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LATEST TOP 100 PCs, PRINTERS, AND MORE

# PC WORLD

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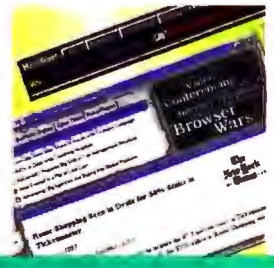
SEPTEMBER 1997

## Bigger *Is* Better

Best Buy 17-Inch Monitors: 23 Models Rated

## Microsoft Office

Undocumented Tips and Tricks for Office 97 and 95

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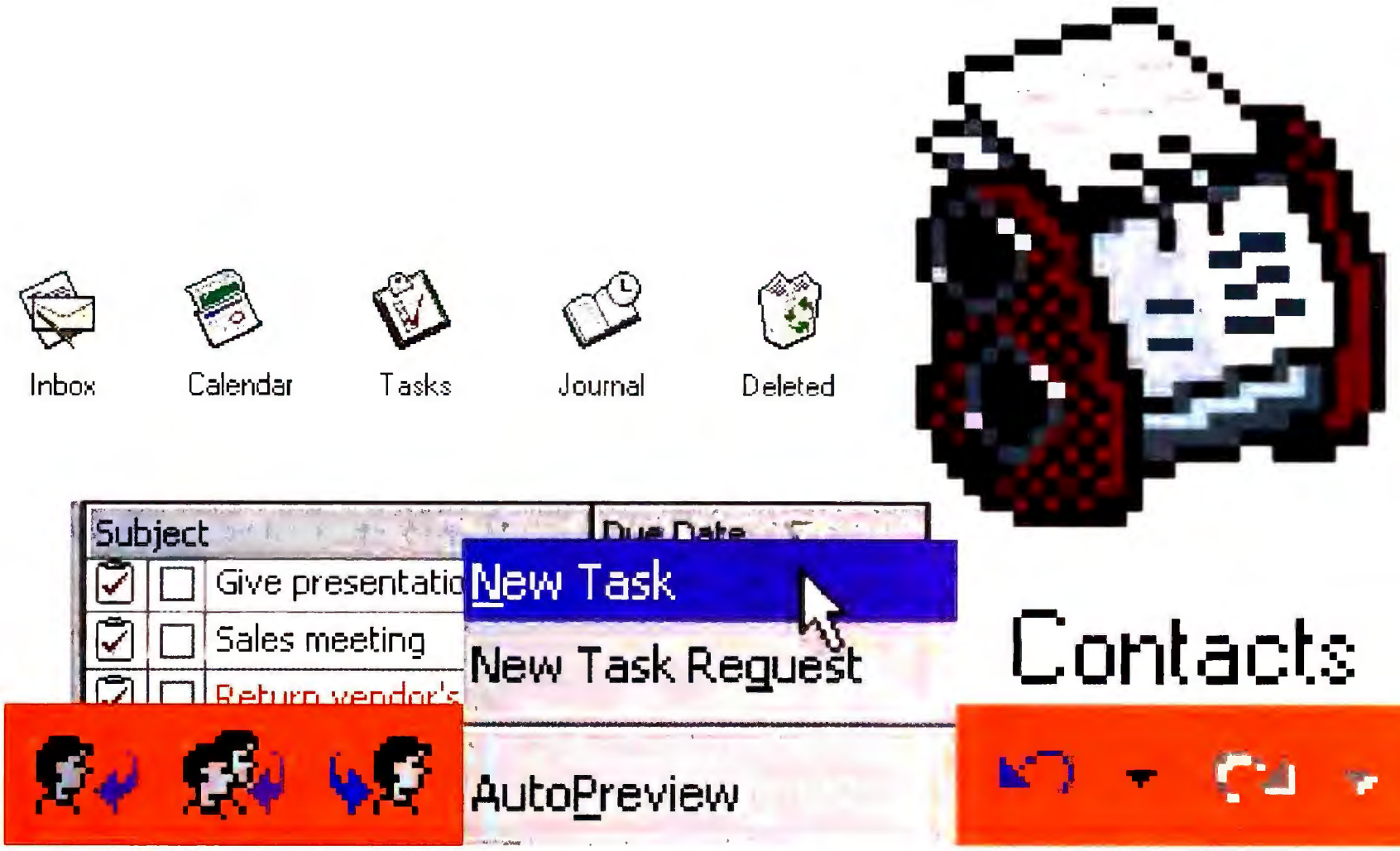


# it's going to be rea to stay disorganized.

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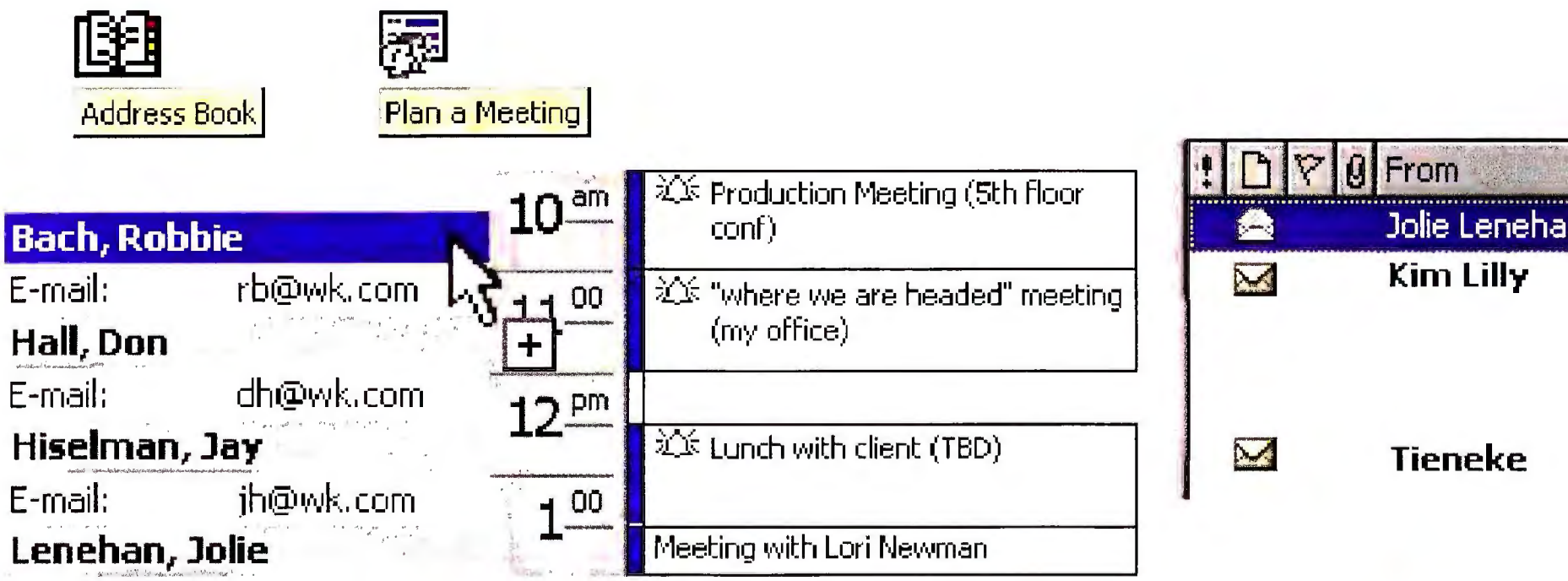


# lly, really hard

Some people are inclined to neatly arrange, file, cross-reference and deploy strategic bits of information, like what's-his-name, the guy who sent you the e-mail about the thing on Tuesday... or Wednesday. Well, here's good news for the highly with-it and the chronically disorganized alike: the new Microsoft® Outlook™ 97 desktop information manager. It's part of new Microsoft Office 97, and it's here to help you get organized (or, as the case may be, way more organized). Outlook puts your e-mail, electronic scheduling, "to-do" lists and contacts in one cozy interface. It helps you do smart things, like preview the first three lines of your e-mails to quickly separate news from junk. And you can easily share, link and move information; for instance, drag an e-mail onto the contacts icon and a new contact file is automatically created for you. Now, that's functionality. Want to know more? Block out a little time to visit our Web site.

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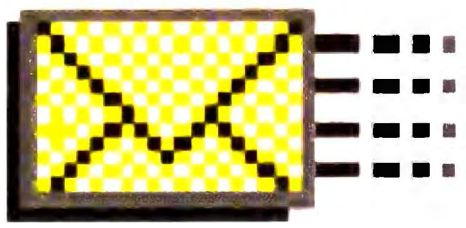


