of usage (up to 2500 hours in Eco-mode). **Hard Drive:** For hard drives, GB means 1 billion bytes; actual capacity varies with preloaded material and operating environment and will be less. For hard drives, one TB = one trillion bytes; actual capacity varies with preloaded material and operating environment and will be less. **PowerConnect:** This device has not been approved by the Federal Communications Commission for use in a residential environment. This device is not, and may not be, offered for sale or lease, or sold or leased for use in a residential environment until the approval of the FCC has been obtained. **Printer Toner Yield:** Laser monochrome print cartridge yield based on 5% page coverage; color print cartridge yield based on 20% page coverage. Yields vary with usage and environmental conditions. **Free 3-5 Day Shipping:** Free shipping is lowest cost (3-5 day) shipping. Valid for U.S. Small Business new purchases only. Available in Continental (except Alaska) U.S. only. To qualify for free shipping, minimum purchase thresholds may apply. Call or go online for details. Systems free shipping offers exclude Software and Peripheral (S&P) orders under \$49; all S&P orders placed by phone, and S&P orders placed in systems configurator pages. S&P free shipping offers apply to S&P orders purchased in the S&P Online store and/or by phone. Free shipping on S&P does not apply to S&P in the online system configuration pages, but can be combined with other offers. **Trademarks/Copyright Notices:** Dell, the Dell logo, the stylized E logo, E-Value, Dimension, Inspiron, Latitude, OptiPlex, PowerEdge, Dell Precision, PowerConnect, CompleteCare, ExpressCharge, Tri-Metal and UltraSharp are trademarks of Dell Inc. Intel, Intel Inside, the Intel Inside logo, Intel Centrino, Intel Xeon, Pentium and Celeron are trademarks or registered trademarks of Intel Corporation or its subsidiaries in the United States and other countries. Digital Light Processing, DLP, the DLP logo and the DLP medallion are trademarks of Texas Instruments. Microsoft and Windows are trademarks or registered trademarks of Microsoft Corporation in the United States and/or other countries. EMC is a registered trademark of EMC Corporation. ©2005 Dell Inc. All rights reserved.

By Cade Metz

18th

Annual Reader Satisfaction Survey

Our readers told us about more than 45,000 PCs and printers. What they said might surprise you.

Now that even bargain systems can handle most any day-to-day task, consumers are less likely to ask, "Can my machine do what I want it to do?" The question is now "Can my machine do what I want it to do *today*?" The biggest factors that differentiate systems and makers are, How reliable is the machine? How often does it break down? How good is the maker at repairing it? Most important, however, is the question of support. When things go wrong, how good is the company at supporting you as you try to find a solution?

To assist in your search for the best (and best-supported) PCs and PC manufacturers, we give you our annual Reader Satisfaction Survey. In this, the survey's 18th edition, nearly 14,000 *PC Magazine* readers describe their experiences with

desktops, notebooks, and printers. They rate over 26,000 PCs and over 19,000 printers, including products used in the home and at work. They detail not only the reliability of these products—how well they hold up over time—but also the quality of the support and repair services provided by manufacturers.

VISIBLE MEANS OF SUPPORT

Since 2003, the number of support requests among computer makers has increased 11 percent, with the largest companies fielding between one and two million requests each month, according to the Service and Support Professionals Association. Despite this substantial increase, *PC Magazine*'s readers are actually happier with their PCs and manufacturers' support services overall than they were a year ago. This may surprise those who've had trouble with phone support. Some of

the biggest vendors, including Dell, HP, and Gateway, offshore at least part of their technical support operations to overseas call centers, and their customers often have difficulty communicating with technicians. Without exception, vendors with the lowest tech support scores use overseas workers, and get low scores on technicians' communication skills.

One possible reason for this increase in satisfaction with support: When they do need tech support, PC owners are slowly but surely turning away from the phone and toward the Internet. Last year our readers reported getting support by telephone 80 percent of the time. This year, that number is down to 69 percent. A year ago, readers turned to online FAQs, knowledge bases, download centers, and other forms of Web support just 18 percent of the time. Now they're looking for answers via the Web 30 percent of the time.

THE PARTICULARS

Who's doing it right? As usual, Apple receives the highest ratings for overall satisfaction with both desktops and notebooks, and it is a Readers' Choice award recipient. Dell desktop PCs win their 14th Readers' Choice award in 15 years; they share the prize with Sony and survey newcomer Alienware. Lenovo/IBM wins in the notebook category. Hewlett-Packard PCs, both desktop and notebook systems, sit at the other end of the scale.

For the 13th year in a row, however, HP receives our Readers' Choice for printers. But HP once again shares the award with Canon, which receives its third straight award. Canon seems to be bumping the bar up, too, scoring higher than HP on many measures, especially when we look at printers purchased within the last year.

Survey respondents rate various aspects of their PCs and printers on a scale of 1 to 10: 1 to 2 meaning *poor*, 3 to 4 *fair*, 5 to 6 *good*, 7 to 8 *very good*, and 9 to 10 *excellent*. Each raw rating means something on its own. Sony's 8.2 overall score for desktops, for

instance, is very good on our scale. But ratings must be checked for statistical accuracy, and they aren't meaningful unless they're compared with competitors' ratings.

If readers comment on fewer than 50 systems in a category for a particular vendor, its scores are dropped; for the remaining companies, a statistical t-test is used to calculate whether we can say with confidence that a vendor's score differs significantly from the industry average. Thus, all scores are classified as average, better or worse than average, or significantly better or worse than average. In some cases, t-tests can give different meanings to identical scores. In the desktop category, for instance, both ABS and Sony receive an overall score of 8.2, but t-tests indicate that, statistically, Sony's 8.2 score is significantly better than average, while ABS's 8.2 is merely average.

For the first time, we've removed Apple from the mix when calculating these relative weightings. Whether because Apple's products are truly so much better than everyone else's or because Apple's customers are so passionate about their products, the company scores so high that it's like the class genius blowing the curve. More importantly, however, when shopping for a system, buyers are apt to compare Apple's platform to the Windows platform—not just to, say, Dell's product line or HP's. By removing Apple from the calculation of averages, we can compare Apple machines with the "average" Windows PC.

Which computer or printer is right for you depends on your needs. For example, Lenovo leads among Windows notebooks, but are their systems overkill for a little word processing and Web surfing? Would a cheaper HP serve you better, or is it a false saving? Consider the aggregate opinions of thousands of what we humbly submit are the best-informed tech buyers in the world—PC Magazine's readers—before you make your next purchase. You'll be happy you did.

MORE ON THE WEB

For more information on the companies mentioned, reviews of their products, and results of past years' surveys, visit us on the Web at www.pcmag.com.



Apple users simply love their machines. Apple continues to lead the pack, winning Readers'



Choice awards for both its desktops and notebooks.



One of several newcomers to the survey, high-end gaming machine maker Alienware grabs a Readers' Choice award for desktops.

Sony makes



reliable desktops that rarely need repair, which helps the company overcome poor support scores to earn a Reader's Choice.



Whether it's work machines or home systems, Dell's desktops just satisfy—earning the company a Readers' Choice for the 14th time in 15 years.

Even though



it targets mainly businesses, Lenovo/IBM leads in the home notebook market as well.



Success in photo printers and color ink jets power Canon to a spot at the top of the printer heap.



Long-time favorite HP wins its 13th award for printers in a row.

Desktops & Notebooks

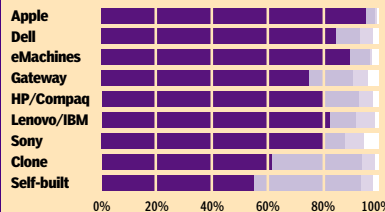
by Cade Metz

THIS YEAR READERS GAVE US DATA ON MORE THAN 26,000 PCs, supplying us with enough information to report on a dozen desktop makers and ten notebook makers, for a total of 15 of the top PC companies in the United States. Our readers remain loyal to old favorite Dell, and Apple once again runs up the score against the Windows opposition. There were a few surprises, too, however, including Sony's jump from average to outstanding and Alienware's impressive debut.

INITIAL SETUP EXPERIENCE

Desktops purchased within the past year

- Everything worked the first time
- Not everything worked, but I solved the problems myself
- Not everything worked, but tech support solved my problems
- There were major problems, and the machine had to be replaced



ABS

No, this isn't a typo: Nearly half of our readers' ABS desktops have required repair in the past year. That repair rate is almost twice as high as that of any other PC maker in this year's survey. Yet, despite this, readers seem not to hold it against the company too much, giving ABS an overall score of 8.2, which falls within the average range. Obviously, customers must be fairly pleased with the company's tech support—and how it handled its many necessary repairs—in order to forgive machines needing so much work.

ABS manufacturers all its own desktops in full at facilities in City of Industry, California, and there's little doubt that the operation has had a quality control problem this past year.

Readers who responded to our survey complain about the early failure of everything from DVD-ROM drives and hard disks to power supplies, cooling fans, and monitors. "Had to send it the back to the factory twice during first year," says Gary Stark, of his ABS Awesome desktop.

Of course, some of our readers report nary a problem with their ABS desktops.

"I have had a very good experience with reliability and performance from my ABS PC," says Mark Whitley. "I purchased a second, identical ABS PC for a coworker, and he has had the same reliability and service from his system also." Indeed, the

company's score for the reliability of its desktops is 8.1—again, within the average range, and slightly above the numerical average of 8.0.

This high reliability score seems to contradict the high repair rate, but that's the opinion readers give. We can only speculate that once the machines are finally fixed, they're pretty much bulletproof.

ABS outsources its technical support and repair duties to another company based nearby in southern California. This facility has a call center that offers both phone and e-mail support; it's also the location of a repair depot where users can mail in notebooks and, in some cases, desktops.

On-site service is available from ABS as well. In

the end, when asked how likely they are to purchase another ABS desktop, our readers give ABS an average rating, 7.9. So it seems the company must be doing something right.

TOP THREE SYSTEM TYPES PER COMPANY

Desktops purchased within the past year

Apple	Multimedia	52%
	All-in-one	36%
	Workstation	20%
Dell	Mainstream	37%
	Multimedia	27%
	Value	16%
eMachines	Value	51%
	Mainstream	45%
	Multimedia	25%
Gateway	Multimedia	41%
	Mainstream	31%
	Media Center	18%
HP/Compaq	Mainstream	35%
	Multimedia	27%
	Value	20%
Lenovo/IBM	Mainstream	42%
	Corporate	39%
	Workstation	22%
Sony	Media Center	48%
	Multimedia	47%
	Mainstream	19%
Clone	Multimedia	46%
	Mainstream	30%
	Workstation	25%
Self-built	Multimedia	53%
	Mainstream	32%
	Gaming	30%

Multiple choices are allowed, so totals may not equal 100 percent.

Acer

They're back. Acer makes an appearance on the notebook side of our survey this year, thanks to a concerted distribution push in the States, with a particular focus on notebooks.

The results are moderately encouraging for this new batch of machines: Acer receives respectable ratings across the board, both overall and for notebooks less than a year old. The company's newer notebooks tend to score slightly better, but all of the company's scores fall within the average range in both categories.

For the most part, Acer notebooks and tablet PCs, including the Aspire, Ferrari, and TravelMate lines, are manufactured in China, but the company handles all technical support—for desktops as well as notebooks—at a call center in a suburb of Austin, Texas. The same facility also houses an Acer-owned and -operated repair depot. If a notebook needs extensive repairs, customers can overnight it to the depot at Acer's expense. In some cases, however, parts are mailed out so that customers can replace them on their own.

In general, our readers are pleased with these arrangements. Acer's overall score, 8.1, is within the survey's average range, as is its score for reliability, 8.3. Of the 81 Acer notebook customers who responded to our questionnaire, only 20 percent say that their machines have needed repair within the past year. "All in all, this has been a good laptop," says Janssen Jones, discussing his year-old Acer TravelMate.

"The hardware has been pretty durable. It gets a beating and manages to hold up well."

But there are dissenting opinions. "I consider it mediocre at best," says one

Size isn't everything: Alienware's fast, rock-solid desktops prove that even a boutique vendor can take the prize.



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anonymous reader of his TravelMate, after having trouble with both the graphics engine and the Bluetooth port. The company's score of 7.7 for likelihood of recommending is also within the average range—not nearly as high as the scores given to Dell, IBM, and even Averatec but higher than those given to Gateway and HP.

Alienware



You couldn't ask for a better debut. With its first appearance in our annual Reader Satisfaction Survey, Alienware receives a higher overall score than any other Windows desktop manufacturer, including much larger players such as Dell, Gateway, HP, Lenovo/IBM, and Sony. Its overall score, 8.8, is significantly better than the survey average and nets the company a Readers' Choice. Only Apple's evangelists gave their desktops a higher numerical overall score.

Based in Miami, Florida, Alienware bills itself as a manufacturer of "high-performance" desktops and notebooks, often purchased specifically to run high-end 3D games. All of Alienware's desktops are built, from beginning to end, at the company's Florida facilities, while at least the first phase of notebook manufacturing is farmed out to third-party companies overseas. Readers are generally pleased with the reliability of Alienware's desktops, including the Area-51 and the Roswell. "I have owned my Area-51 for over two years without a single hiccup," says Robert Gagne. "This machine is fast and rock-solid." For desktops, the company's overall reliability rating, 8.7, is better than average, and only 19 percent of systems required repair, which is average.

The company's "level one" call center, which handles first-time calls and e-mails from customers, is located in Costa Rica, and at least a few readers had trouble understanding technicians. "Alienware technicians are extremely helpful when I can understand them," says J. Thomas Howell. "Most have very thick accents, and I normally have to repeat myself many times."

When asked how likely they were to recommend another Alienware machine, readers give the company merely an average rating, 7.9. Why? We suspect that it may have something to do with the cost. These high-end desktops are quite expensive. But it's hard to argue with such high overall and reliability scores.