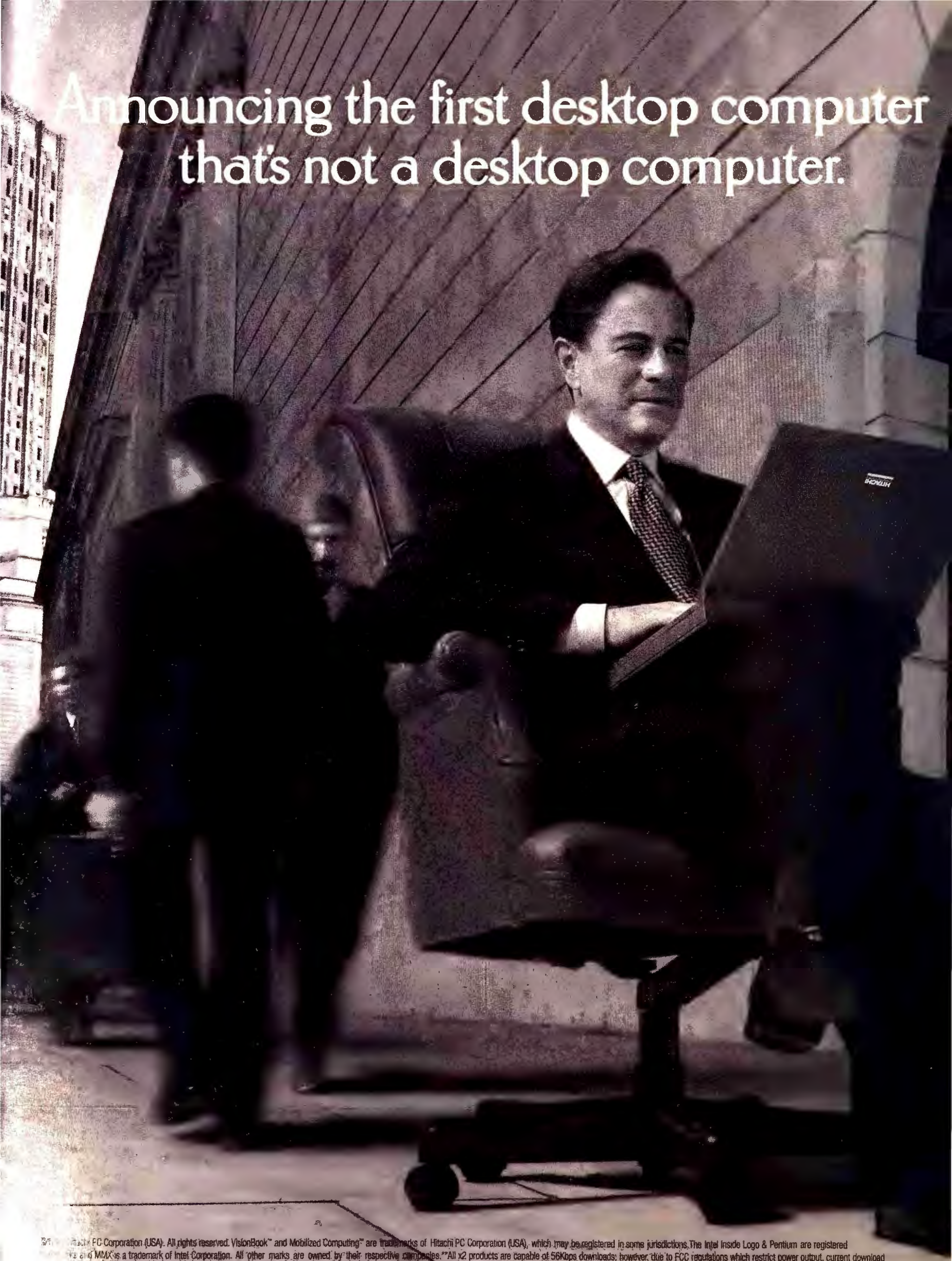
# Microsoft Office 97/now/

| Subject | Received |
| --- | --- |
| FW: Home Essentials | Fri 3/7/97 |

**RE: Hey there!**

Hey guys: I realize you're all looking forward to doing a major presentation at 8:00 A.M., but as it happens, the meeting time has been pushed back to 3:00. So sleep in an extra 17

# Announcing the first desktop computer that's not a desktop computer.

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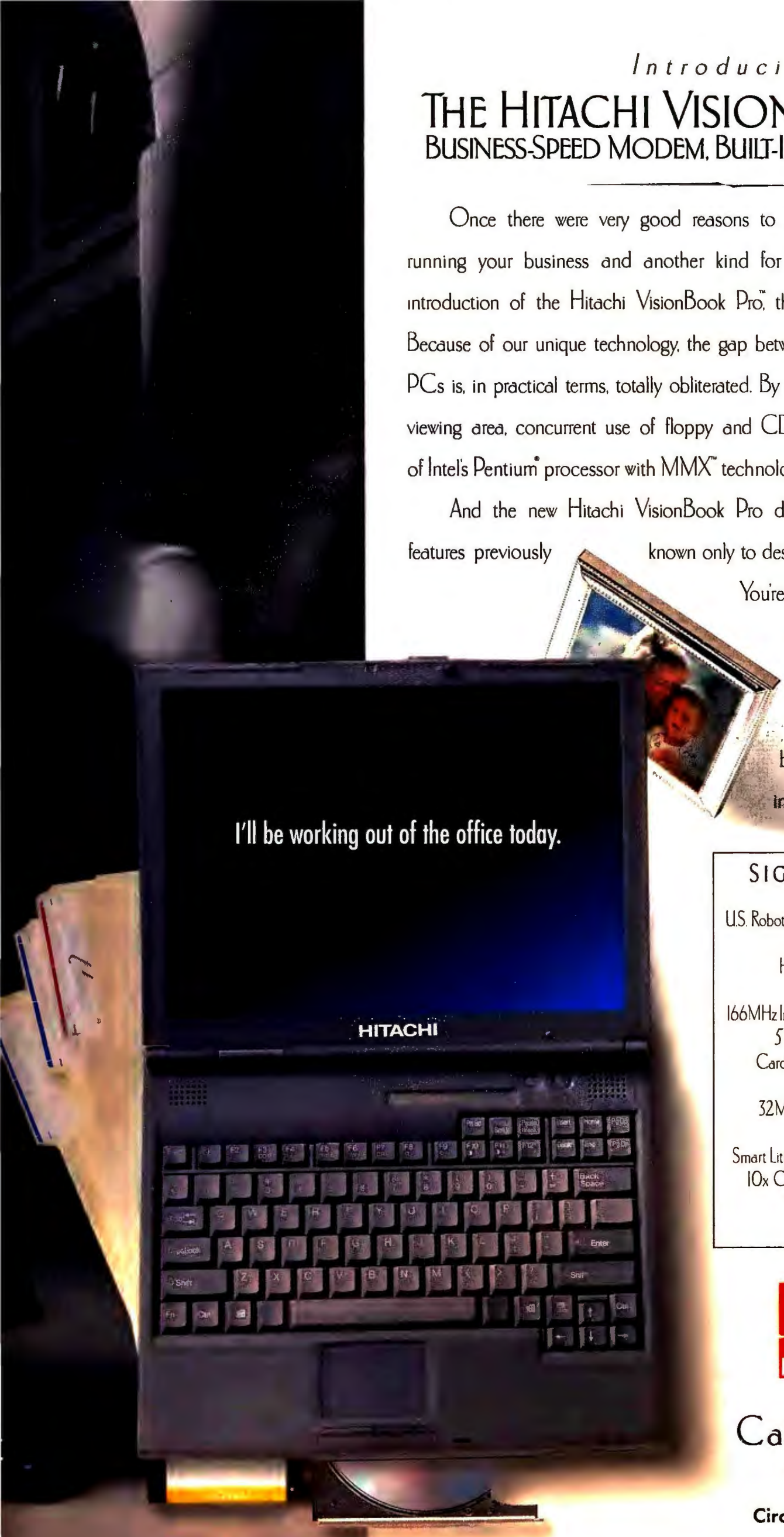


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*the monitor*

*Early computer "displays" were simple text displays or printed output. Used with mainframes, the first true monitors were rack-mounted behemoths. In the early 1980's microcomputers displayed alphanumerics and jagged graphics in monochrome. Today, monitor technology has advanced to exquisite high-resolution color and full-motion video.*

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PC WORLD

# SEPTEMBER

VOLUME 15 ◆ NUMBER 9

## COVER STORY

58 **WINDOWS 98: A CONVENIENCE YOU CAN LIVE WITH...OR WITHOUT**

PREVIEW Our hands-on testing of the first beta of Windows 98 reveals a slew of incremental improvements, from an Internet Explorer interface to patches, add-ons, and new hardware support. Will all the new features add up to a must-have Windows, or is this one upgrade you can sit out?

## FEATURES

140 **INSIDE OFFICE 97**

HOW-TO Chances are, you *live* in your office—Microsoft Office 97 or 95, that is. Here are the best ways to deal with file incompatibilities, tips for using new Web tools, plus pointers for getting the most out of Word, Excel, Access, and more.

169 **BIGGER IS BETTER**

REVIEW Upgrading your cramped 15-inch monitor? *PC World* set out in search of reasonably priced 17-inchers with bright, sharp displays. We tested 23 models and found two can't-miss Best Buys.

189 **WHAT A PAIN! THE FIRST SIX MONTHS OF OWNING A PC**

CONSUMER ISSUES Once you bought your new PC, how well did it work? We followed 25 new buyers through the joys and frustrations of PC setup, tech support, and much more. Here are the lessons we all learned.

204 **INVASION OF THE WEBCASTERS**

REVIEW It's info overload! Push apps, or Webcasters, send a stream of news, stock quotes, software, and more to you—but not all deliver. We downloaded ten Webcasters to find the real story.

58

140

Additional material available on PC World Online: www.pcworld.com

## SPECIAL REPORT

THE WEB AND YOUR BUSINESS

221 **SERVERS WITH ROOM TO GROW**

Buying a reliable built-from-the-ground-up server doesn't have to bust your budget. With up to 36GB of swappable storage and features that make it easier to use, Digital's Prioris MX 6200 SMP tops this competitively priced group of servers.

225 **EIGHT WAYS TO WORK ACROSS THE WEB**

Need to work with others over the Web but can't convince your reluctant IS manager to cooperate? These eight no-nonsense strategies will let you do it yourself, using software you already have or can buy for cheap.

COVER *Photo illustration by Jeff Berlin*

ICONS: JEFFREY PELO

## TOP OF THE NEWS


**64 56-KBPS ILLUSIONS: HIGH-SPEED ACCESS NOT AS ADVERTISED**
Finding an ISP to support your new 56-kbps modem could be tough. A *PC World* investigation exposes inflated claims of ISP support for K56flex and x2 access.

**66 THE NETPC ARRIVES: BACK TO THE FUTURE FOR USER CONTROL?**
Is this your next PC? Cheaper, stripped, and sealed, NetPCs from Compaq, Dell, IBM, and others will go on sale by year-end. Is it a blessing for control- and cost-conscious IS managers or a bane to personal computing?