Survey results: Desktops

- ▲ Significantly better than average*
- ▲ Better than average** Within the average range
- ▼ Worse than average**
- ▼ Significantly worse than average*

	OVERALL SCORE†	POOR (1-2.4)	FAIR (2.5-4.4)	GOOD (4.5-6.4)	VERY GOOD (6.5-8.4)	EXCELLENT (8.5-10)	RELIABILITY	TECH SUPPORT	REPAIRS	PERCENT NEEDING REPAIR	LIKELIHOOD OF RECOMMENDING
ALL DESKTOPS											
ABS (61 responses)	8.2						8.1	—	—	44% ▼	7.9
Alienware (58)	8.8 ▲						8.7 ▲	—	—	19% ▲	7.9
Apple (298)	9.2 ▲						9.3 ▲	8.4 ▲	—	11% ▲	9.2 ▲
Dell (5,752)	7.9 ▼						8.2 ▲	6.4	6.7	17% ▲	8.4 ▲
eMachines (367)	7.4 ▼						7.7 ▼	6.7	7.1	18% ▼	7.7
Gateway (688)	7.7 ▼						7.9 ▼	6.3	6.5	23% ▼	7.1 ▼
HP/Compaq (2,174)	7.4 ▼						7.7 ▼	6.4	6.7	19% ▲	7.4 ▼
Lenovo/IBM (334)	7.4 ▼						7.8 ▼	7.2 ▲	6.7	21% ▼	6.9 ▼
MPC/Micron (82)	7.8						8.2	—	—	23% ▼	7.1 ▼
Shuttle (63)	8.0						8.1	—	—	17% ▼	8.1
Sony (445)	8.2 ▲						8.2 ▲	6.1	6.5	16% ▲	8.0 ▲
Systemax (92)	7.7						7.9	—	—	20% ▼	7.8
Clone (710)	8.2 ▲						8.4 ▲	7.5 ▲	7.8 ▲	23% ▼	8.3
Self-built (1,408)	8.4 ▲						8.6 ▲	7.3 ▲	8.0 ▲	22% ▼	8.7 ▲
Avg. of Windows PCs	7.9						8.0	6.5	6.7	22% ▼	7.7
BUSINESS											
Apple (100)	8.9 ▲						9.2 ▲	—	—	9% ▲	8.8 ▲
Dell (2,835)	7.7 ▼						8.0 ▲	6.9	6.9	18% ▲	8.3 ▲
eMachines (77)	7.4						7.9	—	—	14% ▼	7.9 ▲
Gateway (257)	7.5						7.8	6.8	6.8	25% ▼	6.8 ▼
HP/Compaq (919)	7.2 ▼						7.6 ▼	6.8	7	19% ▼	7.2
Lenovo/IBM (240)	7.1 ▼						7.6 ▼	7.2	6.6	23% ▼	6.5 ▼
Sony (97)	8.0 ▲						8.3 ▲	—	—	18% ▼	7.8
Clone (199)	8.0 ▲						8.3 ▲	7.3	7.6 ▲	28% ▼	8.3 ▲
Self-built (290)	8.1						8.5 ▲	7.3	7.9 ▲	29% ▼	8.6 ▲
Avg. of Windows PCs	7.5						7.9	6.9	6.8	19% ▼	7.4
HOME											
ABS (51)	8.2						8.1	—	—	41% ▼	7.8
Apple (198)	9.3 ▲						9.4 ▲	8.5 ▲	—	12% ▲	9.4 ▲
Compaq (385)	7.4 ▼						7.7 ▼	6.1	6.3	19% ▼	7.3 ▼
Dell (2,914)	8.2 ▲						8.3 ▲	6	6.6	16% ▲	8.5 ▲
eMachines (290)	7.4 ▼						7.7 ▼	6.6	7.2	19% ▼	7.6
Gateway (431)	7.9						8.0	6	6.3	21% ▼	7.3 ▼
HP (870)	7.7 ▼						7.8 ▼	6	6.5	20% ▼	7.8
Lenovo/IBM (94)	8.2 ▲						8.5 ▲	—	—	15% ▼	8.0
Shuttle (52)	8.0						7.9	—	—	17% ▼	8.0
Sony (348)	8.2 ▲						8.2 ▲	5.9	6.4	16% ▲	8.1 ▲
Systemax (64)	7.8						7.8	—	—	23% ▼	7.9
Clone (511)	8.2 ▲						8.4 ▲	7.6 ▲	7.9 ▲	21% ▼	8.3 ▲
Self-built (1,118)	8.5						8.7 ▲	7.4 ▲	8.1 ▲	20% ▼	8.8 ▲
Avg. of Windows PCs	7.9						8.0	6.1	6.5	21% ▼	7.8
DESKTOPS LESS THAN A YEAR OLD											
Apple (139)	9.3 ▲						9.4 ▲	—	—	12% ▼	9.2 ▲
Dell (1,842)	8.2 ▲						8.3	6.3	6.7	15% ▼	8.4 ▲
eMachines (126)	7.6 ▼						8.0	—	—	8% ▲	8.0
Gateway (137)	8.1						8.3	—	—	15% ▼	7.7
HP/Compaq (618)	7.9						8.1 ▼	6.6	6.7	13% ▼	7.9
Lenovo/IBM (110)	7.7						8.1	—	—	14% ▼	7.3 ▼
Sony (116)	8.5 ▲						8.6 ▲	—	—	13% ▼	8.4 ▲
Clone (206)	8.7 ▲						8.6 ▲	7.5 ▲	—	20% ▼	8.6 ▲
Self-built (500)	8.8						8.9 ▲	7.2 ▲	7.7 ▲	20% ▼	8.8 ▲
Avg. of Windows PCs	8.0						8.2	6.4	6.7	13% ▼	8.0

*At least 2 confidence intervals from the average. **1 confidence interval from the average. **RED** denotes Readers' Choice. Except as noted, scores are based on a scale of 1 to 10, where 10 is best. A dash indicates that we do not have enough survey data to give the company a score. †The overall score is based on answers to the question "Overall, how would you rate this desktop PC?" It is not the average of the other scores in this table.

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Apple



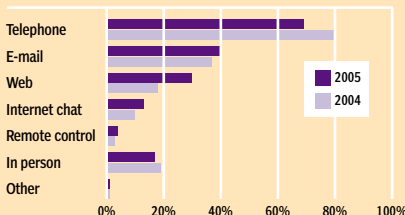
Once again, Apple achieves scores that are far and away the highest for all vendors in our survey, earning Readers' Choices in both desktops and notebooks. For Apple, in both the desktop and notebook sections of the survey, *every single score* is significantly better than the industry average for Windows machines. No exceptions. Apple's overall score for desktops is 9.2, and the closest competing score, Alienware's, is 8.8. Apple's overall score for notebooks, 9.2, is just as high, and the rest are even further behind: IBM and Fujitsu are the closest, at 8.4.

The company's scores are so high there's some concern that they can't be completely trusted: that Apple users are so passionate—almost fanatic—about the company and its products, they're not quite as objective as other computer owners.

Still, there's solid evidence that Apple

SATISFACTION WITH SUPPORT: Desktops less than four years old

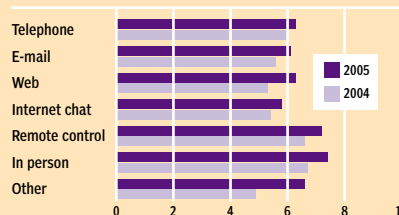
HOW RESPONDENTS CONTACTED SUPPORT



Multiple choices are allowed, so totals exceed 100 percent.

* This category indicates satisfaction with the support itself, not with the type of support (e.g., telephone, e-mail, or other) contacted. If a person contacted support in multiple ways, the score for overall support satisfaction applies to all the methods tried.

OVERALL SUPPORT SATISFACTION, BY TYPE OF CONTACT*



Responses are on a scale of 1 to 10, where 10 is best.

desktop systems less than a year old, the iMacs (18 percent) were twice as likely to need repairs as PowerMacs (9 percent).

Apple does walk a thin line with its support, though, offering perhaps the stingiest terms of any of the vendors in our survey. If customers do call Apple for technical support, they're more likely to pay an extra fee. While some vendors offer a lifetime of toll-free telephone support, Apple's standard warranty affords only 90 days. The warranty protects against break-

pressed with Averatec notebooks that, when asked how likely they were to purchase or recommend another, their ratings garnered Averatec a score of 8.3.

Averatec outsources all notebook manufacturing to third parties. Given the company's excellent score for units needing repair and its high (though statistically average) score for reliability, it has obviously chosen its partners well. "My Averatec is the single best laptop I've ever had," says E. V. Di Massa, Jr. "I've had NEC, Sony, Toshiba, and Compaq, and none compare to the Averatec. It's easy to handle and works great." Readers are also fairly pleased with the basic out-of-box experience, giving the company average

Apple's customers are exceptionally satisfied . . . is it time for frustrated Windows users to take another look?

computers may actually be worthy of devotion. There's little doubt, for instance, that the company builds unusually reliable products.

On the desktop side, readers say that Apple systems needed repairs only 11 percent of the time, an astonishing number when you consider that the closest competing score is Sony's at 16 percent. Just 17 percent of Apple notebooks needed repair—second to Averatec's 14 percent—but this is still amazingly low considering that no one else is under 20 percent.

Tempting as it may be to suspect that Apple owners are prone to exaggerate when asked subjective questions, they are much less likely to exaggerate the number of times a system needs repairs. "I have never had a problem with this unit," says Michael Wright, of his Apple PowerBook. "My only reason for contacting tech support was to set up my wireless network, and they even helped me set up my Windows desktop."

Nonetheless, we've heard from readers about problems related to the all-in-one design of the iMac G5. Looking at Apple

down for only a year, and Apple fails to offer on-site service.

That's right: The company will not send someone to your home or office to repair your system. Your best option is to carry your system to one of the more than 100 Apple stores spread across the country.

Still, while we appreciate generous support and repair policies, it's even better to offer top quality products and services, as Apple has done.

Averatec

Like Alienware, Averatec is making its first appearance in our Reader Satisfaction Survey. Though its results aren't quite as impressive as those for Alienware's high-end desktop gaming systems, this southern California notebook manufacturer more than holds its own.

Its overall score, 8.2, is merely average, but only 14 percent of its systems required repairs—the lowest rate of any vendor in the notebook portion of our survey, including Apple. Readers were so im-

ratings for initial setup.

Currently, Averatec farms out all its technical support and repair duties to a third party based in Bryant, Texas. Though Averatec indicates that it could switch to another partner in the near future, the company has no intention of routing telephone calls and e-mails to call centers overseas. In fact, the company plans to broaden its service by offering online chat support. At the moment, help is limited to phone and e-mail.

When repairs are needed, Averatec's customers are instructed to ship systems to this same third party, and, in most cases, machines are sent back within three business days. Not all customers like having this as their only option—wary perhaps of shipping and handling expenses (which customers must pay, even if the machine is still under warranty) and of going computer-less for that many days. "Technical support told me twice that I had to send it in for repair, so I solved the problem myself," says one anonymous reader. Luckily, repairs aren't needed often.

Dell



When you look at the overall numbers for desktop PCs, Dell looks like it's slipped out of the top tier. But this has more to do with the fact that Dell sells a much higher percentage of work systems than the other top-tier vendors. In general, people are less satisfied with business PCs than home computers. Thus Dell's overall numbers are affected more than other companies'. However, when we drill into both the Work and Home categories for desktops, Dell scores significantly better than average in nearly every measure, especially in the very important gauge of brand recognition, likelihood to recommend. Therefore Dell receives a Readers' Choice award for its desktop computers.

The bigger issue is with notebooks, where Dell's overall score is worse than average—for the second year running. Still, the company's notebooks score for likelihood of recommending is the highest of any manufacturer other than Apple, even beating Readers' Choice winner Lenovo/IBM's score on this measure.

Dell system reliability is as strong as ever. Its desktops' score for reliability, 8.2, is significantly better than average, as is its repair rate. Readers say only 17 percent of Dell desktops required repair—a score that only Sony and Apple can better.

Dell's tech support scores are less inspiring. Though its score for tech support, 6.4, is within the average range, the company scored worse than average or significantly worse than average on several drill-down questions on that measure. Readers also complain about the time it takes to reach technicians and of difficulties communicating with them.

"Dell's technical support has been pathetic since they farmed most of it out overseas," says Dell Dimension owner Jamie Kraft. "Their people do not speak adequate English to understand the problem. They go through a scripted set of questions, and if you are lucky, they bump you up to an American." Dell confirms that it does outsource some of its technical support but says this is done mostly to handle call overflow during peak buying

seasons, such as the winter holidays and back-to-school shopping.

In a change of policy, Dell now charges extra to remove viruses and spyware from customer machines—a service that's technically outside the bounds of its standard

warranty. Most other manufacturers will support users under warranty trying to recover from spyware and viruses. Generally, customers pay between \$60 and \$80 per incident, but monthly and year-long contracts are available for \$49 and

Survey results: Notebooks

	OVERALL SCORE ⁺	POOR (1-2.4)	FAIR (2.5-4.4)	GOOD (4.5-6.4)	VERY GOOD (6.5-8.4)	EXCELLENT (8.5-10)	RELIABILITY	TECH SUPPORT	REPAIRS	PERCENT NEEDING REPAIR	LIKELIHOOD OF RECOMMENDING
ALL NOTEBOOKS											
Acer (81 responses)	8.1						8.3	—	—	20%	7.7
Apple (319)	9.2 [▲]						9.3 [▲]	8.6 [▲]	8.3 [▲]	17% [▲]	9.4 [▲]
Averatec (95)	8.2						8.4	—	—	14% [▲]	8.3 [▲]
Dell (2,753)	8.0 [▼]						8.2	6.8 [▲]	7.0 [▲]	23% [▼]	8.3 [▲]
Fujitsu (106)	8.4 [▲]						8.6 [▲]	—	—	22%	8.2
Gateway (272)	7.8 [▼]						7.8 [▼]	6.4	5.9	27% [▼]	7.1 [▼]
HP/Compaq (1,453)	7.8 [▼]						8.0 [▼]	6.2 [▼]	6.2	20%	7.6 [▼]
Lenovo/IBM (1,106)	8.4 [▲]						8.5 [▲]	7.8 [▲]	8 [▲]	23%	8.2 [▲]
Sony (398)	7.9						8.1	5.5 [▼]	5.6 [▼]	21%	7.7
Toshiba (865)	8.1						8.1	6.6	6.4	21%	8.1 [▲]
Avg. of Windows PCs	8.1						8.2	6.5	6.5	21%	7.9
BUSINESS											
Apple (87)	9.1 [▲]						9.2 [▲]	—	—	18%	9.4 [▲]
Dell (1,581)	7.8 [▼]						8.0 [▼]	7.0	7.1	26%	8.2 [▲]
Fujitsu (50)	8.3						8.6 [▲]	—	—	14% [▲]	8.1
Gateway (98)	7.7						7.8	—	—	32%	7.0 [▼]
HP/Compaq (590)	7.8 [▼]						8.0 [▼]	6.9	6.9	23%	7.6 [▼]
Lenovo/IBM (786)	8.3 [▲]						8.5 [▲]	7.8 [▲]	8.0 [▲]	24%	8.0 [▲]
Sony (133)	7.9						8.1	5.8 [▼]	—	26%	7.6
Toshiba (314)	8.0						8.0	7.2	6.6	22%	7.9
Avg. of Windows PCs	8.0						8.1	6.9	7.1	24%	7.8
HOME											
Apple (232)	9.2 [▲]						9.3 [▲]	8.8 [▲]	—	16%	9.4 [▲]
Averatec (71)	8.2						8.3	—	—	13%	8.2
Compaq (356)	7.6 [▼]						7.8 [▼]	5.6 [▼]	5.9	19%	7.4 [▼]
Dell (1,171)	8.2						8.3 [▲]	6.3	6.7	19%	8.5 [▲]
Fujitsu (56)	8.6 [▲]						8.5	—	—	29%	8.3
Gateway (174)	7.8 [▼]						7.9 [▼]	6.4	—	24%	7.2 [▼]
HP (506)	7.9 [▼]						8.1	5.5 [▼]	5.6 [▼]	18%	7.8
Lenovo/IBM (319)	8.6 [▲]						8.6 [▲]	7.9 [▲]	7.8 [▲]	18%	8.7 [▲]
Sony (264)	7.9						8.0	5.2 [▼]	—	18%	7.8
Toshiba (549)	8.1						8.2	6.2	6.3	20%	8.2 [▲]
Avg. of Windows PCs	8.1						8.2	6.2	6.4	20%	8.0
NOTEBOOKS LESS THAN A YEAR OLD											
Apple (131)	9.3 [▲]						9.3 [▲]	—	—	13%	9.4 [▲]
Acer (50)	8.4						8.4	—	—	20%	7.9
Averatec (66)	8.4						8.6	—	—	11%	8.5
Dell (1057)	8.2 [▼]						8.4	6.7	6.9	14%	8.4 [▲]
Gateway (110)	8.1						8.1 [▼]	—	—	18%	7.7 [▼]
HP/Compaq (587)	8.2						8.4	6.3 [▼]	6.3	14%	8.1
Lenovo/IBM (407)	8.6 [▲]						8.8 [▲]	7.9 [▲]	7.8 [▲]	15%	8.5 [▲]
Sony (127)	8.5						8.7 [▲]	6 —	—	9% [▲]	8.4
Toshiba (324)	8.3						8.3	6.8	6.5	16%	8.2
Avg. of Windows PCs	8.3						8.5	6.9	6.9	15%	8.2

⁺At least 2 confidence intervals from the average. ^{**}1 confidence interval from the average. **RED** denotes Readers' Choice. Except as noted, scores are based on a scale of 1 to 10, where 10 is best. A dash indicates that we do not have enough survey data to give the company a score. [†]The overall score is based on answers to the question "Overall, how would you rate this notebook PC?" It is not the average of the other scores in this table.

OUR CONTRIBUTORS: Cade Metz is senior writer at *PC Magazine*, and Sebastian Rupley is a senior editor. Executive editor Ben Gottesman and features editor Sean Carroll were in charge of this story.

\$149, respectively. It's hard to judge what readers think of this policy, but what's worth noting is that among those with desktops less than a year old, nearly 8 percent of those who experienced virus and spyware problems say they were charged too much for tech support. The average on our survey among Windows desktops is 5 percent.

Dell assembles each machine at whichever of its six facilities is closest to the customer. This includes factories in Texas and Tennessee; a new plant is opening in North Carolina in December. Notebooks are built in Malaysia and are routed through US fulfillment centers.

The company handles both desktop and notebook support out of the same call centers, but what's interesting is that our readers aren't as critical of notebook support. Readers give low ratings to Dell technicians for their ability to speak in a clear manner, but most other technical support scores for notebooks are better

This statistical weighting also affects the assessment of Fujitsu's and Lenovo/IBM's similar scores on the "likelihood of recommending" measure for all notebooks, as well as of their scores for likelihood of recommending and overall satisfaction in the business notebooks category. While Lenovo/IBM is the undisputed winner, this second-place showing is well worth noting. Any maker that can challenge Lenovo/IBM in its specialty, business notebooks (both Fujitsu and Lenovo market mainly to business users), bears watching.

Fujitsu doesn't sell desktop PCs in the U.S. It focuses strictly on laptop and tablet PCs, handling a majority of the manufacturing at Fujitsu-owned and -operated facilities in Japan. According to our readers, these are high-quality machines.

Like its overall score, the company's score for reliability, 8.6, is better than average. "Very stable product," says Anthony Lin, of his two-year-old Fujitsu LifeBook. "I've had no issues whatsoever."

Memphis, Tennessee, and though customers must pay to ship machines to Memphis, the company pays to send them back. In some cases, on-site service is also available.

Gateway/ eMachines

A year ago, we had high hopes for Gateway's service and reliability. The company had just acquired the low-cost retail vendor eMachines, which had made great strides on last year's survey with its newer systems. As part of the process, Gateway applied many of eMachines' best practices for service and reliability for both brands.

A year later, however, the combined organization seems to be struggling a bit. On both the desktop and notebook portions of

our survey, Gateway's overall score is significantly worse than average, and after last year's improvement, eMachines actually moves backwards, receiving a similarly low score for desktops.

This is all the more frustrating considering that eMachines users report the best initial setup experience outside of Apple (that is, they report the fewest instances of needing tech support or receiving a defective system). Somewhere after the initial setup, however, eMachines' reliability breaks down. At 8 percent, eMachines desktops less than a year old have the lowest figure for percent needing repair, but they also have the lowest numerical score for reliability (8.0, although it falls within the average range). Clearly something isn't working right on these machines, even though they may not need many repairs. Gateway desktops garner a respectably average score for repairs, but their overall desktop reliability score drops to worse than average.

Gateway should be commended for using a single organization to handle both quality assurance and support services. In theory, the people who oversee support calls and repairs should have the greatest insight when it comes to improving system reliability. But for now at least, the setup hasn't had the effect it was meant to. Reports from customers tend to bear this out: "I had to replace three hard disk



Given Lenovo's dominant scores, it's easy to see why so many businesses choose its ThinkPad notebooks.

than average or significantly better than average.

With notebooks, the bigger problem seems to be reliability. According to readers, 23 percent of Dell notebooks required repair within the past year, a score that's worse than average. Still, it's worth noting that apart from this, Dell's notebook numbers aren't bad; they simply aren't comparable to those of Lenovo/IBM.

Fujitsu

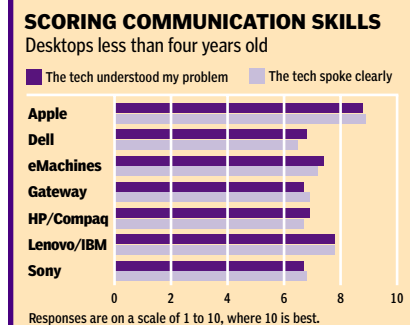
Talk about impressive progress. After a merely respectable showing in last year's survey, Fujitsu has managed to climb into the top tier of notebook vendors, giving portable powerhouse Lenovo/IBM a run for its money and surpassing every other manufacturer save Apple.

Where notebooks are concerned, the company's overall score, 8.4, is better than average. Although Fujitsu's overall score matches Lenovo/IBM's numerically, Lenovo's far greater number of responses weights its score to significantly better than average; hence Lenovo/IBM edges out Fujitsu for the Readers' Choice award.

When it comes to business notebooks, the company does even better: Just 14 percent of such machines required repair in the past year. No other maker performed so well. Only Apple, at 18 percent, comes close; by comparison, 24 percent of Lenovo/IBM's business machines required repair in the past year.

Despite the fact that Fujitsu's overall and reliability ratings are better than average, users rate their inclination to recommend a Fujitsu machine as only average.

Fujitsu outsources some of its "level one" tech support but uses only companies based in North America. Repairs are generally handled at a Fujitsu depot in



drives until I got one that worked," says John Dyer, of his Gateway desktop.

Portables are no longer sold under the eMachines name. For Gateway notebooks quality control seems once again to be a problem. The company's scores for reliability and percent needing repair are numerically the notebook survey's lowest, each worse than average. At least in this case, the problem seems to lie with hardware. Readers rate the systems' software reliability as average but rate its hardware reliability as worse than average.

That said, our responders with Gateway and eMachines systems are reasonably pleased when they call the company for support. Gateway and eMachines receive scores within the average range for tech support on the desktop side of our survey, and Gateway's tech support score is just as high on the notebook side. The company handles calls for both brands out of the same calls centers. Although some of the desktop call centers are located overseas, in the Philippines, technicians' ability to speak in a clear manner was never rated less than average. Still, readers seem unwilling to forgive either brand for its comparatively mediocre reliability.

Hewlett-Packard/Compaq

When you look at the survey results for HP systems purchased within the year leading up to the survey, the company's desktops and notebooks perform respectably, ending up in the average range for most major scores. But when you take a look at all their systems, the outlook is somewhat grayer. As was the case last year, readers gave HP significantly worse than average ratings on both the desktop and notebook portions of our survey, coming down particularly hard on system reliability. And this year, both desktop and notebook ratings are similarly low.

The best we can say about the company's performance is that, in the home market, scores for HP-branded machines—as opposed to Compaq-branded—have improved by a slight amount in the past year, although the overall scores for HP home machines (desktops and notebooks) are still worse than average.

Even now, three years after its merger with Compaq, Hewlett-Packard continues to use both names. In the home market, consumers can choose between HP Pavilions and Media Centers and Compaq Presarios, but the company's business machines carry the HP/Compaq name. Thus, whereas our survey treats HP and Compaq as a single entity when tabulating overall ratings, it treats them separately where home machines are concerned.

Although the company has completely consolidated the HP and Compaq tech support and repair operations, Compaq-branded home machines generally receive lower ratings on our survey than HP home machines. Compaq's overall scores for home desktops and notebooks, 7.4 and 7.6 respectively, are significantly worse than average, whereas HP's scores, 7.7 and 7.9, are only worse than average. The difference seems to lie with quality control. Compaq home machines receive lower reliability ratings and required more repairs over the past year.

If you look at the company as a whole, repairs aren't required all that often. On the notebook side, the company's repair rate is close to the survey average, and on the desktop side, its 19 percent rate of repairs in the past year is actually better than the 22 percent average. That said, reliability scores are significantly worse than average for both desktops and notebooks. "This machine from day one has been awful, and I will never purchase another HP," says Marc Alan Reichbart of his HP Pavilion.

HP/Compaq's tech support score is average for desktops but worse than average for notebooks. On both portions of the survey, readers give worse-than-average ratings when asked about technicians' ability to speak in a clear manner. HP confirms that some of its call centers are located in India, and some readers object to the linguistic abilities of those manning the phones. Says one anonymous Compaq business desktop owner, "Much of the time, it's very hard to understand them and get your technical support question answered within the first three calls."

Lenovo/IBM



The name has changed, but service and reliability are much the same, which is both very good and very bad news. In early May, IBM completed the sale of its personal computing division to the Lenovo Group, a Chinese manufacturer, and, at least for the time being, Lenovo has kept much of the operation intact. Much as they did last year, readers this year give the old IBM PC division high marks for technical support, and they're just as positive about the reliability of its ThinkPad notebooks, which win the Readers' Choice award for Windows notebooks. But, once again, they're terribly critical of desktop reliability, so much so that Lenovo's overall score for desktops ties with HP/Compaq and eMachines for the worst score in our desktop survey.

Lenovo still routes all U.S. support calls through a single call center in Atlanta, Georgia. It forwards particularly difficult problems to more experienced technicians working beside system engineers in Raleigh, North Carolina. And it still farms out about half of all repairs to various business partners. Obviously, this is a setup that works. On the desktop part of our survey, Lenovo's tech support score, 7.2, is better than average, and on the notebook side, the scores for both tech support and repair are significantly better than average.

Likewise, Lenovo can be pleased with the quality of its ThinkPad notebooks. Its notebook reliability score, 8.5, is significantly better than average. "The only exceptional thing is that it just works," says Charles McLaughlin. "Day after day. No problems." As a result, Lenovo's overall notebook rating, 8.4, is also significantly better than average. Among Windows notebooks, only Fujitsu scored as high. Interestingly, for a company that markets its notebooks primarily to the business segment, Lenovo's systems scored significant-

TOP THREE SYSTEM TYPES PER COMPANY

Notebooks purchased within the past year

Acer	Mainstream	34%
	Desktop replacement	24%
	Tablet PC	20%
Apple	Mainstream	44%
	Multimedia	40%
	Desktop replacement	29%
Averatec	Value	42%
	Ultraportable	39%
	Mainstream	29%
Dell	Mainstream	39%
	Desktop replacement	35%
	Corporate, managed	20%
Gateway	Mainstream	35%
	Desktop replacement	34%
	Multimedia	23%
HP/Compaq	Desktop replacement	36%
	Mainstream	35%
	Multimedia	27%
Lenovo/IBM	Mainstream	43%
	Corporate, managed	36%
	Desktop replacement	25%
Sony	Ultraportable	37%
	Desktop replacement	32%
	Multimedia	26%
Toshiba	Mainstream	34%
	Desktop replacement	31%
	Multimedia	26%

Multiple choices are allowed, so totals may not equal 100 percent.

ly better than average in the home market as well. It's not surprising, perhaps, that more expensive ThinkPads would outperform the no-frills value lines popular in the home market, but it is noteworthy that home users give their Lenovos even better ratings than business users do.

What the company needs to tweak is the desktop manufacturing process. Assembled predominantly in Monterrey, Mexico, Lenovo desktops receive a reliability rating of 7.8, worse than average. Users give Lenovo desktops a rating of 6.9 on likelihood of recommending—significantly worse than average. It will be interesting to see if Lenovo can apply to its desktop division the excellence we've come to expect from its notebooks.

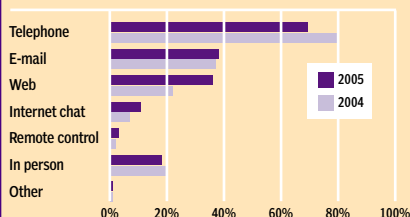
MPC

MPC has all but dropped out of the consumer PC business, choosing instead to focus its marketing and sales efforts on the government and educational markets, but it still shows up in the desktop portion of our survey. Most of its scores remain within the average range—nothing dazzling but nothing terrible, either. The only exception involves one of the survey's more important questions: When asked how likely they were to buy or recommend another MPC desktop, readers give MPC a worse-than-average rating of 7.1. Though aware that this isn't MPC's market anymore, we thought that home users might be dragging this rating down, but actually the opposite was true.

MPC assembles all its PCs in Boise, Idaho, where the company has long been based. Judging from reader responses, its desktops are fairly reliable. The company's reliability score, 8.2, is on the high side of average; Alienware was the only Windows PC manufacturer that had a higher numerical score. The proportion of systems need-

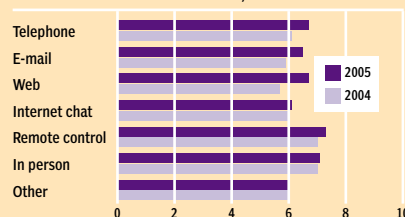
SATISFACTION WITH SUPPORT: Notebooks less than four years old

HOW RESPONDENTS CONTACTED SUPPORT



Multiple choices are allowed, so totals exceed 100 percent.

OVERALL SUPPORT SATISFACTION, BY TYPE OF CONTACT*



Responses are on a scale of 1 to 10, where 10 is best.

* This category indicates satisfaction with the support itself, not with the type of support (e.g., telephone, e-mail, or other) contacted. If a person contacted support in multiple ways, the score for overall support satisfaction applies to all the methods tried.

ing repairs, 23 percent, is average. "The machine is in continuous, hard use," says Raymond Hall of his Millennia desktop, "and short of replacing a pair of fans two years ago, I've had no problem with it."

MPC runs its own call center, also based in Boise, providing both phone and e-mail support. It offers all the standard means of repair, including on-site service and mail-in. Though the company didn't make the cut on the notebook side of our survey, it still sells notebooks, and according to standard policy, it will get you a replacement notebook by the next day if you call in before 3 o'clock to say yours is broken.

Additionally, MPC offers a "self-maintainer" program aimed at its institutional customers. As part of this three-year-old program, a company's IT staff can be trained to provide support and even parts for MPC machines all on its own.

Shuttle

The American arm of Taiwan-based Shuttle Computer Group is one of three debutantes in this year's survey, and like the others—Alienware and Averatec—it's quite presentable. Shuttle makes small, luggable, boxy desktops that have become popular among gamers and media center enthusiasts. Its systems' overall score is near the survey average, as are all its other ratings.

The company manufactures its own desktops in full, and readers rate the reliability of these famously compact systems at 8.1, also near the average of 7.9 for Windows PCs. "When I first saw this small box, I was skeptical," says Carleton Scully, in rating his Shuttle desktop. "But it has turned out to be a real workhorse—completely reliable." According to readers, only 17 percent needed repair—an average score among desktops.

Shuttle handles all tech support calls and e-mails from its own call center in City of Industry, California. It offers chat-based

support and occasionally uses Windows XP's remote assistance service to diagnose and solve problems via remote control (other companies, including Systemax and Toshiba, also offer this service). Repairs are handled through the company's repair depot, also located in City of Industry. If customers don't get support from a reseller, they have no choice but to mail malfunctioning systems back to the company. Shuttle does not offer on-site service.

Some are pleased with the company's support and repair practices. "Very good product and support," says Craig Telsa. Other are not. "The machine is great, Shuttle customer service is not," says Jordan Taylor. "They need to pay attention to what the buyers want, because if they don't, they will go under soon."

On the whole, however, readers are pleased enough to rate the likelihood of buying another Shuttle at 8.1, again within the average range.

Sony



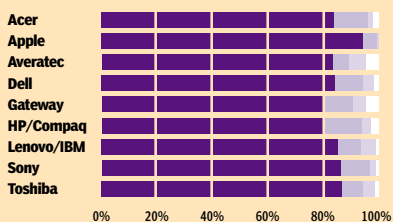
Sony's got a lot to crow about—and some things to worry about, too. The company's desktop systems did well this year, garnering an overall score of 8.2. This score is significantly better than average, trailing only Alienware among Windows desktop manufacturers. It alone is enough to earn Sony a Readers' Choice award for desktops, which it shares with Alienware, Apple, and Dell. On the notebook side, scores aren't quite as impressive, remaining on a par with last year's. The one area where Sony falls down is on support and repair scores, especially for notebooks.

In large part, Sony's improved desktop score seems attributable to system reliability. Some of the company's VAIO desktops are assembled here in the States and some overseas; this doesn't seem to affect quali-

INITIAL SETUP EXPERIENCE

Notebooks purchased within the past year

- Everything worked the first time
- Not everything worked, but I solved the problems myself
- Not everything worked, but tech support solved my problems
- There were major problems, and the machine had to be replaced



ty control, as our readers are generally pleased with how well the machines hold up. "This is my second Sony VAIO desktop," says Mark Hatcher. "I've been completely



Sony's VAIO desktops seem to be the exception to the current rule that great support is the key to great PCs.

pleased with the performance, reliability, and engineering forethought." On the desktop side, the company's score for reliability, 8.2, is better than average, and only 16 percent of systems needed repair, which is also better than average. Readers aren't quite as pleased with VAIO notebook reliability. The reliability score for Sony notebooks, 8.1, is close to the desktop score, but when compared with the competition, it's only average, as is Sony's 21 percent repair rate.

Though Sony handles both desktop and notebook tech support from the same global network of call centers, notebook owners are far more critical of their support experiences. Sony may not be as proficient when it comes to notebook support, or perhaps readers are less pleased because the problems are harder to solve. Whatever the case, woe to the customer with a problem. Sony received the lowest numerical scores in our survey for satisfaction with tech support and repairs. Its notebook numbers, 5.5 and 5.6, border on abysmal, though amazingly, the support figure is quite an improvement over 2004's score of 4.8.