**70 USB GIVES YOU A ROUGH RIDE**
Plug and Play it still isn't. Incompatibilities and a dearth of products show that easy-to-install USB peripherals are just not here yet.

**72 BROWSER: MANAGE YOUR MONEY**
Online banking goes glitzy, offering international banking, high-level security and encryption, and stock market research tools.

169

189

## NEW PRODUCTS


94 Digital 6166K AMD K6 system, USA Flex 6x86MX-PR200 Cyrix 6x86MX system
95 CSA-6700 USB add-in card
96 Cross iPen input device
96 Gateway 2000 G6-266XL PC
100 Toshiba PDR-2 digital camera
100 Reunion online BBS/chat rooms
102 TView PresoCard
102 DVD471TII DVD-ROM kit
106 VoicePilot 3.0 for Windows 95
106 Business Traveler's Suite
108 PaperPort Strobe, ScanMaker V300, OpticPro 9630P scanners
112 PC-cillin HouseCall
112 DiskMapper with Office 97 Zoom utility
119 Kai's Photo Soap
124 Analytica modeler
124 Uninstaller 4.5
126 Safeguard Interactive Back-up, Atrieva off-site backup
128 Pictra Album imaging
128 CD Traveler 820
133 Mitsubishi DJ-1000 Digital Camera
134 EarthLink Website Inc.

204

237

## TOP 100


**237 NOTEBOOKS WITH MMX APPEAL**
TOP 100 MMX notebooks take the Power Notebooks chart by storm, grabbing nine of ten spots. Other Top 100 action includes a whirl of PCs sporting new CPUs like AMD's K6-PR233 and Intel's Pentium MMX-233 and Pentium II-233.

**240 POWER DESKTOPS**
TOP 20 MMX battles the Pentium II invasion as three Pentium MMX-233 systems take spots on the chart, among them a Best Buy from Dell going for under $3000.

**250 BUDGET DESKTOPS**
TOP 20 AMD and Cyrix crash Intel's party as six PCs with non-Intel processors make the chart, including the very fast $1899 Micro Express MicroFlex-PR/233.

**258 NOTEBOOKS**
TOP 20 Pentium MMX-166 notebooks seize more than half the chart, including both Power Best Buys—WinBook's FX and Micron's Transport XKE P166 A.


### RELIABILITY & SERVICE SURVEY


**268 WIN A POLYWELL PC**
How satisfied are you with your PC? Fax in this survey for a chance to win a Polywell Poly 500 QX, a Top 20 PC this month.

**273 WORKGROUP PRINTERS**
TOP 10 A price drop of over $3000—yes, $3000—pushes IBM's Network Color Printer onto the chart. But that's not good enough for this laser to top the new $799—yes, $799—Epson Stylus Color 1520 ink jet.

**279 17-INCH MONITORS**
TOP 10 Superb graphics and text clarity keep Iiyama's VisionMaster Pro 17 at number one. But check out great color on the runner-up Mitsubishi Diamond Pro 87TXM.

**281 GRAPHICS BOARDS**
TOP 10 Last month's number one STB Nitro 3D hangs tough despite challenges from the new Matrox Millennium II.

**283 INTERNAL MODEMS**
TOP 10 Motorola ISG ModemSurfr debuts as our first 56-kbps chart topper.

## HERE'S HOW


**292 ANSWER LINE**
Figure out the best way to reinstall Windows 95; cut down on your browser's cache.

**296 WINDOWS TIPS**
Make Windows 95 start up faster; create SendTo in Win 3.*x*; move NT's swap file.

**302 SPREADSHEETS**
Automate spreadsheet titles; close all Excel workbooks quickly.

**304 WORD PROCESSING**
Find and replace formatting in Word; cut down file sizes in WordPerfect.

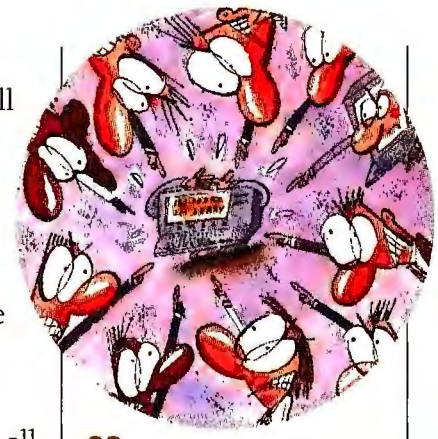
**308 DATABASE TIPS**
Simplify Access data entry with Lookup fields.

**310 INTERNET TIPS**
Take precautions when buying from Web auctions; turn off pesky AOL ads.

**314 HARDWARE TIPS**
Get faster output and improved quality from your laser printer.

**316 MULTIMEDIA TIPS**
Manage multimedia mayhem; adjust PC sound quickly.

**318 UPGRADE GUIDE**
Install a video camera on your PC, step by step.

33

47

318

## @HOME


**285 @HOME PRODUCTS**
A tiny, low-cost video camera; genealogy tree software; custom stationery over the Net.

**286 KEEPING UP**
Web sites and services for consumers.

**289 TOP 5 HOME PCS**
The new number one Dell Dimension XPS M233s is the fastest home PC we've tested so far.

**290 HOME OFFICE**
Steve Bass searches for the perfect keyboard.

290

## DEPARTMENTS


**17 UP FRONT** Watch out for this Windows.

**23 LETTERS** Readers sound off on World Class products.

**33 CONSUMER WATCH** A customer revolt forces end to Compaq's fee-based support.

**36 COMING UP**

**41 PCW ADVOCATE** Yahoo user info sold? U.S. Robotics customers on hold.

**47 REAL SOLUTIONS** Office 97 hell.

**53 BUGS AND FIXES** Browser bug solutions.

**366 FULL DISCLOSURE** To Microsoft: Enough!


## RESOURCES


**14 HOW TO CONTACT PC WORLD**

**327 MAIL-ORDER SHOPPING GUIDE**

**345 PC WORLD CATALOG**

**357 READER SERVICE CARD**

**359 ADVERTISER INDEX**

**362 EDITORIAL PRODUCT INDEX**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- Microsoft® Intellimouse™, 104-key keyboard
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- U.S. Robotics Sportster 56K x2 internal data/fax modem*
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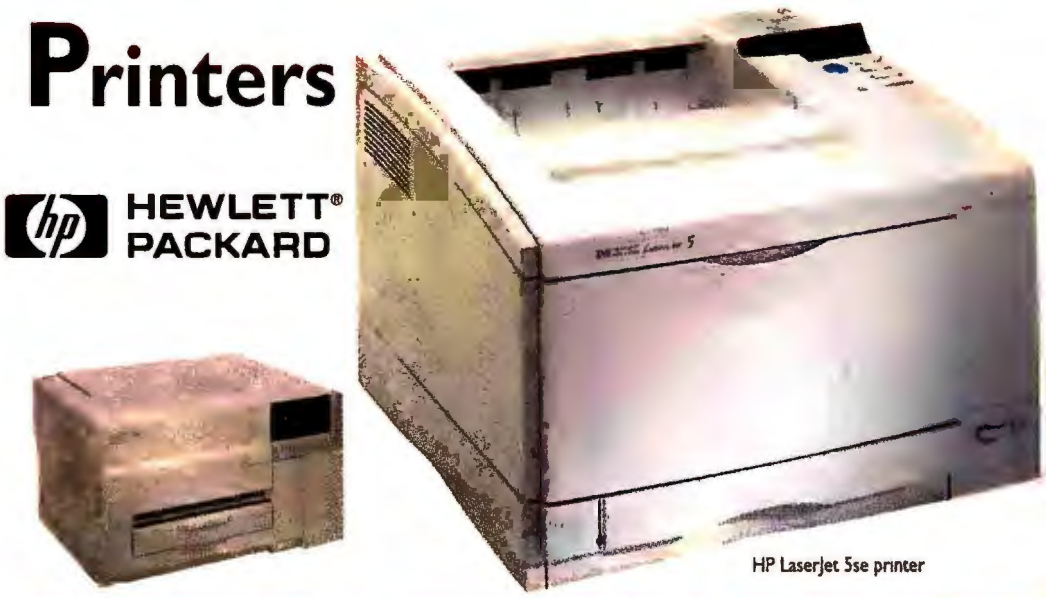

HP LaserJet 5se printer

### HP Color LaserJet 5 printer

HP Image REt 1200
10 ppm black, 3 ppm color
20MB RAM std., 84MB max.
Printer language: enhanced HP PCL 5
250-sheet input tray
1-year on-site warranty
HP C3961A

**$3939.33** CDW 65565

**HP Color LaserJet 5M**
36MB RAM std., 76MB max.
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24 ppm
4MB RAM std., 132MB max.
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12 ppm
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1-year warranty
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HP C3994A