"Sony has the worst support policy around," says Jim McGann, who owns a VAIO notebook. "They just have no interest in helping to solve problems, and their Web site has little information." So while it looks like Sony is hitting the ball out of the park when it comes to building desktops—and doing reasonably well building notebooks—the company's support, though not as awful as it used to be, still has a long way to go.

Systemax

Systemax makes a welcome return to our survey this year, with stats based on close to a hundred of the company's desktop PCs. The company still does not make the cut on the notebook side, but its desktop results are nothing to sneeze at. Systemax receives an overall desktop score of 7.7, falling within the survey average and outdoing the scores of industry giants Gateway, HP, and Lenovo/IBM.

Based in Fletcher, Ohio, Systemax handles all manufacturing and tech support

within the company, and the policy seems to be paying dividends. Readers rate the reliability of Systemax desktops at 7.9, within the average range. Only 20 percent of systems required repair in the past year, which is also average. We didn't receive enough data to report on how satisfied readers were with the repairs they required, but given that the scores for overall satisfaction and likelihood of recommending are as solidly average as the company's score for percent needing repair, it seems that readers' experience with the quality of repairs was also somewhere in the middle.

Systemax is one of the few companies that regularly uses Windows XP's remote assistance engine to take control of customers' machines while looking to solve problems. Systemax also agrees to help customers deal with problems caused by viruses and spyware, something not all companies are willing to do. Readers are quite pleased with the company's tech support. "Have had great service and communication with both Systemax and

back to the company for servicing. On the notebook side, under some service plans, Systemax will mail you a replacement notebook within 24 hours should yours break down.

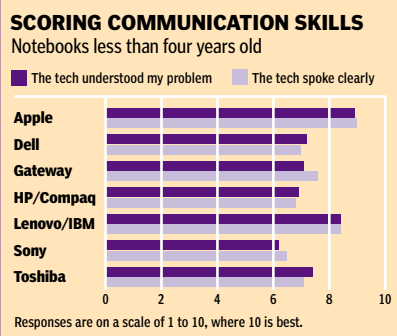
Toshiba

Lake Wobegon's children probably aren't using Toshiba notebooks. Nearly all of the company's ratings were average statistically. Yet one area where they're in step with the town's above-average children is in likelihood to recommend or purchase again.

Toshiba certainly has its fans. "Works near flawlessly," says one reader, of his Toshiba Tecra. "I switched from Dell and before that IBM. Next time I'll purchase another Toshiba!" This attitude has helped Toshiba become the highest-selling brand name in the retail notebook market, according to the NPD Group (though the combined HP and Compaq brands still account for more sales).

The company handles most manufacturing at its own facilities in Japan and China, although some duties are outsourced to Chinese and Taiwanese partners. According to Toshiba, about 80 percent of tech support calls are handled by call centers in Toronto, Canada, but calls may also be routed to Singapore, Istanbul, and Milan. This doesn't seem to have hurt Toshiba's scores. When asked about technicians' ability to understand problems and ability to speak in a clear manner, our readers again give the company average ratings.

Toshiba doesn't offer email or chat support, saying that phone calls are typically more efficient. It does, however, offer users remote control to solve problems. Many repairs are still handled by Toshiba resellers and other partners spread across the country, but the company streamlined repair operations in 2003 when it opened a repair depot inside a UPS sorting facility in Lexington, Kentucky. Systems can be shipped from almost any UPS storefront in the country, and the depot can send out new parts as late as 2 A.M., getting them to customers by that morning. This approach may be paying off. Satisfaction with repairs is up slightly since last year.



its sister company, TigerDirect," says one anonymous reader. Of course, not everyone is quite so pleased. "Technicians on the phone are ignorant, and they think that I am as ignorant as they are," says Samuel Schachter.

Systemax offers several options should a machine require new parts. Systemax sells through a variety of outlets, including Office Depot, and online at TigerDirect.com, which is an arm of the company. On-site service is available and machines can be taken to Systemax retail stores for repair. Depending on the service plan, you can also mail faulty PCs, including desktops,

Printers

by Sebastian Rupley

LAST YEAR'S TIGHT RACE FOR THE TOP SPOT IN THE PRINTER MARKET gets even closer this year. Hewlett-Packard earns a significantly better than average rating this time around, as it has for many years, but Canon's absolutely stellar ratings, especially among newer printers, home printers, and photo printers, look to be helping it slowly pull away from the perennial favorite. Still, the two share the Readers' Choice award—for now.

We evaluated many categories of printers, used in business and at home, ranging from monochrome lasers to color all-in-one printers. Below is an in-depth analysis of the five leading companies in the very popular color ink jet category: Canon, Dell, Epson, HP, and Lexmark. But several other companies had notable results.

Brother is second only to HP in the number of responses for black-and-white laser printers. The companies' results are similar, though Brother customers report needing fewer repairs but are less impressed with service. In the ink jet all-in-one category, Brother doesn't do as well. 17 percent of Brother's devices need repairs.

Samsung has also been making waves in the monochrome laser market, with aggressive pricing. The company won a Readers' Choice award in 2003. It hasn't returned to that level yet, but its results are respectable, and its reliability and low number of repairs are impressive. Xerox gets the highest overall score in the color laser category, but its business printers, along with those of Konica Minolta and Ricoh, have disturbingly high repair rates.

THE FINE PRINT

Make no mistake: Despite Canon's run at its crown, HP still gets its typically outstanding ratings, with a significantly better than average score overall and on reliability, with significantly fewer printers than average needing repair.

When something does go wrong, readers are impressed with the HP's Web-based support. HP relies on Instant Support technology, through which an embedded Web server gathers data about printers and submits it over the Internet to HP for diagnostics. In the color laser category, HP was the only manufacturer to get a better-than-average score for reliability, though Xerox got the highest overall score.

So what is HP's weakness? One possible answer: though HP gets significantly better than average ratings for the *quality* of its

own ink, readers are less happy with the cost. Readers rate the cost of manufacturer-provided ink and toner as significantly worse than average. Even third-party inks receive scores significantly worse than average among HP users.

Canon's climb is powered by glowing service and reliability ratings for color ink jets, color ink jet all-in-ones, and photo printers. High ratings by owners of photo printers garner a towering score of 9.0 for likelihood of purchasing or recommend-

ing. No manufacturer does better in overall satisfaction or reliability in those fast-growing printer categories.

One possible component of this success is the cost of ink. While the majority of negative comments survey participants make about printers concern cartridge and toner costs, Canon users have great things to say in this regard. The company gets a significantly better than average score for costs of manufacturer-provided ink cartridges. In the color ink jet category, Canon gets the best scores on cost of third-party ink cartridges for photographs and everyday documents. And Canon's overall scores for the quality of its own ink and third-party ink are the highest of all.

Canon's newer models are faring well, as the company receives the highest scores of any manufacturer for overall satisfaction and for reliability among printer users who have had their printers for a year or less. Also, Canon's score for repairs needed is significantly better than average.

Among all printers, Epson's fare reasonably well, getting average scores overall

Survey results: Printers

	OVERALL SCORE†	POOR (1-2.4)	FAIR (2.5-4.4)	GOOD (4.5-6.4)	VERY GOOD (6.5-8.4)	EXCELLENT (8.5-10)	RELIABILITY	TECH SUPPORT	REPAIRS	PERCENT NEEDING REPAIR	LIKELIHOOD OF RECOMMENDING
ALL PRINTERS											
Brother (713 responses)	8.0 ▲						8.1 ▲	6.7	6.6	7% ▲	8.1 ▲
Canon (1,769)	8.2 ▲						8.4 ▲	7.2 ▲	6.9	5% ▲	8.5 ▲
Dell (439)	7.6						8.0	—	—	5% ▲	7.5
Epson (1,983)	7.8						8.0	6.6	6.8	3% ▲	8.1 ▲
HP (11,281)	8.0 ▲						8.2 ▲	6.8	6.9	6% ▲	8.5 ▲
Konica Minolta (265)	7.7						7.8	6.5	—	13%	7.6
Lexmark (1,259)	7.1 ▼						7.4 ▼	6.2 ▼	6.5	6% ▲	7.1 ▼
NEC (52)	7.7						8.3	—	—	0% ▲	6.8 ▼
Oki Data (89)	7.7						8.0	—	—	6% ▲	7.6
Ricoh (84)	7.6						7.5 ▼	—	—	40% ▼	7.3
Samsung (288)	7.9						8.3 ▲	—	—	5% ▲	7.9
Xerox (411)	7.8						7.6 ▼	7.2 ▲	7.3 ▲	26% ▼	7.4 ▼
AVERAGE	7.8						8.0	6.7	6.8	11%	7.7
PRINTERS LESS THAN A YEAR OLD											
Brother (294)	8.0						8.1	—	—	5%	8.2
Canon (653)	8.7 ▲						8.8 ▲	7.3	—	3% ▲	8.9 ▲
Dell (300)	7.8 ▼						8.2	—	—	5%	7.6 ▼
Epson (703)	8.2						8.4 ▲	6.4	—	3% ▲	8.4 ▲
HP (2,248)	8.3 ▲						8.4 ▲	6.6	6.7	4% ▲	8.6 ▲
Konica Minolta (114)	8.0						8.1	—	—	12% ▼	8.0
Lexmark (282)	7.5 ▼						7.8 ▼	—	—	4%	7.6 ▼
Samsung (102)	8.0						8.3	—	—	6%	8.0
Xerox (125)	8.0						8.0	—	—	11%	7.7
AVERAGE	8.0						8.2	6.8	6.7	6%	8.1



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	OVERALL SCORE†	POOR (1-2.4)	FAIR (2.5-4.4)	GOOD (4.5-6.4)	VERY GOOD (6.5-8.4)	EXCELLENT (8.5-10)	RELIABILITY	TECH SUPPORT	REPAIRS	PERCENT NEEDING REPAIR	LIKELIHOOD OF RECOMMENDING
▲ Significantly better than average*											
▲ Better than average**											
Within the average range											
▼ Worse than average**											
▼ Significantly worse than average*											
HOME											
Brother (470)	8.0						8.2	6.4	—	7% ▼	8.1
Canon (1,465)	8.2 ▲						8.5 ▲	6.8	—	3% ▲	8.6 ▲
Dell (283)	7.7						8.1	—	—	3% ▲	7.4 ▼
Epson (1,702)	7.8						8.0 ▼	6.6	6.9	3% ▲	8.1 ▲
HP (6,404)	8.0 ▲						8.3 ▲	6.5	6.6	3% ▲	8.5 ▲
Konica Minolta (142)	8.0						8.2	—	—	4%	7.9
Lexmark (872)	7.1 ▼						7.4 ▼	5.7 ▼	—	3% ▲	7.1 ▼
Samsung (213)	7.8						8.3	—	—	3%	7.8
Xerox (67)	8.0						8.1	—	—	10%	7.9
AVERAGE	7.9						8.1	6.4	6.7	5%	7.9
BUSINESS											
Brother (243)	8.0 ▲						8.1 ▲	—	—	7% ▲	8.2 ▲
Canon (304)	8.1 ▲						8.1 ▲	7.6 ▲	7.2	17%	8.2 ▲
Dell (156)	7.6						7.9	—	—	7% ▲	7.6
Epson (281)	7.9						8.0	—	—	5% ▲	8.1 ▲
HP (4,877)	7.9 ▲						8.1 ▲	7.1	7.1	10% ▲	8.4 ▲
Konica Minolta (123)	7.3 ▼						7.4 ▼	—	—	24%	7.2 ▼
Lexmark (387)	7.2 ▼						7.5 ▼	6.7	6.5	13%	7.0 ▼
Ricoh (80)	7.6						7.5	—	—	43% ▼	7.3
Samsung (75)	7.9						8.4 ▲	—	—	8% ▲	7.9
Xerox (344)	7.7						7.6 ▼	7.2	7.3	29% ▼	7.3 ▼
AVERAGE	7.7						7.9	7.2	7.0	16%	7.7
INK JET PRINTERS											
Canon (975)	8.1 ▲						8.4 ▲	—	—	2%	8.5 ▲
Dell (67)	7.2						7.8	—	—	0% ▲	7 ▼
Epson (1,094)	7.6						7.8	6.3	—	3%	7.9 ▲
HP (3,489)	7.8 ▲						8.2 ▲	6.7	6.3	2%	8.4 ▲
Lexmark (424)	6.8 ▼						7.2 ▼	—	—	2%	6.9 ▼
AVERAGE	7.5						7.9	6.5	6.3	3%	7.8
INK JET (ALL-IN-ONE) PRINTERS											
Brother (138)	7.2 ▼						7.2 ▼	—	—	17% ▼	7.2 ▼
Canon (226)	8.1 ▲						8.3 ▲	—	—	4% ▲	8.4 ▲
Dell (208)	7.5						7.9	—	—	5%	7.3 ▼
Epson (364)	7.9 ▲						8.1 ▲	7.0	—	5%	8.1 ▲
HP (2,311)	7.9 ▲						8.1 ▲	6	6	4% ▲	8.4 ▲
Lexmark (447)	7.2 ▼						7.5 ▼	5.8	—	4% ▲	7.3 ▼
AVERAGE	7.7						7.9	6.3	6	6%	7.8
LASER PRINTERS: COLOR											
HP (518)	8.0						8.1 ▲	7.3	6.9	13% ▲	8.4 ▲
Konica Minolta (146)	7.7						7.8	—	—	14%	7.6 ▼
Xerox (126)	8.1						8.0	—	—	28% ▼	8.0
AVERAGE	8.0						8.0	7.3	6.9	18%	8.0
LASER PRINTERS: MONOCHROME											
Brother (507)	8.2 ▲						8.4 ▲	6.7	—	5% ▲	8.4 ▲
Canon (101)	7.6						7.6 ▼	—	—	32% ▼	7.4
Dell (106)	7.9						8.2	—	—	5% ▲	7.9
HP (4,309)	8.1 ▲						8.3 ▲	7.3 ▲	7.3	10% ▲	8.5 ▲
Konica Minolta (100)	7.7						7.8	—	—	8%	7.5
Lexmark (323)	7.4 ▼						7.6 ▼	6.8	—	13%	7.0 ▼
Samsung (247)	7.9						8.4 ▲	—	—	4% ▲	7.9 ▲
Xerox (188)	7.6						7.6 ▼	—	—	26% ▼	7.1 ▼
AVERAGE	7.8						8.0	7.0	7.3	13%	7.7
PHOTO PRINTERS											
Canon (390)	8.7 ▲						8.9 ▲	—	—	3%	9.0 ▲
Epson (445)	8.3						8.5 ▼	—	—	3%	8.6
HP (511)	8.3 ▼						8.5	—	—	2%	8.6
AVERAGE	8.4						8.6	—	—	3%	8.8

*At least 2 confidence intervals from the average. **1 confidence interval from the average. RED denotes Readers' Choice. Except as noted, scores are based on a scale of 1 to 10, where 10 is best. A dash indicates that we do not have enough survey data to give the company a score. †The overall score is based on answers to the question "Overall, how would you rate this printer?" It is not the average of the other scores in this table.

and on reliability, with similar scores for business machines. Overall only 3 percent of Epson machines needed repair, an impressive achievement. On the other hand, the company's home printers fare slightly worse than average on reliability.

Readers are enthusiastic about the ease of use and ease of setup of Epson printers, awarding significantly better than average ratings in both categories. Epson also aced our repairs needed category, posting a significantly better than average score. But readers rate the expertise of Epson's tech-support personnel as worse than average.

Users are less pleased with the cost of Epson's ink, and Epson's score on this measure was the second worst among all manufacturers, beating only Lexmark. Epson's scores for reliability are generally good, except for photo printers, where its score is worse than average.

Lexmark's scores for overall satisfaction and reliability are significantly worse than average. The company receives the lowest scores in all tech support categories—from expertise to providing prompt solutions—and the lowest score of all in terms of tech support's ability to solve problems. Even those readers who have attempted to bypass active support give worse-than-average ratings to the availability of support information and ease of finding it on the Web. The only bright spot: a significantly smaller than average percentage of Lexmark printers needed repair.