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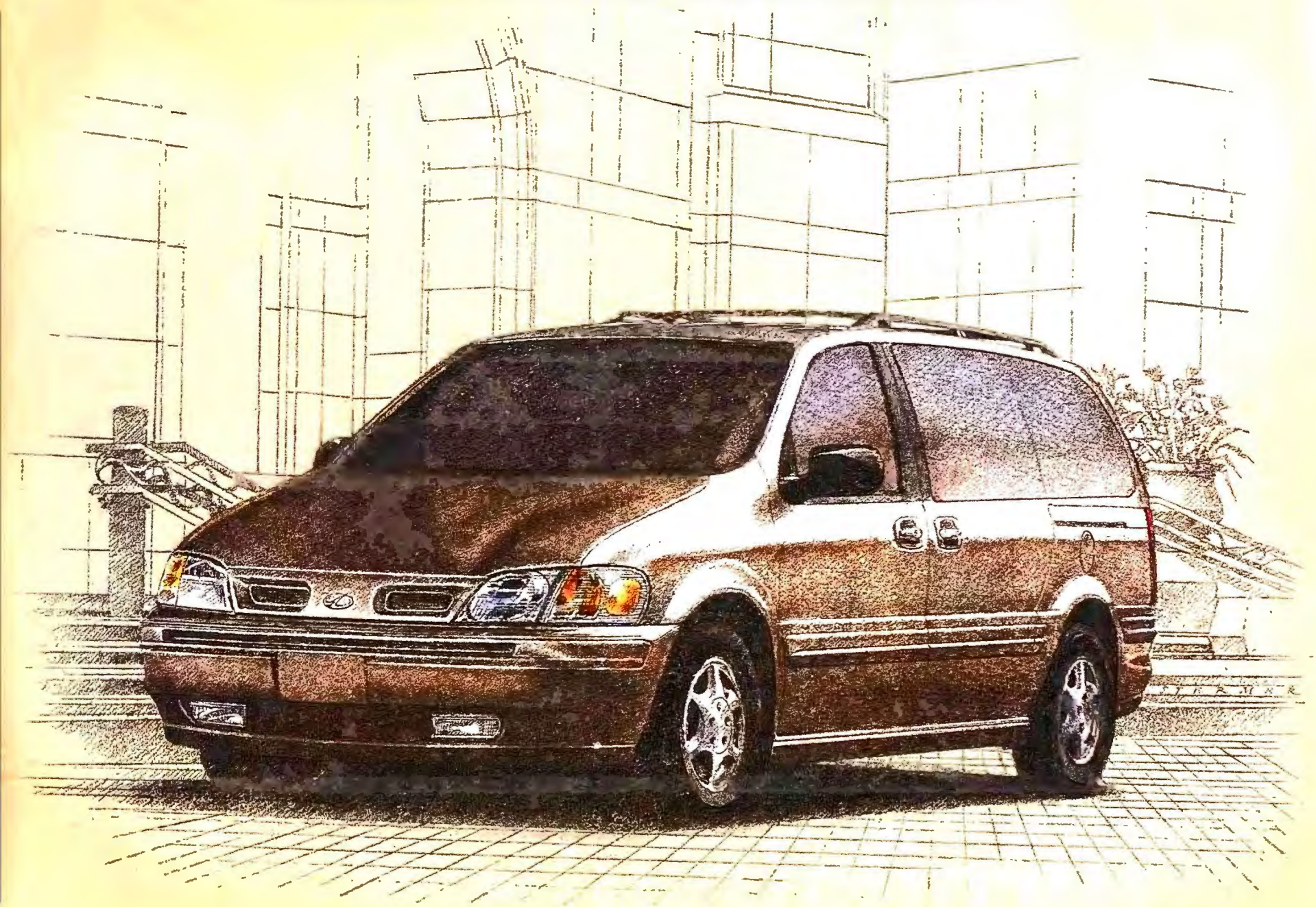

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# Windows 98—to Upgrade or Not?

MORE THAN TWO YEARS AGO, Microsoft released the first public beta version of Windows 95 with great fanfare. For the privilege of trying out this prerelease software, tens of thousands of eager beta testers forked over $50. Expectations for the new operating system ran high, with promises of ease of use that rivaled the Macintosh's; hardware that would be truly plug and play; greater stability resulting from added 32-bit code; and a new generation of multitasking applications.

We all know what happened next. Some of us gladly ditched Windows 3.1, installed more RAM, and never looked back. Others passed on the upgrade, certain that expectations for the OS were overblown, and unconvinced that its benefits were worth the trouble and expense.

Enter Memphis. In early July, Microsoft released the first beta version of Windows 95's successor, now known officially as Windows 98. This time around, the noise level is far less deafening. And after our first tests of the beta release, it is not at all clear that upgrading to Windows 98—at least for current Windows 95 users—will be worth the trouble and expense.

PHOTOGRAPH: ERIK BUTLER

After our **first** tests of the **beta** release, it is **not** at all clear that **upgrading** to **Windows 98** will be worth it.

## A DIFFERENT INTERFACE

FOREMOST AMONG Windows 98's new features is its optional integration with Internet Explorer 4.0, which will let you browse the Web and files on your hard disk through a single interface. Is it worth upgrading to gain this integration? Perhaps, if you like to browse your files this way *and* prefer Internet Explorer to Netscape Navigator. Even if that's the case, Windows 95 users can simply download IE 4.0.

A second substantive interface change is Active Desktop, which lets you place on the desktop applets that automatically retrieve information from the Web. To date, of course, the only applets available are demonstrations from Microsoft's site, so it's hard to get too excited about Active Desktop's potential usefulness. Fans of PointCast and other push products already have similar capabilities; Netscape will add them to Netcaster, due this summer.

In addition to other more minor interface changes, Windows 98 includes a number of add-ons and bug fixes, most of which are currently available on the Web or in Windows 95 OEM Service Release 2, the version of the operating system now shipping on many new PCs.

## NEW, IMPROVED HARDWARE?

MEMPHIS ALSO HAS support for DVD drives, Universal Serial Bus peripherals, Advanced Configuration and Power Interface (ACPI), high-speed IEEE 1394 (Firewire) connections, and Accelerated Graphics Port (AGP) hardware. How significant is this support? If you've bought a PC recently, chances are it has USB ports designed to make hardware—as we've heard before—truly plug and play. But our first tests with Windows 98 and USB peripherals showed mixed results. USB performance may fare better in the final version of Windows 98; on the other hand, our results with the beta version may be as good as it gets.

The benefits of the other hardware standards are tough to gauge. It's telling that we could not obtain a PC with BIOS support for ACPI in time for testing this month. Likewise, we could not yet test Windows 98 support for AGP because AGP-enabled PCs and graphics cards are not yet available. But when AGP arrives later this year, what exactly will its benefits be? That remains to be seen; some PC vendors say that any gain in performance will be marginal. What about the IEEE 1394 port? Again, few devices make use of this untested standard. In short, much of the added hardware support in Windows 98 is aimed at new, unproven standards and will simply be a hedge against possible future obsolescence.

## DON'T EXPECT TOO MUCH

WHEN YOU ADD IT ALL UP—Internet Explorer 4.0, the other interface changes, more hardware support, and an assortment of add-ons and fixes—the beta release of Windows 98 is a less-than-compelling upgrade. Its main benefit, our reviewers say, is convenience: It's easier to load all its pieces from one disc rather than download them from the Web. IS managers may also benefit by managing a standard version of Windows on all PCs rather than managing Windows PCs in various stages of upgrades.

In the coming months, we'll continue to test beta versions of Windows 98 with a wide variety of software and hardware, trying out new capabilities, exercising the new hardware support, and ferreting out bugs. We'll also watch for late additions and deletions to the operating system. But no matter what the final version brings, one thing is obvious: Windows 98 may turn out to be one operating system upgrade you really don't need.

*Cathryn Baskin is editor in chief of* PC World. ■

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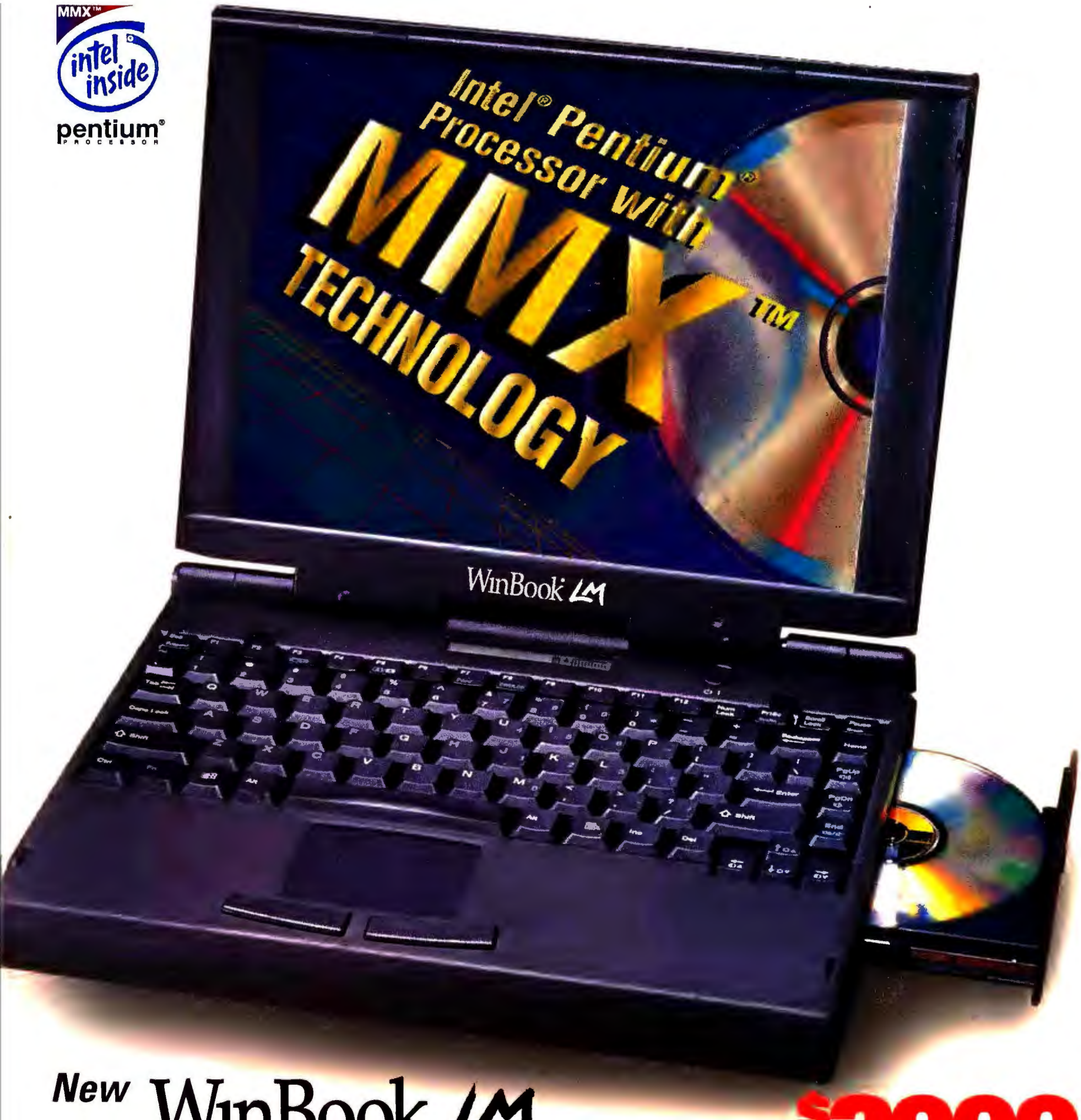


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# YOUR TAKE ON: State of 56k ◆ World Class Awards ◆ PC 98 initiative

## 56K HIT OR MISS

ON THE STATE of the 56-kbps modem market [*Up Front,* July] I applaud editor in chief Cathryn Baskin. There hasn't been this much market competition for competing standards since the VHS-Beta wars of the 1970s. With the Internet driving a demand for faster modem communications, there is much at stake for the modem manufacturers. But ultimately, it is the consumer who has lost. My colleagues and I work for a software modem company that is currently 56-kbps standards–independent, and we continually fight the misconceptions that have been fostered by the smoke and mirrors of the 56-kbps rush to market. Rather than supporting the hype, it is refreshing to see that *PC World* has taken a position to educate the end user.

*Shawn D. Owens, Internet*

I DON'T UNDERSTAND all the fuss about the 56-kbps modems. I bought a U.S. Robotics internal voice fax-modem about two months ago and have had no problem connecting and maintaining 52,000 bits per second. I'm a fairly new PC owner and had no trouble setting it up and getting online. The only headache I really had was finding an Internet service provider in my area that supported the x2 protocol.

My hat's off to you and the writers for an outstanding magazine. Mostly you're right-on about everything. But this time you and most everyone else are off base.

*Bill Foltermann, Cleveland, Tennessee*

## BEST BUY OR WORLD CLASS?

IN YOUR JULY issue, you awarded Symantec's Norton AntiVirus 2.0 a World Class Award. I assume that means you believe it to be the best antivirus program. I am a bit confused and angry. In your March issue, there was a large review of antivirus programs. Norton AntiVirus ranked toward the bottom of the list, while Dr Solomon's Anti-Virus Toolkit received a Best Buy. Acting on your advice, I bought Dr Solomon's. Has something happened in the past few months to change your minds, or have I just wasted my money?

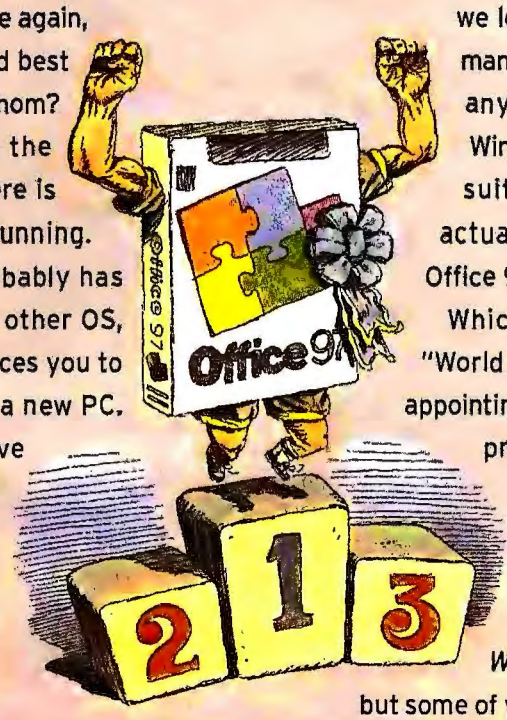
*Lynn Jones, San Francisco*

**Editor's response:** No, you haven't wasted your money. Our editors identify Best Buys on a monthly basis, while the World Class Awards are given once a year by a select panel of *PC World* readers and industry experts. These judges use different criteria to evaluate products. Therefore, their World Class Awards don't always match the Best Buys in our monthly roundups. Fortunately, whether Best Buy or World Class Award, both are good choices. **–Tracey Capen** ▶

HOT BUTTON

## Microsoft: World Class or No Class?

IN "THE BEST PRODUCTS of 1997" [July], James A. Martin says, "Of course, nobody is able to touch Microsoft in one category: operating system. Once again, Windows 95 was voted best of breed." Voted by whom? Your "voting" is like the old Soviet Union–there is only one candidate running. Yes, Windows 95 probably has more users than any other OS, because Microsoft forces you to buy it when you buy a new PC. Plus, most users have never heard of any other OS thanks to *PC World*'s blinders-on coverage of what is mostly Microsoft computer software.




*David Johnson, Internet*

YOU SAY "Microsoft's Office 97 took the honors for Most Promising Software Newcomer," and that Office 97 is just one of 17 World Class Awards Microsoft won this year. That was on page 124. On page 66, in *Top of the News* and its report on "Windows 97 Software Suites: No Fix for Speed Freaks," we learn that, regarding performance, *PC World* has "never had anything good to say about Windows 95 business software suites," and "Office 97 was actually 12 percent slower than Office 95 in our tests."

Which is correct? Is Office 97 "World Class" or just another disappointing program that is, in its "improved" form, even slower?

*Steve Weiner, Buffalo Grove, Illinois*

I NORMALLY respect *PC World*'s recommendations, but some of your World Class Awards left me wondering about your objectivity. I can't believe you named Microsoft Office 97 as Best Product of 1997 in its category.

Office 97 has so many file compatibility problems with previous versions that Microsoft issued a public apology. My organization works with multiple Microsoft Office suites, but using Office 97 is out of the question. Until Microsoft figures out that file format compatibility is a primary issue governing upgrades, we won't be installing it.

*Mark Brownell, Internet*

**Editor's response:** Each month *PC World* editors identify the top hardware and software products. But once a year, we let our readers decide. That's what the World Class Awards are all about. This year, our editors nominated the top four to eight products in each category, then sent out ballots to 2000 longtime readers, computer professionals, and user group members. When we totaled their responses, Microsoft had won 17 awards, including Best Operating System/Environment and Best Office Suite–not surprising, given its domination of these markets. Windows 95 won 61 percent of the vote. Microsoft Office garnered 74 percent. True, these products are far from perfect–as we've pointed out. (For solutions to some of Office's problems, see "Inside Office 97" in this issue.) But there's no question that our readers prefer them, warts and all. **–Daniel Tynan**

ILLUSTRATION: JOHN S. CUNEO

| Model | G773 | P775 |
|---|---|---|
| CRT Screen Size | | |
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| Recommended Resolution | 1,024 x 768 @ 87Hz | 1,280 x 1,024 @ 88Hz |

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**Circle 113 on reader service card**

# LETTERS

## AOL: BEST AND WORST ONLINE SERVICE

I CAN'T BELIEVE *PC World* awarded America Online Best Online Service in 1997. You guys must be on a bad trip from the sixties. Where were you and your supposed readers over the past few months while users were enduring the "constant busy signal" period?

I know the answer: They fixed their problems, and they have the best content. Yes, if you can connect and get to that content. But you'd better hold on because you'll soon be disconnected.

*Mike Vitiello, East Brunswick, New Jersey*

## PC 98: NOT SUCH A BAD IDEA

REGARDING Stephen Manes's column on PC 98, "What Your Next PC Will Look Like" [July], I must say that I agree wholeheartedly with Microsoft, Intel, and Compaq's attempt at serious standardization of PCs. For too long, different hardware manufacturers, software producers, and PC builders have had a great deal of trouble making sure that all the peripherals, cards, and add-ons in a PC work together with the software and drivers for thousands of programs and millions of users. I know this is somewhat contrary to the idea of the free market, and it gives Microsoft and Intel a tighter grip in their stranglehold on the PC universe—but the standardization is something that has to be done, especially if people really want easy-to-manage computers.

*Joshua Hartke, Dieterich, Illinois*

I welcome PC 98 as a logical step in the evolution of the personal computer. As for the minimum requirements for PC 98, the fact is, systems with at least 200-MHz Pentium processors and 32MB of RAM are already common in mid-1997, as reflected in *PC World*'s July Top 20 desktop charts. So what's the big deal? Intel and Microsoft have already cornered the market. It is now time for these giants to initiate some sort of standardization.

*Robert Hardie, Internet*

## ADOBE ILLUSTRATOR'S GOOD, BUT WE EXPECT BETTER

SHANE MOONEY'S description of Illustrator 7 as consisting of "cosmetic improvements" [*New Products*, July] is very strange, and I think it does a disservice to Adobe and to the readers who count on your reviews. As a user of Illustrator on both Macs and PCs, I can vouch for the radical nature of the component changes from the previous Windows version. This is the first time that gradients, layers, and numerous plug-ins long available in the Mac version have appeared in the Windows version.

*John Buenfil, Concord, California*

**Editor's response:** You're right. The Windows version of Illustrator 7 gives PC users features that Mac fans have enjoyed for years, including gradient fills, layers, real text tools, and alignment tools. And as the review mentioned, the new shortcuts and unified interface with Photoshop and PageMaker are big improvements. But we expected more from Illustrator 7. Its GIF and JPEG antialiasing are an improvement over previous versions, but CorelXara does better. If you're creating Web graphics, Illustrator still has a ways to go. Make no mistake, this is a great program. But PC users who've been waiting five years for the new version may also feel disappointed in what's not included. —Laurianne McLaughlin

## CORRECTIONS AND CLARIFICATIONS

"DEBABELIZER PRO FOR PCS" (*New Products*, April) implied that DeBabelizer Pro's scripting and batch processing were the same as similar features available in less-costly competing products. *PC World*'s second review of the product found that its scripting and batch processing were superior to the competition's, making DeBabelizer Pro one of the best tools available for graphics professionals who routinely work with large numbers of .bmp files. For a fresh look at DeBabelizer Pro, see www.pcworld.com/news/daily/data/0697/970612193014.html.