Lexmark also receives mostly significantly worse than average ratings in our categories related to ink cartridge costs. The company scores worst of all on the cost of manufacturer-provided cartridges, the cost of third-party cartridges for everyday documents, and the cost of third-party cartridges for photo printing.

Dell is breaking into the printer market with printers based on designs by other manufacturers, including Kodak, Lexmark, and Samsung. None of the 67 Dell color ink jet printers reported on needed a repair—impressive, though printer repair rates tend to be low in any case. If a printer less than a year old needs a repair, Dell ships a replacement unit the day the customer reports his or her problem.

On the flip side, users' overall satisfaction with Dell printers less than a year old rates as worse than average, and readers' ratings for the quality of Dell's manufacturer-provided ink and toner for documents and photographs are also worse than average. Dell users report a worse-than-average likelihood of purchasing or recommending this brand again. ■

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We tested five services to see who could solve your hardware and software problems in a pinch. Some weren't up to the task.



Who you gonna call?

by David A. Karp

Illustration by Dynamic Duo Studio

At a time when brand-new computers can sell for under \$400, it's hard to make a case for spending \$100 on a single tech-support call. But you shouldn't have to buy a whole new computer just to eradicate spyware or fix your e-mail; besides, you would have to migrate all your data to the new computer, and could quite possibly encounter the exact same problems again. When your precious data is at stake, or you have an urgent job to finish, your best bet is to work with what you have.

We tested five paid support services to see which ones best handled a variety of computer problems. Since nothing beats a human being on the other end of a telephone when you're in a jam, each service had to offer unrestricted toll-free phone support and accept payments by credit card.

Given that your problem might include a malfunctioning Internet connection or a PC that won't boot, we disqualified services that either required Web-based preregistration or offered support solely via Internet-based chat (although all do offer it).

We asked each service to solve the same three problems—one software, one hardware, and one malware. (For the details on how we tested, see the PC Magazine Labs scorecard on page 98.) The results varied dramatically.

In This Story

96	888 Geek Help	●○○○○
96	Geeks By Minute	●●●○○
97	Geek Squad	●●○○○
98	PC Pinpoint	●●●○○
101	YourTechOnline.com	●●●●○
96	Before You Call . . .	
100	Free Help on the Net	

888 Geek Help

\$1.75 per minute. 888 Geek Help, 888-433-5435, www.888geekhelp.com. ●○○○○

As promised on the 888 Geek Help Web site, there was no wait to speak to a technician. And surprisingly, the geek assigned to us wanted to hear about our PC problems before taking any payment information. Despite the terrible (perhaps overseas) connection, we distinctly heard pages turning as he read information to us.

After hearing about our trouble opening an e-mail attachment, he concluded that our e-mail provider was responsible. Even after we repeated the error message, which clearly indicated that Microsoft Outlook was blocking the attachment, he insisted we had to contact our ISP to solve the problem.

His solution to our sound problem, which involved speakers not producing any sound, was to remove the speakers, which he suggested after we told him we were using a laptop. Once he realized that we were dealing with built-in speakers, he was stumped. The diagnostics were not exactly probing; at no time did he suggest adjusting the volume (the most common solution) or opening the Control Panel.

He quickly identified our browser hijacker as a "pop-up" but never used the

The screenshot shows the 888 Geek Help website. At the top, there's a logo with a cartoon geek and the text "888 GEEK HELP (888)433-5435". Below this is a section titled "FREQUENT BUYER PLAN" with the text: "Save money now for your Household or Small Business. Groups that have more than one (maybe two) Tech Support Questions per month can now get the same peace of mind at a discount with a 888 Geek Help™ Frequent Buyer Plan. Frequent Buyer Plans allow us to reward our higher use customers with a new lower rate." There are several buttons: "About Us", "Feedback", "Be a Geek", "Testimonials", "FBI Discounts!", and "Online Store". A "Live Support By Phone" section says: "Lower your costs today! Once you are a member you can simply call 1-888-GEEK-HELP (1-888-433-5435) and tell them that you are a Frequent Buyer Plan Member. Just give them your pin number and you will get a discount right away." A "Live Support Online" section says: "If you prefer, 888 Geek Help™ can walk you through the steps online. They will simply take some information on the phone, and give you the support online." A "Save Money" section says: "Get the discounted rates right away. You won't have to pay for hefty per-incident fees or inflated membership fees. Just pay as you go, for what you actually use, only now at your special discounted Frequent Buyer Plan rate." A "Family Plan" section lists: "Live 24/7 Phone Support", "Live Online Chat Support", "Reduced Per-Minute Rates", "Fast, Friendly, & Reliable Help you can depend on", "Hardware Support", "Software Support", "Printer Help", "Virus Removal", "Virus Protection Tips", and "And Much More!". A price comparison shows "Reduced to \$1.50 per minute" and "Saves! \$28.00! \$55.00".

888 GEEK HELP didn't fix any of our test problems—but didn't charge us or waste much time, either.

word *spyware*. At this point he told us he had to research the problem and would call back the next day. Alas, that was the last we heard from him.

At the beginning of the call, our geek explained that we could get our money back within the first 10 minutes, a promise he ultimately did not have to keep. During the 11-minute call, he was unable to offer a correct explanation for any of our three problems, yet never asked for a credit card. So

the call cost nothing, and we got exactly what we paid for. At least 888 Geek Help didn't waste a lot of our time.

Geeks By Minute

\$1.99 per minute; first minute free. Geeks By Minute, 888-286-4335, www.geeksbyminute.com. ●●○○○

Of all the services in our roundup, Geeks By Minute had the quickest and most hassle-free registration. After an automated system greeted us and prompted us for our credit card and phone number, we were connected to a tech without delay.

Given that we were paying by the minute, we weren't entirely surprised that the geek assigned to us spoke slowly and carefully; there wasn't a hint of stress or expeditiousness in the conversation. While his tone set us at ease, we never quite forgot that we were paying for each syllable.

We started with the blocked attachment in Outlook, which he incorrectly assumed was the work of a virus. Although Windows XP doesn't come with an antivirus program, he was surprised that we didn't have one. He instructed us to use Trend Micro's free Web-based virus scanner, Housecall (<http://housecall.trendmicro.com>).

Before we had a chance to describe the PC's malware problem, we had encountered one of its symptoms. Hijackers are designed to redirect links in certain Web sites, making it difficult to download the software used to eradicate them. Our geek explained that we needed to download a



BEFORE YOU CALL...

Nobody wants to rattle with tech support to begin with. Stepping through these simple suggestions could eliminate the need to call, or at least save you from going through them all again with the wonk on the other end of the line.

1 REBOOT. As simple as this step is, forgetting it is even easier. If you can't click the Start menu to reboot, and Ctrl-Alt-Del doesn't work, try holding down the PC's power button for a few seconds to force the machine to power down. We don't recommend yanking out the power cord.

2 PLUG IN. If you're having a hardware problem—something won't turn on or your computer won't recognize a peripheral—make sure all cords are firmly seated, both in the power supply and in the appropriate PC port. If you're comfortable with the Control Panel's System | Devices dialog, check to see if the device is recognized.

3 UPDATE THE OS. Make sure your OS is up to date. If you're running Windows XP, visit <http://update.microsoft.com> and let Microsoft check for critical updates. Then check for noncritical updates that look as if they might be relevant to your problem.

4 UPDATE THE DRIVERS. If you're having a hardware problem, check the manufacturer's Web site for an updated driver. Conversely, if you've recently updated, try rolling back the driver—go through the Control Panel's Device Manager, find the device, and double-click for the driver dialog. Video card drivers in particular can cause problems that seem totally unrelated to video.

5 GO TO THE SOURCE. Do your software or hardware vendors owe you free tech support? Before you bug your kids, friends, or friends' kids—and before you pay anyone—check this out.

6 BACK UP. Yes, it's advisable in *any* situation. This won't help fix your problem, but you'll want to have a backup of all your important data before getting down and dirty with tech support. (For our latest story on backup solutions, check out go.pcmag.com/backup.)

spyware removal tool before trying the virus scanner. Of course, the hijacker prevented us from downloading the free trial version of Webroot's Spy Sweeper (www.webroot.com), redirecting us instead to the dreadful Clicksearchclick.biz.

After toiling for several minutes with the recalcitrant browser, we started hunting for evidence of unwanted software processes. The tech had us read the Add or Remove Programs list and remove a few apps he didn't recognize, none of which was actually malware.

He then had us search our hard drive for filenames containing the word *click*, instructing us to delete about 20 files. Most of these were located in the /source/1386 folder, the installation directory for Windows XP (no malware here, either, and not a directory we should have been messing with). If we hadn't still owned a recovery CD, this would have spelled real trouble the next time we needed to reinstall Windows.

After this unnecessary diversion, he revealed a magic workaround for the hijacker problem. Apparently, if you open the Control Panel and click the Windows Update link to your left, you often get an unaffected Internet Explorer window, from which you

YourTechOnline.com



When your PC is ailing, and your important data is at stake, what matters most is getting the machine fixed right and getting it fixed fast. Getting it fixed cheap wouldn't hurt either, but we consider that secondary. Three of the five services we tested solved our problems. Only one fixed them fast—and it even fixed them cheap.

YourTechOnline.com had all the right moves. Offering by far the best combination of speed and technical savvy—at a reasonable price—YourTechOnline was the only service to use remote-control software to dispatch our PC problems. Instead of wasting time on bad leads, our tech efficiently found the causes and cleaned up the problems. Our minor complaints are that we had to choose a pricing plan before having a clue how long our problems would take to solve, and that we feel a responsible help service should at least set us on the road to a safer computing experience, by recommending that we install antivirus and a firewall (as we continually recommend to our readers).

While our Editors' Choice of last year, PC Pinpoint, has slipped, it deserves mention for solving all of our test problems and for having an extremely inexpensive trial price—just \$18. For frequent callers, the low cost of a year's worth of calls may render the risk of a long hold time or an impatient tech worthwhile.

er scanned and cleansed the system, during which he explained what Spy Sweeper was doing and what steps we could take to prevent future infestations. Spy Sweeper successfully removed the hijacker, at which point we tried the online virus scanner again.

This time, Housecall loaded successfully and proceeded to scan our system. This took an eternity, yet it found no trace of viruses. To be fair, our geek didn't know (as we did) that the PC was virus-free. But we couldn't escape the feeling that had we not been paying by the minute, he wouldn't have bothered with the time-consuming virus scan at all.

We then tackled the speaker problem, which the geek dispatched with uncharacteristic speed. He directed us to the Sounds and Audio Devices applet in the Control Panel, recognized the incorrect default playback device, and corrected it handily.

Only the blocked attachment in Outlook was left. By this time, the tech had ruled out spyware and viruses and started to look at Outlook—the real cause. This last task took him about 30 minutes to research and execute. (That's almost 60 bucks, if you're keeping track; we sure were.) The solution involved a simple Registry edit, before which he wisely had us back up our Registry by creating a new restore point with Windows' System Restore feature.

We were on the phone with Geeks By Minute for well over 2 hours, at a cost of \$284.57. To its credit, Geeks By Minute fixed all three problems and went farther to protect our PC than any other service. If this were the only service that had solved our puzzles, we might grudgingly recommend spending the dough. But the stratospheric cost and the unreasonable amount of time required to correct our problems make Geeks By Minute hard to recommend.

Geek Squad

\$79 per incident. Geek Squad, 800-433-5778, www.geeksquad.com. ●●○○○

The best known of the paid help sites in this roundup—thanks to quite a bit of television advertising—Geek Squad adds a touch of humor to its service. After a customer support representative took our payment information, we were entertained by several minutes of hold music accompanied by an occasional scream of the B-horror movie sort. Had we had more at stake on the outcome of this exercise, we might not have been so amused. Geek Squad does offer on-site services, charging \$129 to \$229 per job, presumably without the music.

Right off the bat, our geek seemed very distracted. We had to repeat ourselves frequently and wait as long as half a minute for him to respond. We were put on hold four times. When we finally got fed up with this and asked him about the delays, he explained that he wanted to keep the conver-

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GEEKS BY MINUTE offers friendly, very relaxed, and mostly competent help.

can surf properly. (If you don't see the Windows Update link, go to Tools | Folder Options, and select Show Common Tasks in Folders.)

Now, a better—and faster—approach would have been to have us type the full address of the download file directly into Internet Explorer's address bar, which would have bypassed the hijacker's redirection tactic. Regardless, the tech's Control Panel hack did get the job done.

Our geek stuck with us while Spy Sweep-

Our Contributors: David A. Karp is a freelance writer and the author of *Windows XP Annoyances for Geeks*, 2nd Edition (O'Reilly). Janet C. Rubenking is a freelance writer, graduate student, and radio enthusiast from Northern California. Features editor Sarah Pike and PC Magazine Labs lead analyst Neil J. Rubenking were in charge of this story.

sation relaxed by not rushing through the diagnostics. The experience was about as calming as the hold music.

After hearing only a brief explanation of our test problems, the tech suggested that we open Windows XP's System Restore feature and revert to an earlier hardware configuration. He dismissed, without any real explanation, concerns that doing so might break something else on the PC. But when we found no recent restore points, he aborted that plan.

We proceeded to tell him about the blocked attachment problem, and he quickly (and correctly) identified it as a problem with Outlook. We waited a few minutes while he researched the problem, and then listened to him read a Microsoft Knowledge Base article that briefly outlined some unsuccessful workarounds.

When we tried to draw him out and get him to come up with other suggestions, he instructed us to open and read the aforementioned article. Although a quick Google search would've turned up the correct solution, he apparently wasn't willing to look any further, and concluded that the



GEEK SQUAD'S slick Web site may inspire misplaced confidence—but humor's no substitute for competence.

problem simply couldn't be fixed.

Next came the speaker problem. Our geek's first instinct (and a good one at that) was to open Device Manager and look for disabled or malfunctioning sound devices. When he confirmed that all the sound hardware was working, he had us adjust the volume control (an important potential lead to eliminate). Since we were working on a laptop, we had to consider three such controls: the Windows on-screen volume, the keyboard mute function, and a small, unmarked dial on the side of the case. Although we might have needed to turn up

all three volume controls, he instructed us to adjust only the on-screen volume. Without inspecting any settings in the Control Panel, he informed us that that problem was due to a hardware malfunction that only the laptop manufacturer could fix. So far, he was 0 for 2.

We moved on to the browser hijacker, which the tech quickly recognized. He instructed us to download and install Ad-Aware SE Personal (www.lavasoftusa.com), and he stayed with us while it completed its scan. Ad-Aware detected and cleansed the hijacker, and found no other problems.

Geek Squad consumed 94 minutes of our time, yet solved only one of the three problems we posed.

PC Pinpoint

Single-use trial, \$18; \$75 per year. Distinctive Technologies, 877-434-8697, www.pcpinpoint.com. ●●●●●

We made four attempts to reach a PC Pinpoint tech. The first two times, we were put on hold for 15 minutes, then asked to leave a message. The third time, we waited just 5 minutes, only to be told someone would call us back within the hour.

Two hours later, we tried again. This time we were placed on hold for 10 minutes while the tech helped someone else. Finally, he took our payment and contact

PERFORMANCE TESTS

How We Tested



To evaluate the five services in this roundup, we first had to come up with plausible, repeatable problems for them to solve. We chose three: one software, one hardware, and one malware.

The first task required overcoming a security puzzle in Microsoft Outlook to open an attachment. By now most of us are at least passingly familiar with Microsoft's automatic attachment handling; Outlook's default settings prohibit users from sending or receiving attachments with EXE or MDB (Microsoft Access) extensions. (For a summary and steps to a solution, see go.pcmag.com/noblock.) Next came a hardware

problem involving speakers that wouldn't produce sound (the solution being a setting in the Control Panel). The final challenge was to remove some nasty malware (a Trojan horse that presents as a browser hijacker), given only a vague description of the symptoms.

Because each problem had a distinct solution, we rated the services based on their **technical proficiency**, their **speed**—including the amount of time they took to ask the right questions and time wasted on dead ends—and the **clarity of their instructions**. Points were given for **taking steps to protect the PC**, such as helping us back up Registry entries before making changes, having us install antispyware tools to deal with the malware, instructing us about good practices, and helping us configure our PC to reduce future problems.

	Call duration (min)	Total cost of call	Number of problems fixed (out of 3)	Technical proficiency	Clarity of instruction	Speed	Took steps to protect PC	OVERALL
●●●●●—EXCELLENT ●●●●—VERY GOOD ●●●—GOOD ●●—FAIR ●—POOR								
888 Geek Help	11	\$0.00	0	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
Geeks By Minute	143	\$284.57	3	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
Geek Squad	94	\$79.00	1	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
PC Pinpoint	75	\$18.00	3	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●
YourTechOnline.com	26	\$39.99	3	●●●●●	●●●●●	●●●●●	●●●●●	●●●●●

RED denotes Editors' Choice. Some services have more detailed fee structures, with different prices per month or year, per additional incident, or for particular problems.

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information, then put us on hold again. Another 5 minutes to process the payment—and a few more urging us to register online and offering to call us back (we declined, citing browser problems)—and the help session began.

The tech then explained that we needed to download and install PC Pinpoint's inventory software. Only then, after we had

waited for more than 20 minutes—a less bitter wait than if we'd been paying by the minute, but irritating all the same—did he finally ask us to describe our problems.

First we dove in to the Outlook problem. After taking several minutes to research a solution, our geek told us we needed to edit the Registry. Before we made any changes, he had us back up our Windows Registry

settings; he was one of only two techs in this roundup to do this. His instructions were terse and sometimes incomplete, and he quickly grew impatient when we asked simple questions. But within a few minutes, the Outlook problem was fixed.

Next, the tech tackled the spyware, walking us through some settings in the Internet Options box. He was the only

FREE HELP ON THE NET

Want to test your mettle by fixing your computer yourself? Here are some free sites to get you started. Read a few tutorials or peek at the forums to see if others are having similar problems. But remember, there can be more than one answer, and a little trial and error is standard operating procedure.—*Janet C. Rubenking*

WINDOWS AND MICROSOFT APPS

Microsoft's Support Knowledge Base

<http://support.microsoft.com/search>

When Windows misbehaves or you are stumped on how to use a Microsoft application feature, your first stop should be Microsoft's Knowledge Base. Search using keywords or error messages: Most of the help is great step-by-step advice, but don't expect to find the answer you need every time.

JSI FAQ

www.jsifaq.com

Jerold Schulman offers thousands of no-nonsense tips about the Windows NT, 2000, and XP platforms. Search by keyword or check out Today's Tips and Recent Tips. Detailed instructions help tweak Windows and solve problems. The home page (www.jsiinc.com) includes a link to Microsoft's excellent Windows XP Expert Zone Community.

Inside Outlook Express

<http://insideoe.tomsterdam.com>

We have featured this venerable site before and continue to recommend it. You'll find news, including bug fixes, update reports, and frequently reported problems. For discussion groups, the site steers you to MSnews, which is Microsoft's public news server.

Slipstick Systems

www.slipstick.com/outlook

If Microsoft Outlook is your favorite e-mail program, turn to Slipstick for help. Beginners are welcome, and the site is rich with update information, tips on customization, and articles on how to manage your mail. Like Inside Outlook Express, Slipstick sends you to MSnews for discussion groups.

A BIT OF EVERYTHING

ExtremeTech

www.extremetech.com

You might assume that Ziff Davis's ExtremeTech is too technical, but don't be intimidated. The site offers plenty of straightforward information and advice from experts, hardware and software reviews, how-to articles, and busy discussion forums. Often just browsing questions by topic is enough to find the information you need. It helps to know the configuration of your computer system, because if you post here, members will ask.

PC Magazine go.pcmag.com/solutions, go.pcmag.com/usertouser

We hate to toot our own horn, but we find our searchable Solutions and User to User sections fantastically useful.

TechRepublic

<http://techrepublic.com>

TechRepublic is an information and help site for IT professionals and power users. It offers downloads, including printable keyboard shortcuts for Microsoft applications, articles from popular computer authors, and tips for networking professionals. You'll also find discussion forums with useful advice, links to blogs, and white papers.

Tech Support Guy

www.helponthe.net

Mike the Tech Support Guy started this site as an antidote to overpriced technical support. His volunteers include everyday people who love computers and contribute often. The site is very simple to use, but you'll find some irrelevant information. Read the rules, search the forums, and register to post messages. With almost 200,000 members, Tech Support Guy is sure to have a hint or two.

WhatIs.com

<http://whatis.techtarget.com>

WhatIs.com is part of the SearchTechTarget universe, a database search portal for IT professionals. Its growing encyclopedia is the place to visit if geek-speak is getting you down. Search by keyword or category, or alphabetically.

HARDWARE

PC Mechanic

www.pcmech.com

PC Mechanic promises plain-English information, with tutorials on tasks from installing a new device to building an entire computer. The site offers online content, for-fee downloads, a CD for off-line work and troubleshooting, an e-mail newsletter, and help forums.

TweakTown

www.tweaktown.com

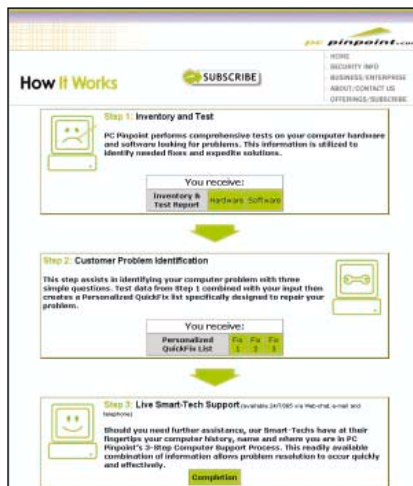
TweakTown is all about hardware. It covers overclocking, BIOS tuning, multimedia, and even mobile phones. If you're looking for advice on how to cool your screaming motherboard or for information on graphics card incompatibilities, this is a good site to check out.

SPYWARE

SpywareInfo

www.spywareinfo.com

No matter your expertise in diagnosing computer problems, you will need this up-to-date information on how to rescue your hijacked computer. Sign up for the newsletter and don't forget to visit the forums for security warnings, general information, reports on privacy invasion, and what to do after you remove spyware.



PC PINPOINT provides terse assistance at a low cost—provided you can get through.

geek to ask us the address of the hijacked home page (an important step), but didn't follow through with this information to help find a specific solution.

After a few attempts to fix the problem by changing Windows settings, he asked us to download two antispyware tools and a third program to scan for viruses. But instead of walking us through what could be a daunting process for beginners, he told us simply to run the programs and call him back when we were done.

To his credit, PC Pinpoint's tech was the only one to provide direct URLs to the download files, a good way to fool the hijacker that had infected our PC. But without further instruction, many customers might not have been able to complete the task or realize if they'd done it incorrectly.

For our speaker problem, the tech started with the obvious solution, checking the various volume controls on the screen and laptop case. We then waited several minutes while he looked for PDF manuals for our laptop, before he decided that was a dead end.

At this point, we started poking around in the Control Panel, where the solution actually lay. The first thing he asked for, the text immediately under the Volume tab, was a dead giveaway: The voice dictation headset was set as the default playback device. But it took him several more minutes of rummaging and making adjustments to realize what the problem was and fix it.

An hour and 15 minutes on the phone, and PC Pinpoint had fixed two of our three problems. After hanging up, we followed the verbal instructions our geek gave us and removed the browser hijacker on our own.

Of the three services in this roundup that

successfully fixed all our problems, PC Pinpoint was the most affordable. At the beginning of the call, we had a choice between a single-use "trial" call for \$18 and a full year's worth of calls for \$75 (to which the \$18 can be applied, if you go that route first).

PC Pinpoint was our Editors' Choice last year for paid support services. Despite the sound technical advice, the long wait time and the impatient tech left us impatient ourselves—leading us to pick another winner this year, YourTechOnline.com.

YourTechOnline.com

\$39.99 for 30 minutes; \$69.99 for 1 hour. Yourtechonline.com Inc., (877) 717-7111, www.yourtechonline.com.

●●●●●



YourTechOnline.com is a take-charge kind of service. The tech with whom we spoke didn't waste any time. He quickly explained the costs of the service up front, at which point we were forced to choose whether to purchase 30 minutes for \$39.99 or 60 minutes for \$69.99. Having experienced wildly differing call times with other services, we timidly opted for 30 minutes.

After collecting street address and phone information—like the others here, promising not to add us to any marketing



YOURTECHONLINE uses remote-control software to fix problems in a jiffy.

lists—he requested an e-mail address and instructed us to choose a password, for reasons that would soon become apparent.

With the formalities out of the way, we proceeded to explain our set of problems. This is where YourTechOnline departed from the other services in this roundup: Instead of asking questions, the tech instructed us to open a Web browser (either Internet Explorer or Firefox) and type www.yto.ca into the address bar. At this point, we were prompted to enter our e-mail address and the aforementioned password. He didn't go out of his way to ex-

plain what he was doing—we could have done with a little warning here—but in no time, we had a remote-control session.

First he tackled our Outlook problem, instantly recognizing the cause. In less than 2 minutes, he had opened the Registry Editor and made the necessary change. He didn't back up our Registry before proceeding with the admittedly minor change—a small, simple step that no one should skip.

Next he quickly dispatched the sound problem, zeroing right in on the errant setting in the Control Panel. Again, he knew exactly what to do, and had music playing in about 5 minutes. While our geek was working, several pop-ups (a symptom of the browser hijacker that was running rampant) appeared on the screen, but this never seemed to faze him.

The last task was to deal with the spyware, and here again, this tech wasted no time. Instead of letting a common spyware scanner do all the work, he downloaded and installed Process Explorer (<http://sysinternals.com>) and HijackThis (<http://merijn.org>). Within minutes, he had recognized the process responsible for the hijacker and used HijackThis to disable it.

After confirming that the spyware was gone, he disconnected, we hung up, and that was that. The entire phone call took 26 minutes, including the 5 minutes we spent on hold before talking to the tech and the 5 minutes it took to collect our payment information. In less total time than we'd spent on hold waiting for PC Pinpoint to answer the phone, this YourTechOnline rep had fixed all three of our problems and said good-bye.

The remote-control capability gave YourTechOnline a significant advantage over the other services in this roundup. But given how quickly YourTechOnline's tech attacked each problem, we suspect the call wouldn't have taken much longer had we not had the luxury of remote control. We do wish our tech had spent a few more minutes (minutes covered in the 30 minutes we'd paid for) to ensure that our PC was better protected from future threats; and a bit more in the way of explanation would have been in order, had we not been in full control of our test problems. But if we ever get another browser hijacker—or something we actually don't know how to deal with—we know who we're going to call. ☺

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go.pcmag.com/whotocall.

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☐ CAN OUR PEOPLE MANAGE IT

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☐ IS IT LINUX

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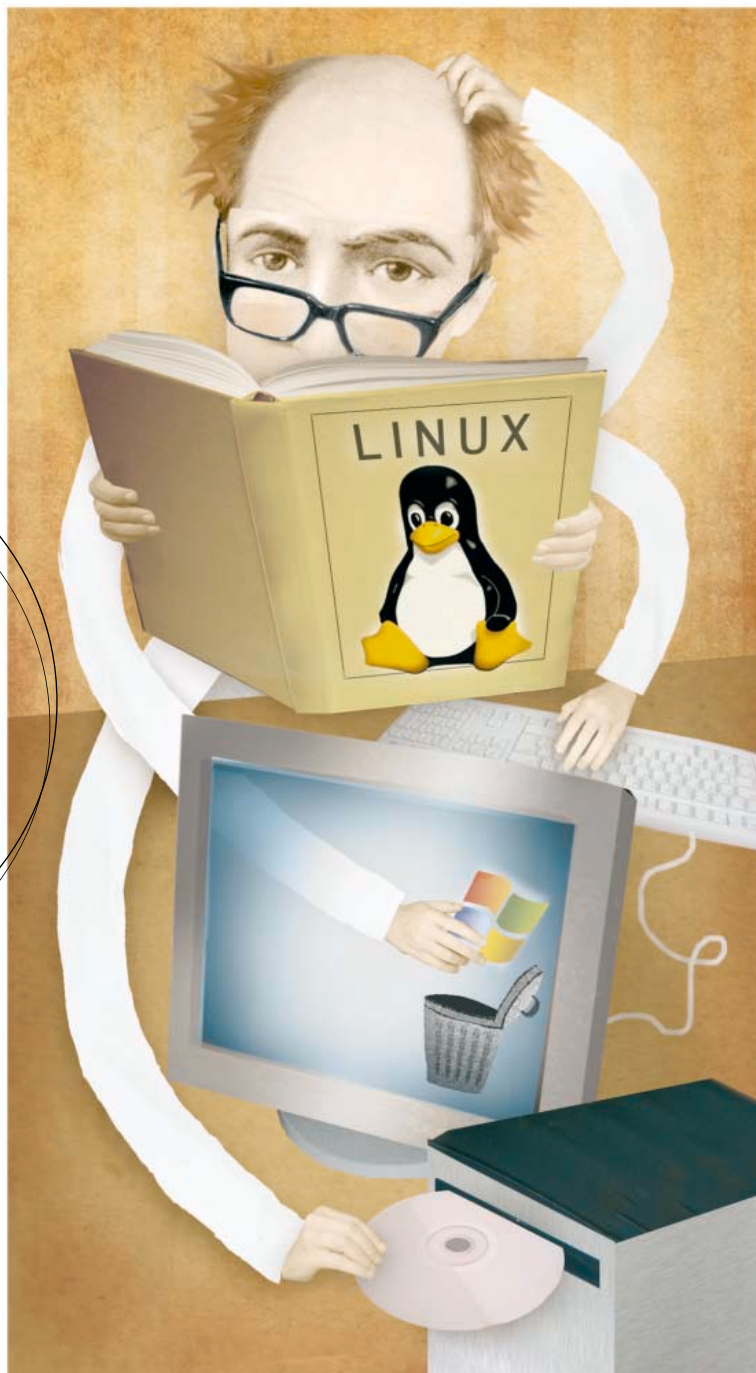
Here are
step-by-step
instructions
for installing
and customizing
your own
Linux system.

D.I.Y.

LINUX

by Sebastian Rupley
and Oliver Kaven

Illustration by
Isabelle Cardinal



If you are a tech tinkerer at heart, have some free time on your hands, and embrace the sweat and tears that accompany a challenging project, perhaps you've contemplated setting up a Linux system at home.

You're not alone. Countless *PC Magazine* readers have told us they're curious about the Windows-free, open-source way of computing. But turning an old PC into a Linux box from scratch can be daunting, and the benefits of having one are debatable.

On the plus side, Linux appeals to those tired of the security woes that plague Microsoft Windows and, of course, to those interested in sampling thousands of free apps. As Linux is free, you won't be encumbered by potential software-licensing frustrations. It attracts developers in particular because of the plentiful development tools that are both powerful and free.

Those who venture into Linux fresh from the Windows or Macintosh worlds are often pleased to find that Linux distributions, or *distros*, approach user interfaces with much more flexibility than those operating systems do. If you install one distro and don't like its look-and-feel, you can switch to other graphical user interfaces—some of which may be Mac-like and some Windows-like—without reinstalling Linux.

Stability has long been cited as an advantage

of Linux, although Windows XP has pretty much closed that gap. In fact, the introduction of fancier and more complex GUIs for Linux, with translucent windows and 3D shadows, has caused growing pains similar to those Windows has experienced.

Although there are many free, useful Linux applications, such as OpenOffice, the breadth of compelling apps is far smaller than it is for Windows or Mac. Also, relatively few peripheral devices like printers and scanners offer Linux drivers, and vendors often won't support a product used with Linux. If you end up wanting real-life tech support for the distro you choose, you may find that Linux isn't at all the low-cost solution you envisioned it to be.

On the other hand, Linux users enjoy a vast com-

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munity of Web sites and discussion boards that often have good advice and answers to tech questions. A good resource for beginners is www.linuxfromscratch.org, where you can download a free online book with instructions for customizing a Linux machine—regardless of which distro you choose—and participate in newsgroups and other community forums. Two other sites we like are www.linuxforums.org

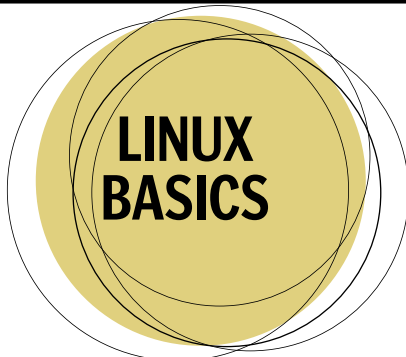
and www.linuxquestions.org.