In our July story "The Best Products of 1997," we misnamed our readers' choice for Best Backup Utility. The correct name is HP Colorado Backup for Windows 95 by Cheyenne.

*PC World* regrets the errors.

PC World *welcomes your responses, ideas, and other letters to the editor.* *See page 14 for contact information.* ■

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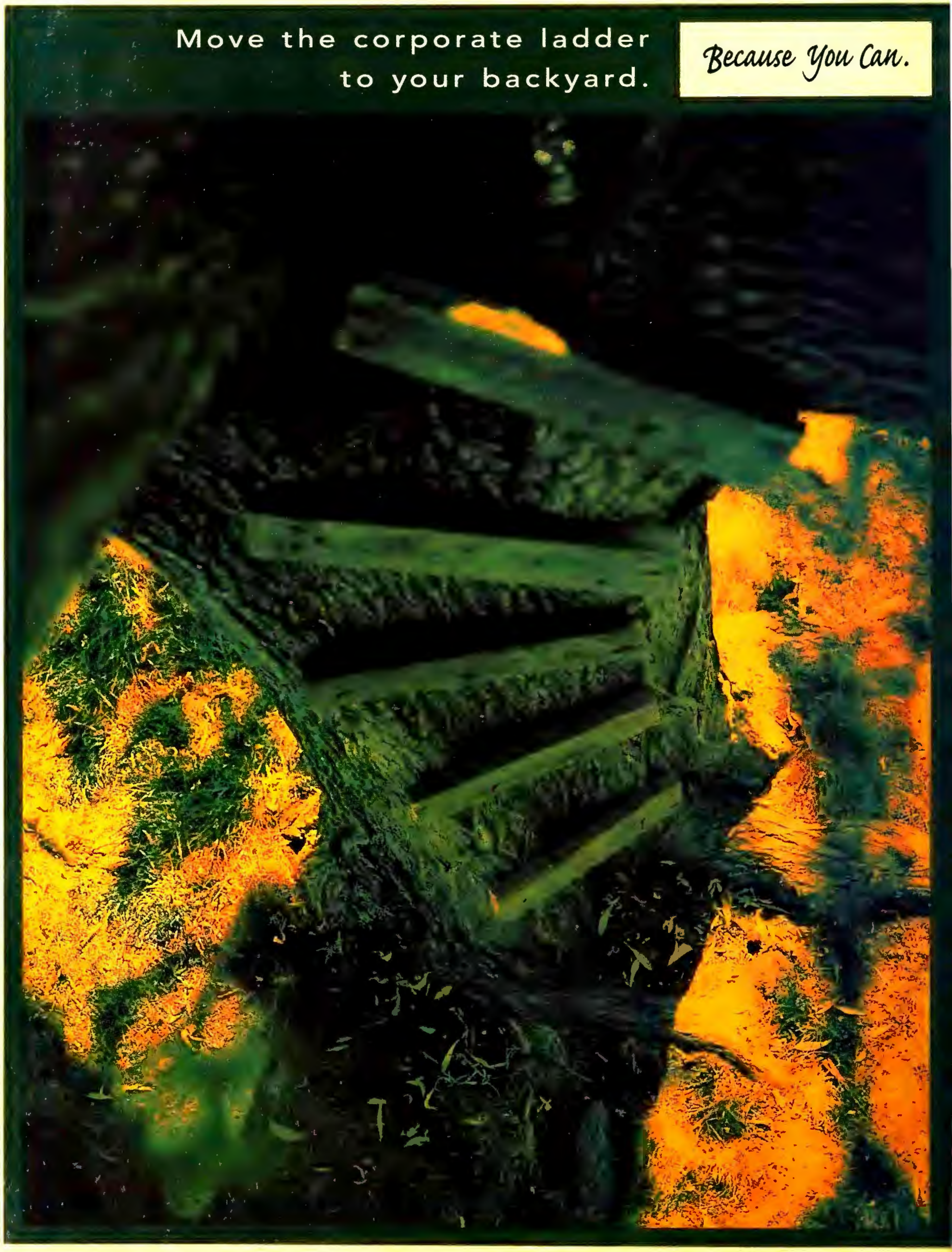

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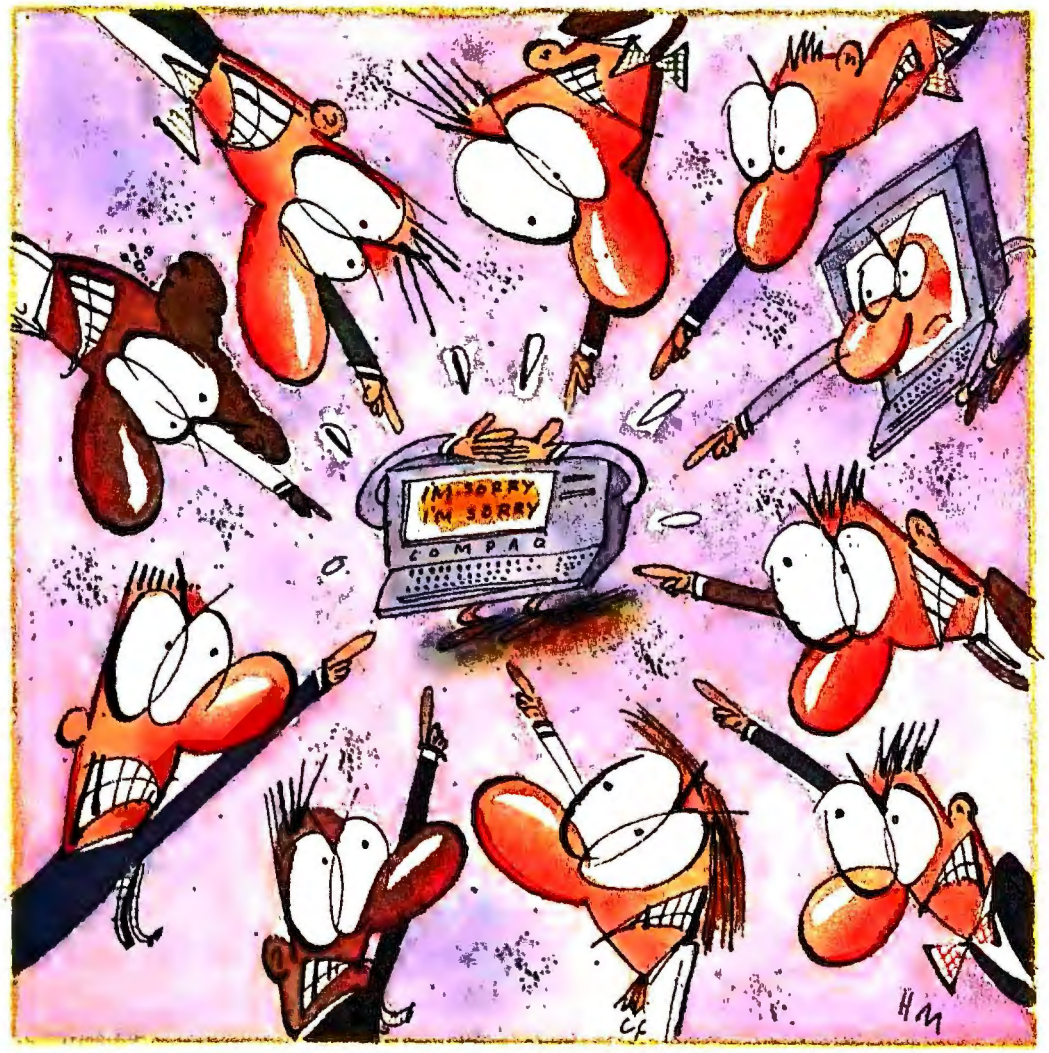


ILLUSTRATION: HAL MAYFORTH

REMEMBER NEW COKE? Coca Cola introduced what it called a fresh new taste back in the early eighties, and incurred the wrath of customers when it discontinued the original cola they had grown to crave. It was a public relations disaster—before too long, the beverage giant was reintroducing Coke Classic and trying desperately to undo the damage wrought by its grand experiment.

Well, say hello to Compaq Classic. Compaq Classic Service, that is.

After nearly 18 months of charging its Presario customers $35 each time they needed a question answered, the Houston, Texas, PC powerhouse has realized the error of its ways. On May 12, just as quietly as it instituted its draconian fee policy, Compaq stopped charging every time a customer called to ask for help.

And it was about time.

The fees had succeeded only in alienating many of Compaq's once-loyal customers. When they were first levied, *Consumer Watch* was flooded with letters from irate consumers—upset both by the idea of having to pay for technical support and by the not-so-gentle way in which the company collected its fees. (Before customers could even articulate their problem they were asked for a credit card number.) Interestingly, there's also been a steady drop in Compaq's satisfaction ratings among readers responding to *PC World*'s monthly reliability and service survey.

Consider this: In our first report, back in June 1994, Compaq earned one of the highest buy-again ratings. By December 1996, the company's five-star rating had dropped one notch. In June of this year, Compaq's buy-again rating was down to just three stars, with a higher-than-average percentage of its customers reporting dissatisfaction with the company's service.