Ultimately, many people who are interested in building Linux systems are drawn mostly to the pleasures of the project itself; installing Linux can be a fun experiment that's fully customizable and free. They also probably have one or two Windows or Mac systems that they don't plan on getting rid of anytime soon.

So tinkerers, if you're ready for the chal-

lenge, read on. On the following pages we'll give you the technical basics of Linux, plus step-by-step instructions for downloading and installing Red Hat's Fedora Core 4 Linux distribution. We'll help you familiarize yourself with the OS and configure and customize it to your liking.

More and more do-it-yourselfers are installing and exploring Linux. Follow along with us if you want to join their ranks.—SR



Before you take the plunge and devote time and hardware to experimenting with Linux, let's cover the basics of this free OS. Though its design varies substantially from what you are used to in the Windows world, getting acquainted with it doesn't take much time at all.

One thing Linux and Microsoft have in common is the function of their kernels. Similar to the Microsoft kernel in Windows operating systems, the Linux kernel manages the low-level functions of all the programs that run on the system, such as process management, interrupt handling, scheduling, I/O control, and memory management. As of this writing, the latest stable release of the Linux kernel is 2.6. All patches to the kernel pass through Linux creator Linus Torvalds himself. Though Torvalds does not own Linux in the classical sense, he holds the trademark on the name and has the final say on what gets included in the next release.

For newbies who come to Linux from Windows, one of the most confusing aspects of the OS is its file system. The root of the Linux file system (not to be confused with the administrative user account, also called *root*) is represented by a “/,” from which all subdirectories expand. For example, my home directory would read as “/home/okaven/.” In addition, Linux places all partitions, or logical sections of the hard drive, under the root. The partitions can be mounted manually or automatically at boot time.

This design offers a great degree of flexibility, because you can place any common

directory on a Linux system onto a different partition or drive, even an external one. So, if I run out of space in my home directory, I can just add another hard drive to the system and then mount “/home/okaven” on an external partition. To the system, it would all look the same and appear as a flat directory tree.

Another aspect of Linux that causes confusion is its case sensitivity. The documents “Homework.doc” and “homework.doc” are two different files that can be saved in the same directory. Once you get used to this feature, you will actually come to like it; it will teach you to be far more precise in selecting filenames.

DIRECTORY ASSISTANCE

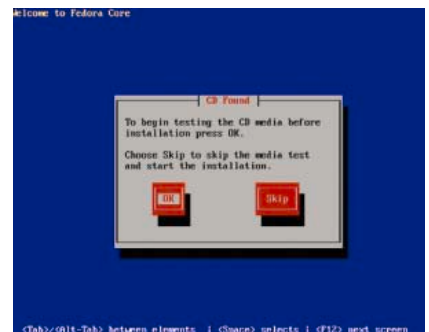
The directories “/boot,” “/etc,” “/sbin,” “/bin,” “/dev,” “/lib,” and “/proc” hold important system startup and configuration files. At least at first, you should definitely avoid deleting anything in these directories.

The “/home” directory contains all user directories and user-specific settings, with one exception: The “/root” home directory for the administrative user is separate.

Finally, the directory “/var” contains data from the mail and print processors, as well as the all-important logging directory “/var/log/,” which can be a godsend during troubleshooting. The “messages” log file can be especially helpful in pinpointing system failures, because it contains aggregated log information from many components.



YOU SHOULD BEGIN installation in graphical mode, particularly if you are new to Linux.



IT'S SAFE TO BYPASS the CD media test. If you run into problems installing from your CD, just burn a new copy.

Although you could run your Linux system from the command line, you will probably want to use a graphical interface similar to that of Windows XP or Mac OS X. The included X server (Xorg or XFree86) will let you run GUIs (front-end graphical user interfaces, also known as window managers) of your choice, such as Gnome, KDE, or Xfce. These display environments are bundled with most recent distributions.

One of Linux's main advantages over other OSs is the amount of control and configurability it provides each user over the computing environment. Linux is designed to be a true multiuser system. All users, including the administrator or “root” user, have their own home directory, which holds all user-specific configuration files, including any customized settings that users select in the GUI, and private files. This directory also holds the user's e-mail.

No matter how many users are accessing the system, the OS guarantees a clear separation among each person's files and user space. Furthermore, Linux is designed to multitask. Whether one user is running several programs or several users are running one program, whether a user is connected locally or accessing the system remotely, Linux will keep this separation intact and direct traffic accordingly.—OK

CHOOSING AND DOWNLOADING A DISTRO

Once you're ready to set up your Linux system, you need to choose a distro. For home tinkerers, there are more than a dozen easy-to-acquire and freely downloadable options such as the Fedora Project, Mandriva Linux, Ubuntu, and Xandros.

For this article, we chose to install Fedora Core 4 (available at <http://fedora.redhat.com>), a trademark of Red Hat, because of Fedora's ease of installation and use, robust release cycle, and timely update schedule.

To download the distro, you will need a CD burner and software that can burn ISO images to disc. The images for standard x86-compatible 32-bit systems (which



YOU CAN CUSTOMIZE the list of packages (software) to be installed. You can also install packages at a later time.

should cover most of your older PC hardware) are available at <http://download.fedoraproject.org/pub/fedora/linux/core/4/i386/iso>. Download all four disk images. Be careful not to download the image files that include "SRPM" in the file name, as they will not be applicable for the installation.

The Fedora main download page will also tell you how to download a DVD image that includes the content of all four CDs. You will find the DVD ISO images only on select Fedora mirror download sites.

THE INSTALLATION

Before installation begins, make sure there are no important files left on your future Linux PC's hard drive. All existing partitions and file systems are erased and overwritten during the installation process.

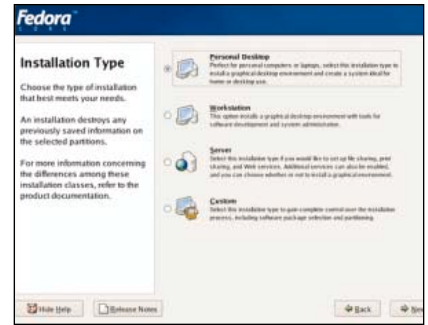
Your system should have at least an 8GB hard drive and 128MB of memory. The system should also be able to boot from the CD/DVD drive.

Installing Linux today is not much different from installing Windows XP. Just put your CD or DVD into the drive and reboot your machine. When the installation routine starts up, you'll first see a simple screen, asking you to choose between graphical or text-based installation. Press Enter here and skip the installation media test screen. Now you will be greeted with a fully graphical installer. Select the appropriate installation language and pick Personal Desktop as the installation type.

In the Disk Partition Setup, select Automatically Partition and then, on the next screen, choose Remove All Partitions on This System. Confirm the warning on the pop-up screen. Leave the Boot Loader Configuration untouched, and proceed to the Network Configuration. The Fedora installer will set your system to use the DHCP (Dynamic Host Configuration Protocol) to obtain an automatic IP address and DNS server information.

If you need to configure a static IP address for your system, do it now. Leave the Firewall Configuration at the default settings and select your appropriate time zone at the next screen.

On the Set Root Password screen, you'll be prompted to create the authentication credentials for the administrative user. Re-



THERE ARE SEVERAL installation types. We chose the Personal Desktop.

member the password; you'll need it to access any administrative functions.

Don't change the Package Installation Default on the next screen. Confirm your intent to install, thus writing the new OS to your hard drive. This procedure will take some time, so if you're installing from DVD, grab a cup of coffee. If you're installing from a set of CDs, you'll have to stick around to change discs when prompted.

Once all the packages are installed, you're almost ready to log on to your new system. You have to agree to the Fedora license, then set the date, time, color depth, and screen resolution. The system should give you only choices compatible with your configuration. You also have to create a system user and test the detected sound capabilities. Skip the Additional CDs screen and, voil  , you're done.—OK

Linux: How It All Began



The Linux kernel development began as a project at the University of Helsinki in Finland in 1991, when Linus Torvalds, a computer science student, posted source code for the kernel to the Internet. Inspired by Minix, an instructional version of the Unix OS, Linux grew rapidly, attracting thousands of developers.

Linux was (and still is) distributed under the GNU General Public License (GPL), which states that free software must remain free, and that any software that uses any piece of the GPL source code will also become free.

Linux joined the GNU Project in 1992. GNU started in the early eighties, when MIT researcher Richard Stallman realized software companies were beginning to claim their proprietary source code as intellectual property and guard it with licensing restrictions. Stallman felt that good ideas ought to be shared among the developer community, so he launched GNU (a recursive acronym for "GNU's Not Unix!"), which promoted freely distributed and freely modifiable software.

Today, you can find countless prepackaged versions of Linux that bundle hundreds or thousands of applications, and the GNU development tools with the core ingredient—the kernel. These distributions are available in diverse flavors, suitable for audiences ranging from home to enterprise users. Depending on the distro's business model, you can either download the software for free or pay a nominal price for the media and documentation. Some of the commercial and enterprise-focused distributions include additional software, documentation, or support that will add to the price tag.—OK

DISCOVERING YOUR NEW OS

Unlike Windows XP, Linux does not present a log-on dialog with fancy user icons by default. (You can, of course, enable this feature and also display a custom picture at log-on, if you choose.) Instead, Linux simply asks for your username and password for authentication.

Once your credentials are verified, you will see your new Gnome (www.gnome.org) desktop—the GUI that's bundled with Fedora.

The desktop should include a Computer icon, your home directory folder, and a trash bin. If you left the installation CD or DVD in the drive, the disc will be displayed as a mounted media on the desktop.

The top menu panel displays three menus, called Applications, Places, and Desktop, on the left side of your screen. You will also find five icon shortcuts to frequently used applications. On the right side of your screen, a flashing red icon indicates that critical system updates are available. (This icon will flash red until you click on it for the initial configuration.) Here you will also find the date, time, and volume controls.

The bottom panel includes an icon on the left that hides all open windows on the desktop with one mouse click. On the

right-hand side you will find the so-called “pager,” or workspace switcher. The pager allows you to switch between different virtual desktops and displays a graphical representation of the open windows in each virtual desktop.

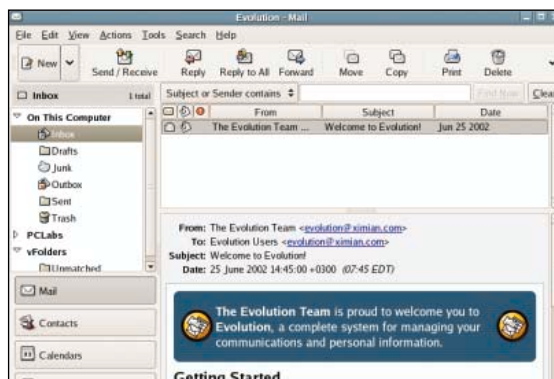
Double-clicking on the Computer icon opens a window that lets you select any locally mounted file system on the machine, as well as all connected network file systems.

If you have a switch on your home network with Windows clients also connected, they will appear in your Network browser under Windows Network. Any Windows PCs on your network won't see the Linux system; if you want the system to serve as a file



THE CONTENT OF a user home directory also shows thumbnail previews for image files.

server and be visible to your Windows PCs, you must install the Samba suite (www.samba.org), which provides file and print services for SMB (Server Message Block) clients.



THE EVOLUTION e-mail client resembles Microsoft Outlook in many respects, but has some unique features that make it a powerful application.

Drilling down in the file-system browser reveals the entire local directory structure that we discussed earlier. The top window bar will display the /, indicating that you are at the top of the tree. You

will not be able to access all directories if you logged on as a normal user and not as the system administrator.

If you select the “/home” subdirectory, you will find your user home directory. A shortcut for this is also available on the desktop.

The installed Gnome desktop includes quite a

selection of applications, so you can spend some time discovering the world of free software. Right-clicking on any of the applications in the menu lets you add them as a shortcut to the top desktop panel. Should you get bored, you can always go to Desktop | System Settings | Add/Remove Applications to browse the package library for additional software to install from the installation CD. You will be asked for your “root” password (which you provided during the initial installation). Installing software is an administrative task that cannot be performed by an unprivileged user.

Fedora uses the Red Hat Package Manager (RPM), a powerful program for building and managing installed software on a system. The Add/Remove Applications menu lets you access a graphical interface to the package manager. If you download RPM packaged software from the Internet, simply double-click the file to launch and install it.—OK

Popular Home Distros

Name	URL	Description
Debian	www.debian.org	Debian GNU/Linux provides more than 15,000 packages of precompiled software. While it is not the most user-friendly, it is certainly one of the most comprehensive distributions.
Fedora	fedora.redhat.com	The Fedora Project is sponsored by Red Hat and designed as a proving ground for cutting-edge technologies that will eventually be integrated into Red Hat releases.
Gentoo	www.gentoo.org	Gentoo is a source-based GNU/Linux distribution that lets you compile your OS and applications from source code. The result is a fast and highly customizable system.
Knoppix	www.knoppix.com	Knoppix is a fully functional bootable CD with GNU/Linux software. It has broad hardware support and can be used as a trial or demo version of Linux.
Mandriva	www.mandrivalinux.com	Mandriva Linux (formerly Mandrakelinux) is known for its graphical configuration utilities, which are the gold standard among Linux-based operating systems.
Ubuntu	www.ubuntulinux.org	Ubuntu is a Debian-based release that strives for ease of use. It maintains a regular six-month release cycle.

Our Contributors: Sebastian Rupley is a senior editor of *PC Magazine*. Oliver Kaven is a lead analyst at PC Magazine Labs. Features editor Michael J. Steinhart was in charge of this story.

CONFIGURING AND CUSTOMIZING

Once you're familiar with your new desktop environment, you'll probably want to start configuring things to your liking. Start by discovering the many submenus of Desktop | Preferences, especially the Theme submenu, which lets you dramatically change the look of your desktop.

A right-click with your mouse on the desktop will open a menu that lets you access background preferences and change the image properties. Right-clicking on the top and bottom panels will allow you to change styles, sizes, and colors.

Fedora didn't include any screen savers in this edition, but you can install them

from the command line, which will further customize the system and give you insight into how powerful Linux can be.

Assuming your system acquired an IP address successfully from your ISP (you can check by launching the Web browser from the top menu or by going to Desktop | System Settings | Network and seeing if you have an active interface), right-click on your desktop and select Open Terminal (the equivalent of Command Prompt in Windows). At the prompt, type "su" and your administrator password. This will give you *super user* (root) rights on the system. Now type "yum install xscreensaver-extras xscreensaver-gl-extras." Yum is an automatic updater and package management program for Red Hat systems. It will download the requested packages automatically. Check in Desktop | Preferences | Screensaver and you will see myriad choices.

If you are using an e-mail service that lets you connect via POP3 or IMAP, you can configure the Evolution e-mail suite by clicking on the icon in the top menu



THE MOZILLA Firefox Web browser is one of the best alternatives to Internet Explorer.

bar. When you select this icon for the first time, a fully featured wizard will take you through configuring the e-mail client to match your server's configuration.

Finally, you can configure a printer on the system by going to the top menu and selecting Desktop | System Settings | Printing. Provided that you have a printer connected to your PC, you can follow the instructions of the printer wizard to configure the driver. If the exact printer driver isn't available, you can try to select a generic PCL or PostScript profile before venturing out to the

Linux on a Server

Linux on the desktop PC is not a new idea, but it has relatively low penetration among home users.

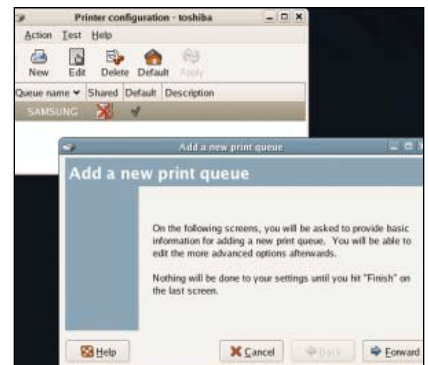
The situation is quite different when you look at servers and hardware devices. Linux has a strong foothold in the server market, and it is becoming a very competitive alternative as an embedded OS in hardware.

Most small and midsize business server installations of the Linux OS are based on the so-called LAMP stack. This abbreviation stands for a series of components: Linux, Apache (a popular open-source Web server), MySQL (a popular open-source database), and PHP/Python/Perl, which are programming and scripting languages. The stack is an extremely flexible, capable, and fast Web application platform. The LAMP stack has also made Linux an emerging alternative to Windows in larger companies and data centers. For instance, it serves as an enterprise-level platform for many high-end applications, including products such as BEA WebLogic, IBM WebSphere, and Oracle Application and Database servers.

One of the striking advantages that Linux offers in server deployment is its support for a wide range of computing platforms, including the first iterations of Intel's and AMD's 64-bit architectures. There are many commercial Linux server solutions available, and some even come with support options that rival the contracts offered by Microsoft or Sun Microsystems.

Linux is also making inroads in the educational and research server fields. Beowulf HPC (High Performance Computing) clusters (www.beowulf.org) that crunch academic or research data are a popular choice for parallel computing solutions. By using clusters that are built entirely with commodity hardware and rely on standard technologies, such as Ethernet, IDE, and SCSI, these "class-I" clusters are cost-effective alternatives to otherwise expensive specialized equipment.

Elsewhere, Linux's greatest proliferation has been in hardware devices. With no traditionally dominant OS in this market segment, Linux's low cost, reliability, and easily available source code make it an attractive solution for developers and vendors alike. You probably own some device that uses embedded Linux. Select routers from Linksys or D-Link, mobile GPS systems, and some new mobile phones all run a modified version of it.—OK



FOLLOW THE print-queue wizard to add a new printer. Just make sure it is attached to your PC or reachable over the network.

manufacturer's site to obtain a Linux driver.

Now it's time to have some fun. Your system should be equipped with the Firefox Web browser, OpenOffice 2.0, and the Evolution e-mail suite. There are plenty of apps, games, and tools that will keep you busy for a while. And you can always find more on the Web—free of charge.—OK

MORE ON THE WEB

For a look at Knoppix, a Linux distro that runs solely from a CD, check out go.pcmag.com/knoppix.

Jillian Hearty
212-503- 5067

jillian_hearty@ziffdavis.com

Alison Weaver
212-503-3284

alison_weaver@ziffdavis.com

Kathy Pavlak
212-503-4847

kathy_pavlak@ziffdavis.com

Brad Sharenow
212-503-5118

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AFTER HOURS

TECHNOLOGY ON YOUR TIME

Modern Warfare

BY PETER SUCIU

When the dust settled following the Second World War, some people held an all-too-brief hope that a new age would dawn—that wars were a thing of the past. Sadly, a golden age without conflict has not arrived. One of the only upsides to this is that game developers have limitless opportunities for strategy games and military simulations. And because it doesn't look as if we're going to stop casting stones anytime soon, some new titles even feature near-future conflicts. Given how powerful these games can be, it is a shame that the real-world combatants can't resolve their conflicts virtually.

chain of command and reduces the typical gabble that makes voice chat so annoying in most games. Likewise, from a strategic view the commander can direct artillery strikes, air-drop supplies, and set up drone aircraft to identify enemy movement.

If you're not up to leading troops, you can still take part in the intense first-person shooter action and control more than 30 land, sea, and air vehicles—from tanks and hovercrafts to fighter jets and helicopters. The modern setting features forces from China, a Middle Eastern coalition, and the United States, and scalable maps provide the appropriate combat arena for the number of players (from 16 to 64 online). With numerous soldier classes, including Special Forces, Medic, and Combat Engineer, you can play it your way—run and gun or stealth infiltration—and earn points for your endeavors. Medics score points for healing wounded troops, and Engineers are rewarded for repairing vehicles while coming under fire. BF2 needs a high-end PC to run smoothly, but it comes together very well.

\$49.99 list. Electronic Arts Inc., www.ea.com.

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ACT OF WAR: DIRECT ACTION

Act of War: Direct Action

Except for the devastating events of September 11, 2001, most conflicts in recent history have taken place far from American soil. But imagine if the next big war were to be fought on the streets of Washington or San Francisco. That is the backdrop of this near-future, real-time-strategy game: An international terrorist group is bent on destroying the West, and it is up to the U.S. Army and a black-ops force

called Taskforce Talon to stop them and save the day. The by-the-numbers but still fairly gripping story line is by best-selling techno-thriller author Dale Brown. In the straightforward game

play, you build up a base and then create units to engage the enemy. The twist is that the primary resource is the American dollar, which is fitting but somewhat cartoonish—you can acquire money by taking over banks, for example.

The game is rounded out by a variety of objectives, including search-and-destroy and hostage-rescue missions. Act of War features some of the best cinematic cutscenes we've ever seen in a game. It's a shame, then,

that most players will hit the Esc key and skip right over them to get back to the direct action.

\$49.99 list. Atari Inc., www.atari.com.

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Battlefield 2

Sun Tzu wrote that "the skillful commander takes up a position in which he cannot be defeated and misses no opportunity to master his enemy." Until recently, this was just a theory in games because of poor interteam communication. With built-in VoIP support, Battlefield 2 lets the strategic commander issue orders to squad leaders, who in turn can direct troops in their squad. This re-creates an authentic military



BATTLEFIELD 2

Close Combat: First to Fight

In modern warfare, one thing is certain: Anyone acting as a lone wolf is likely to have a very short military career. This title reinforces how working as a cohesive unit is the key to success—and to staying alive. First to Fight was developed with input from active-duty Marines, so game play is based on the way real four-man Marine fire teams operate. You can't directly control your

WHAT THE RATINGS MEAN

- EXCELLENT
- VERY GOOD
- GOOD
- FAIR
- POOR





CLOSE COMBAT

squad mates, who consist of a machine gunner, an assistant gunner, and a rifleman; instead you order them to perform specific attacks. This makes for an intense experience that might be too close to the real thing for some players.

First to Fight suffers from an underwhelming tutorial; though we weren't hoping for a stint at Marine boot camp, we felt a little unprepared for our role as squad leader. But once you jump into the game, you can quickly pick up the nuances. The setting is near-future Beirut, and most of the action is close-quarters urban combat. The AI in the 22-mission single-player campaign might make you feel that you don't have the brightest leathernecks at your side, but in a multiplayer game, you have a shot at feeling like part of the few, the proud, the Marines. (Also for Xbox.)

\$39.99 list. Global Star Software, www.firsttofight.com. ●●●●○

Cold War Conflicts: Days in the Field 1950-1973

The quarter century from the early 1950s to the mid-1970s was filled with strife. Cold War Conflicts lets you recreate this era in an accurate real-time-strategy simulation game that's more grounded in history than other what-if titles, such as Command & Conquer. You have 37 missions to complete, along



COLD WAR CONFLICTS

with several alternative variations, through four campaigns that let you lead your choice of American, Egyptian, Israeli, and Korean forces into battle. Equipment such as period-appropriate armor and helicopters, as well as jets and numerous support vehicles, is available to players. The interface feels somewhat dated, but the multiplayer mode offers endless possibilities, with British, Chinese, and Soviet powers added to the mix—so as you play, you can see how different (and possibly, how horrific) things might have been, had the Cold War actually turned hot.

\$19.99 list. GMX Media, www.gmxmedia.net.

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Elite Warriors: Vietnam

Last year, we saw a wave of new Vietnam War games. Except for a few of these titles, though, most were overlooked. Apparently this war remains too touchy a subject for gamers. They may discover other reasons to avoid Elite Warriors: Vietnam, though—which is



ELITE WARRIORS: VIETNAM

a real shame, considering that a former SOG (Special Operations Group) member helped create the game's unique settings and missions.

The resulting game is a simulation that looks stunning and features a novel squad-based command system. But the clunky interface bogs down game play, and the similarity in missions—where you have to trudge through all-too-generic maps—makes the tour of duty feel far too long. At least, unlike the actual Vietnam War soldiers, you don't have to count the days until you can take the plane home.

\$29.99 list. Bold Games, www.boldgames.com.

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WILL OF STEEL

Will of Steel

Most of us play games as a form of escapism, so the settings of Will of Steel might hit too close to home, given the worldwide state of affairs. But if you've ever wanted to see what our overseas troops are facing, this game will get you there virtually.

The back story is a bit more personal than that of most war games: You play as William Steel (pun clearly intended by the developers), who happens to be the son of a USMC general—and no mere general, but a highly decorated one. Thus, you have his legend to live up to as the game begins. You'll participate in some training levels at the Naval Academy before you take up your role in the fight against global terrorism.

This modern-day 3D real-time tactical simulation focuses on the recent campaigns in Afghanistan in 2001 and Iraq in 2003.

You'll receive a battlefield commission and direct American Marine forces in a variety of missions, which are, in a word, intense. Graphically, the game doesn't have the flash of more polished titles, but it does capture the sense of confusion that soldiers face in the field. The unique voice-command system is a bit clumsy at times, but once you get used to the subtleties of the interface it is no mere novelty: It enables you to react more quickly and decisively to the ever-changing combat situations. You'll be able to bark out orders like a drill sergeant.

\$19.99 list. Tri Synergy Inc., www.trisynergy.com.

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GEAR + GAMES



Bringing Prehistory to Life

The **WowWee Roboraptor**, a loud but lovable dinosaur robot, could become the must-have toy of the 2005 holiday season. With its toothy grin and reptilian eyes, the Roboraptor (a little over 2 feet long) is surprisingly lifelike, with just enough autonomy to make it truly interesting for both kids and adults. Don't expect it to get to know you, though; the WowWee robot's abilities remain fixed. That does not make the Roboraptor any less engaging or worthwhile—WowWee has gotten the price and interaction right.—*Lance Ulanoff*

\$120 street. WowWee, www.wowwee.com. ●●●●○



Wake Up with iPod

The **SDI iHome iH5**, the first iPod clock radio, is sleek and white, but many of the less important controls are awkwardly hidden on the rear. That aside, the iH5 is a fantastic first effort, letting you wake to AM or FM radio, an alarm, or your iPod. It offers all the essential clock radio functions, including a sleep timer, snooze button, and a backup battery (in case of brief power outages). Best of all, the speakers are good enough that you'll want to use the iH5 with your iPod even when you're awake.—*Troy Dreier*

\$99.99 direct. SDI Technologies, www.ihomeaudio.com. ●●●●○



Wireless Headset for iPod

If your iPod's earbud cables are usually twisted in a knot, you have two choices: Wait for Apple's long-rumored Bluetooth iPod to arrive or buy your own Bluetooth wireless headphones. The **AirLogic icombi AH10** comes in black or white and features easy, well-designed controls on the right ear that let you pause, change volume, and skip forward or back in your playlist. We loved the rich sound, the 30-foot range, and the 11 hours of battery life. Unfortunately, though, the icombi lacks frequency hopping, so interference with other Bluetooth devices on city streets frequently interrupted our groove.—*TD*

\$190 street. AirLogic Co. Ltd., www.icombi.com. ●●●●○

Very Touching

The **H2i SimplyTouch OpticalBar** is a novel idea—but not a practical one. The ability to turn part of your monitor into a touch screen looks neat on paper, but you need a decent degree of dexterity and patience to operate the OpticalBar. You can't work the virtual buttons as quickly as you type on a keyboard, and even when you hit the right button area, the sensor can still misread your touch. If you really want to tap on your display that badly, we'd recommend a tablet laptop.—*David Murphy*

\$60 list. H2i Technologies, www.simply-touch.com. ●●○○○



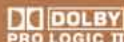
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Violence



Headphone Upgrades

BY BILL MACHRONE

This sampling of earphones could hardly be more varied, but it shows the range of choices available if you want something other than the standard white earbuds. We subjected this group to rigorous lab and listening tests, and here's what we found.

AKG K 28 NC

We were eager to try AKG's latest noise cancelers—they're compact, light, and cool-looking, and they fold up small. The noise reduction is built into a belt clip, and the supraural pads are comfortable for the long haul. The K28NCs are very sensitive and can play loudly even from weak sources. We measured an ear-busting 111 dB on our standard rock track. The noise-reduction circuitry reduces external sound effectively. Bass response is very strong—maybe too strong for purists. A sharp peak at 2.5 kHz emphasizes the high midrange more than we'd like, and there's a slightly muffled quality to the sound, but overall, these are listenable phones.

\$120 street. AKG Acoustics, www.akg.com. ●●●●○

Audio-Technica ATH-CM7Ti

The only earbuds in this roundup, these have all the right buzzwords, plus a few new ones: titanium, neodymium, functional swing housing, and high-performance elastomer. Apart from a little weakness in the bass, they sound fine—if you keep them pressed into your ears with your fingers. But they lose too much when they're just resting in your ears, pulled out by the weight of the titanium bodies. We had better luck wearing them upside down, with the wires over the tops of our ears. The diaphragm assembly swivels eccentrically, ostensibly to improve the fit in your ear, but we didn't find any actual benefit. A strong peak at 1.25 to 2 kHz makes vocals very intelligible, but we'd like these phones more if they fit better.

\$150 street. Audio-Technica U.S. Inc., www.audio-technica.com. ●●●●○

Etymotic ER4

Etymotic's high-end canalphones have clear, incisive highs; a smooth midrange; and honest, accurate bass that thins out in the lowest half-octave. These are

musical purist phones, not rock 'n' roll brain squeezers. The in-ear design blocks at least 15 dB of noise in most of the spectrum and up to 30 dB in higher frequencies. The accessories are plentiful, with three sizes each of foam and flanged eartips, a quarter-inch adapter, a tool to replace the filters that keep ear wax out of the drivers, and some spare filters. We measured 103-dB continuous volume and 107-dB peaks on our loudness tests.

The ER4s have the flattest frequency response of any of the phones in this roundup and are among the best of any phones you can buy. They are a pleasure, as long as you don't expect thumping bass.

\$240 street. Etymotic Research Inc., www.etymotic.com. ●●●●○

JVC HA-NC100

These noise cancelers aren't as compact as the AKGs, but they provide excellent noise reduction, with 20- to 30-dB reductions throughout most of the range. Passive noise reduction is effective in the higher end, and the active circuit does a good job down low. The frequency response leaves something to be desired; it's weak in both the bass and the high end. But the design is innovative: As with the category-leading Bose Quiet Comfort 2, the electronics and single triple-A battery are in one earpiece, and the other holds the retractable cord (up to 5 feet). The NC100s fold compactly and come with a travel bag and a two-prong airline adapter. They're plenty loud, with 105-dB peaks.

\$50 street. JVC Americas Corp., www.jvc.com. ●●●●○

Etymotic ER4 ▶



◀ Sennheiser PX 100

Sennheiser PX 100



The PX 100s are the most unassuming-looking and least expensive headphones in this roundup: just a simple stainless-steel headband and open-backed earpieces with foam cushions. They're light and comfortable on the ears; they fold into a small, hinged plastic case; and they sound terrific. The frequency response is almost as flat as that of the Etymotic ER4s, but the bass extends deeper, with a rich, honest, fundamental tone that is equaled in this roundup only by the AKGs. Open-backed phones have a kind of naturalness that closed-back phones and canalphones can't match; they blend external ambience with your music so you don't get that "underwater" effect. The PX 100s cranked out 100 dB on our loudness test, with 106-dB peaks.

\$40 street. Sennheiser electronic GmbH & Co. KG, www.sennheiser.com. ●●●●○

Turtle Beach Ear Force X51

The Ear Force X51s are real surround-sound headphones, with front, rear, and low-frequency drivers in each earpiece. They also have a removable microphone for interactive gaming and Internet telephony. The surround sound actually works with a 5.1 sound card, and it's sufficiently accurate to locate things behind you when you're gaming. The fidelity, however, is all midrange, which makes explosions disappointing. These aren't music lovers' phones by any stretch. They're loud, though, managing 107-dB peaks.

\$50 street. Voyetra Turtle Beach, www.turtlebeach.com. ●●●●○



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BACKSPACE

HEY, STOP LOOKING AT MY BOOKMARKS!

Edited by Don Willmott

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<< Is it just us, or does defining smoking as a "hobby" seem a bit strange? (Yahoo.com)

<< Wow! Spending five years on Xbox development has had a dramatic effect on Microsoft VP J Allard. (Spotted by blogger Geek on Stun).

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