Was this drop caused by the fee-based help system? "The $35 charge accounts for a lot of the dissatisfaction," admits Michael Zimmerman, Compaq's new director of North American Customer Service and Support for the Consumer Products Group. "We do our own satisfaction surveys, and the majority of feedback when we asked how we could improve service was about the charge for technical support," says Zimmerman, noting that it had "a significant impact on how [customers] viewed our service." Zimmerman moved to Compaq from Motorola in January 1997 and says that his first order of business was to undertake a major rethinking of the Presario support operation.

## WHERE COMPAQ LEADS...

WHEN COMPAQ MADE the switch to fee-based service in January 1996, its executives said the change was inevitable, given the high cost of supporting home-based PC users, and predicted that their competitors would eventually follow suit. But while some companies (Acer and IBM, for example) have started charging for after-warranty technical support calls, none have eliminated free service altogether.

Dataquest PC analyst James Staten sees it this way: When a market leader makes a risky change, its competitors will either step in ▶

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line, figuring there's safety in numbers, or they'll take advantage of a perceived weakness and "start gunning for them." In this case, all guns were aimed at Compaq.

Hewlett-Packard has steadily increased the level of service provided to its Pavilion buyers. Among its noteworthy offerings: a dedicated service line for new models (though it is a toll call), limited software support for 90 days, and a guarantee that if a support call isn't answered within 3 minutes, they'll either give the customer a phone card worth 15 minutes of free long-distance phone calls or extend their warranty by an additional 30 days.

## CUSTOMERS FIRST

COMPAQ'S ZIMMERMAN insists that the company's position as the lone toll taker for tech support had no bearing on the decision to rescind the fee policy. "The bottom line is that we need to be customer focused," says Zimmerman. Asking for a credit card number before solving a problem simply didn't fit with the image of a customer-driven company.

Compaq's new no-fee policy is part of a major overhaul of the Presario service and support operation. These home PCs now have a team of technicians answering calls on a separate phone line. That's good news for both home and business users—all should receive better service as a result.

Reducing hold times is one goal of every support organization, including Compaq. But Zimmerman believes it takes more than just a short response time to keep customers happy. "The real issue is whether or not we can answer questions on the first call...[and then] get customers the assistance they need if [their problem] needs to be handled at a higher level," ▶

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| AcerView 78ie | 17" (15.7" Viewable Image Size) | 1600x1200 @68Hz | iScreen® On-Screen | .26mm |
| AcerView 76ie | 17" (15.7" Viewable Image Size) | 1280x1024 @65Hz | iScreen® On-Screen | .27mm |
| AcerView 56e | 15" (13.7" Viewable Image Size) | 1280x1024 @62Hz | Digital Control | .28mm |
| AcerView 54e | 15" (13.7" Viewable Image Size) | 1024x768 @66Hz | Digital Control | .28mm |
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Circle 212 on reader service card



he explains, noting that he has emphasized to his staff the importance of quick problem resolution.

Improved—and free—phone support is only one component of Compaq's new plan. Working on the notion that the best service call is the one that's never placed, Compaq is also beefing up the team of technicians fielding online queries—though Zimmerman wouldn't disclose the size of this support staff.

By the third quarter, Compaq expects to roll out a service it's calling "Virtual Technician"—a reportedly powerful new (too new for *PC World* to test) set of interactive diagnostic tools on its Web site. Using software developed by SystemSoft, a customer will be able to diagnose and troubleshoot online many hardware and software problems. If the online tools don't do the trick, one click on the Unresolved button gets the problem recorded in Compaq's database. The customer decides whether it's time to place a call to technical support or to continue hunting for a solution online.

## THE ONCE AND FUTURE KING?

COMPAQ'S RECENT changes to its service and support offerings are a huge step in the right direction. They provide consumers with the tools to solve problems themselves, without penalizing those who are unable—or unwilling—to do so.

Will the new strategy win back customers turned off by the $35 fee? It's too soon to tell. Consumers have a long memory when it comes to service; Compaq will have to do more than just change its policies to convince skeptics that it's really committed to satisfying its home and small-business users. The real proof will be in the quality of service.

I, for one, am glad to see that Compaq is acknowledging that it takes more than just selling a bunch of boxes to remain a market leader.

*E-mail your comments about this or any consumer issue to consumerwatch@pcworld.com. Roberta Furger is a* PC World *contributing editor. Her first book,* "Does Jane Compute?" *is to be published by Warner Books in February 1998.* ■

# COMING UP IN OCTOBER

## KEEP YOUR PC IN GREAT SHAPE

It's Murphy's Law: Your PC will work—until you need it most. Here's how to keep your desktop healthy, including advice on what to buy and how to set up backups and system maintenance.

## TECH SUPPORT: NEED HELP?

Want good tech support? Many vendors give you voice-mail mazes, badly written FAQs, and an inexperienced support staff. We tried phone and online tech support at software companies and found much of it less than helpful.

## GRAPHICS BOARDS: 3-D PLUS

Graphics boards should let you hold steady on a monitor while you work on a 50-page report, high-res color graphics, or a 3-D game. We tested 15 boards to find out which don't compromise.

## BUSINESS SOFTWARE FOR ALL

All businesses need to manage time, money, and resources. Our experts review packages in accounting, business planning, contact and project management, and human and legal resources.

## ALSO NEXT MONTH

▶**The PC World Top 100:** Check out the Top 20 power desktops, budget desktops, and notebooks, and the Top 10 workgroup printers, 19-inch monitors, graphics boards, and modems.

▶**Web Sites That Make a Difference:** Past the hoopla on the Net are Web sites containing value beyond self-promotion. A report on four sites with a vision—plus tips on creating your own.

▶**Here's How:** *Upgrade Guide* on installing a CD-Recordable drive, *Answer Line* on speeding up Office 97, *Hardware Tips* on fixing laser printer problems.

PC WORLD

# what's your ANGLE?

No matter how you look at the new PanaFlat™ PF70 Monitor from Panasonic, it's perfectly flat. From the center to the very edges of the screen, in every corner, any angle... just plain flat. And that means you get exceptional clarity, near-zero reflectivity, and precision representation of every item on the screen.

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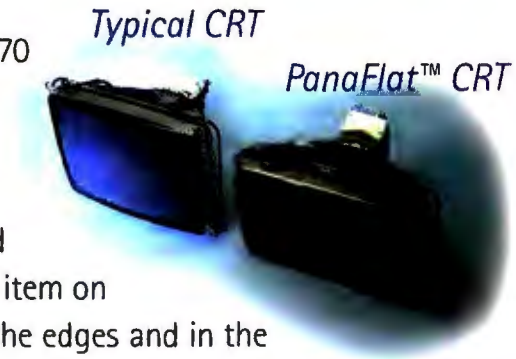


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| Model | Dot Pitch (mm) | Max. Res. (H x V) | Max. H. Freq. | ARP* |
|---|---|---|---|---|
| PF70 | 0.24 | 1600x1280 | 86 kHz | $849 |
| NEC P750 | 0.25 | 1600x1200 | 94 kHz | $904 |
| Nokia 447XAV | 0.25 | 1600x1200 | 92 kHz | $968 |
| EIZO FXC6 | 0.26 | 1600x1200 | 86 kHz | $960 |
| SONY 17seII | 0.25 | 1600x1200 | 85 kHz | $872 |

The PanaFlat PF70 is covered by the most extensive warranty and customer support program in the industry– a 3-Year Limited Warranty on parts, labor and the CRT, 1-Year 48-Hour On-Site Exchange Program, and 24-Hour, 7-Day Customer Support Hotline.

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- Sound Blaster 16 WaveSynth Wavetable Sound
- Altec Lansing ACS-90 Speakers

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- 4.3GB Hard Drive (10ms)
- 1000LS Monitor (15.9" v.i.s.)
- *NEW* Matrox Millennium II 4MB WRAM Video Card
- Integrated Yamaha 16-Bit Sound
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Common features listed above plus:
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- 3.2GB Hard Drive (12ms)
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- 2MB EDO ViRGE 3D Video

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- Motorola 33.6 Fax Modem
- MS Office 97 Small Business Edition

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- 16MB RAM (72MB Max.)
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- MS Office 97 Small Business Edition

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★ *Upgrade to a 2.1GB Hard Drive, add $149.*
★ *2nd Lithium Ion Battery, add $199.*
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- MS Office 97 Small Business Edition

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# See The Big Picture

| | 78D | 78i | 7D | 76i | 74i |
|---|---|---|---|---|---|
| CRT Size/Viewable Size (17"/15.7") | • | • | • | • | • |
| Max Resolution (NI) | 1600 x 1280 | 1600 x 1280 | 1280 x 1024 | 1280 x 1024 | 1024 x 768 |
| Dot Pitch/ Aperture Grill | .25AG | .26DP | .28DP | .28DP | .39DP |
| Digital Controls | • | • | • | • | • |
| On Screen Programming | • | • | • | • | |
| Color Controls | • | • | • | • | |
| Stereo Speakers/ Microphone | | | • | | |

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**Circle 96 on reader service card**

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**Is Yahoo selling your privacy? ◆ Angry USR customers ◆ Hats off to Broderbund**

# Hey, That's My Own Private Information

## SNARED BY A SEARCH?

WHILE PLANNING MY relocation from Tennessee to North Carolina, I used Yahoo's Yellow Pages to search for a company that could help me make the move. Within an hour, I was getting phone calls from four different relocation companies. They told me that Yahoo had faxed to them ("on my behalf") my personal contact information and the clearance to call me. I've never even visited these companies' sites, nor did I register with Yahoo. I'm furious to think that Yahoo is passing along my contact information.

*Dave Whitinger, Durham, North Carolina*

**Editor's response:** We spoke with Diane Hunt, senior manager of corporate communications at Yahoo. Perplexed, she told us that Yahoo doesn't collect information—such as phone or fax numbers—about its visitors. "We do ask for an e-mail address," said Hunt. "But Yahoo will never release your address without your explicit prior consent."

Tim Brady, Yahoo's director of production, reached Whitinger and discovered that Rent.Net, a company promoting a sweepstakes on Yahoo's front page, had contacted the various relocation firms; Yahoo was not involved. Whitinger had registered with Rent.Net and given it permission to share his contact information. The relocation companies were wrong to report that Yahoo had faxed them.

Yahoo's Hunt says to read the fine print before giving out information. "The information you share with companies running promotions on Yahoo is an agreement strictly between the user and the third party."

## WHERE ARE YOU, USR?

LAST FEBRUARY I purchased a U.S. Robotics Sportster 33.6-kbps fax-modem and installed it on my Dell Pentium-75 PC. At the time, I was running Windows for Workgroups and had no problems. When I decided to upgrade to Windows 95, the modem started giving me trouble.

After setting up the modem with Win 95, the setup program flashed on screen; then nothing happened. I called USR's tech support number several times without reaching a human, and sent e-mail. Three months have now gone by, and I haven't heard from USR. I'm stuck with a $200 modem I can't use. Can you help?

*Don Spencer, Internet*

**Editor's response:** Fourteen other readers wrote to us in May and June, complaining about U.S. Robotics' lack of response. USR was merging in June with another company, 3Com, but it is unclear whether this was a factor.

We spoke with Dan Bell, USR's vice president of customer support. He acknowledged "some bottlenecks" in the support system, which he attributed to the launch of USR's new 56-kbps modems (Sportster and Courier), network systems, and PC Cards. "We increased staff by 300 percent in April and May to deal with the demand," Bell said.

At press time, Spencer told us USR had resolved the problem by sending him a later version of the fax software (he says it works). If you are having problems with USR, write to us and we'll forward your complaint.

## VIVA GREEN EGGS AND HAM

I BOUGHT Green Eggs and Ham by Living Books (an affiliated Broderbund label) for my two-year-old son last December. It had a 90-day warranty. Five months later, my young nephew got hold of the CD-ROM and damaged it. I called Broderbund, willing to pay for a replacement. They promised to replace it at no charge within ten days—it arrived four days later. I applaud Broderbund.

*Michael Chicca, Spring, Texas*

*Think you've gotten a raw deal—or a great one?* PCW Advocate *wants to hear the details at advocate@pcworld.com. We'll investigate complaints and publish items of the broadest interest. Aoife McEvoy is a staff editor for* PC World. ■

ILLUSTRATION: GREG CLARKE

## THE FINE PRINT

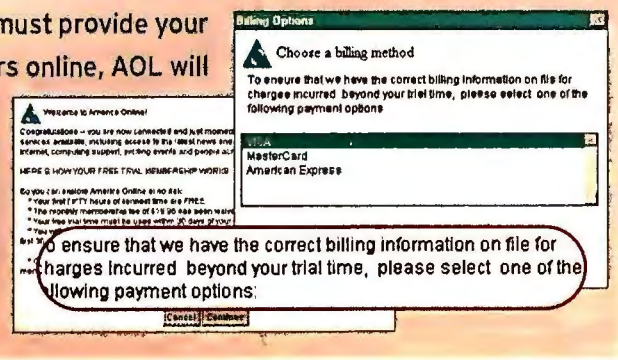
### FREE INTERNET TIME? WHAT DOES A TRIAL REALLY INVOLVE?

FOR A SHORT PERIOD, while America Online tried to catch up with the huge demand its flat fee plan had created, we all stopped getting bombarded with free AOL software. Now the respite is over—trial memberships are back on the scene, with new claims that the service has improved. But be careful of the following points in the offer.

1. The front of the AOL trial package says, "See details inside." Open it up, and you'll discover that you must install the software to find out about the trial's conditions and policies.

2. As part of the trial registration, you must provide your credit card number. If you exceed 50 hours online, AOL will automatically charge your credit card. If you refuse to provide AOL with your credit card number, you can't log on.

3. The 30-day trial period begins when you first sign on. If you want to cancel, you must do so within this 30-day period.



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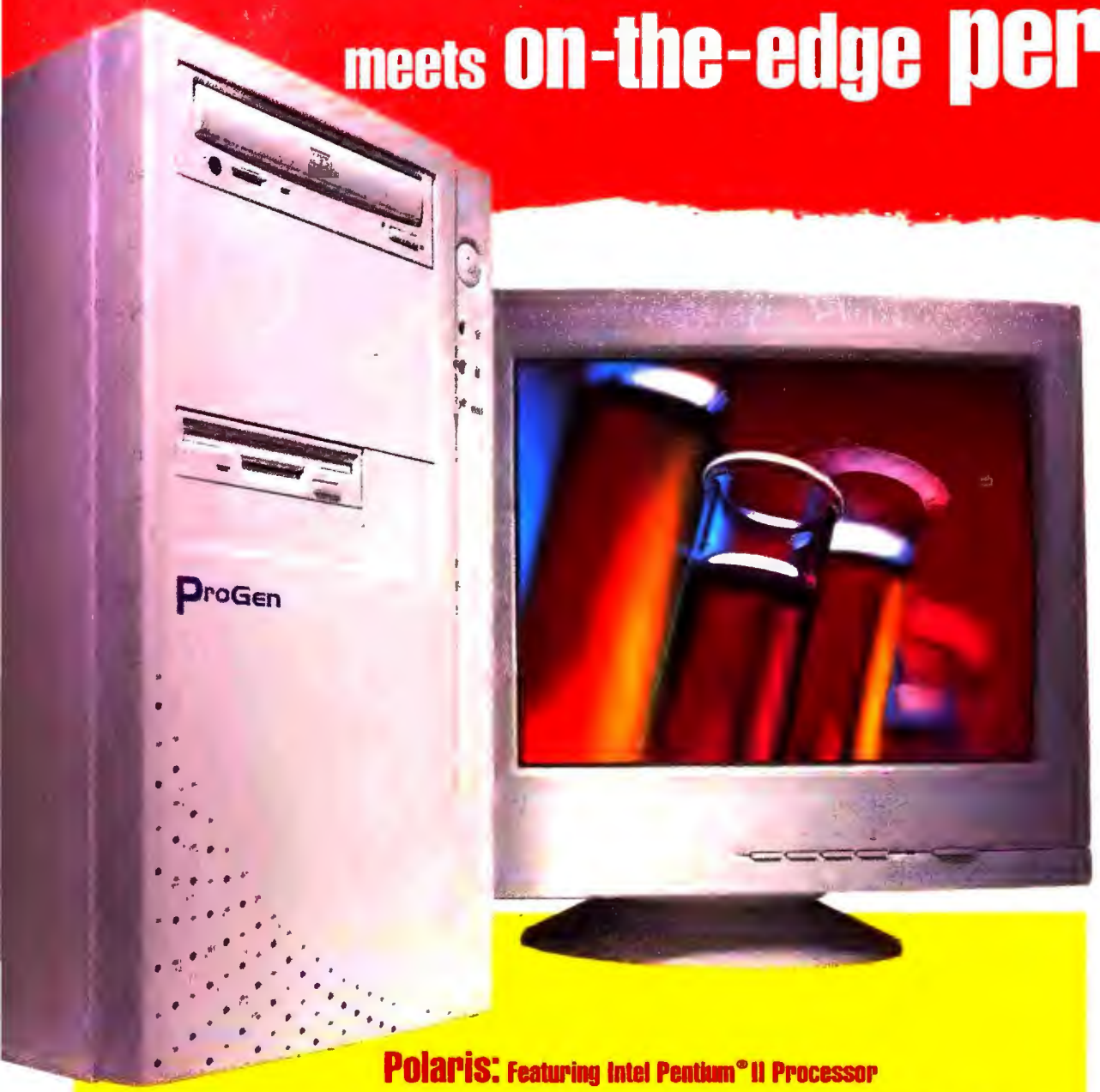


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# Doing Battle With Microsoft Office 97

*Thinking about upgrading to Microsoft Office 97? Do your homework first. For Christine Muehling, making the transition was anything but smooth sailing.*

PHOTOGRAPH: KATHERINE LAMBERT

**THE PROBLEM** A cryptic error message. Windows Shortcuts that suddenly stop working. Online connectivity links that inexplicably disappear. And technical support phone lines that offer nothing but long waits. Christine Muehling, who runs a home-based financial brokerage business with her husband in Silver Spring, Maryland, faced all of these challenges while trying to perform what she thought would be a routine upgrade from Microsoft Office 95 to Office 97. —*Editor*

When Microsoft released the new version of Office 97, I was excited. If nothing else, Office 97's support for hypertext links seemed worth the price of the upgrade. I liked the idea that I could type a URL in a Word document, for instance, and it would be instantly hyperlinked: Just click on the link to go to that site.

But when I tried to upgrade from Office 95 to Office 97, my excitement turned to frustration. The Office 97 installation appeared to go without a hitch, but when I restarted my PC, I discovered, to my horror, that my Windows Registry files had somehow been deleted. And that was just the beginning.

## THE SOLUTION: GET SOME HELP AND START OVER

AFTER I INSTALLED Office 97 and restarted my PC, Windows 95 took an incredibly long time to load. Once it did, I had problems right away. I couldn't launch any of my applications—not just Office programs, but applications such as Intuit Quicken. I kept seeing the same error message: Windows could not locate the system Registry. There seemed to be no logical explanation for this, and I couldn't get through to Microsoft's tech support line for help. I used another computer to go onto CompuServe's Microsoft Office Other Co forum (operated by CompuServe, not by Microsoft) and asked for help. No one could explain what was going on, but I was told to try and locate user.dat and system.dat, the main Registry files. I looked everywhere—the files had vanished.

I pressed <Ctrl>-<Alt>-<Delete> to restart the PC, and when the 'Starting Windows 95' message appeared, hit the <F8> button. This gave me a system setup menu, and I chose the option to restart the PC in MS-DOS mode. Once I was in DOS, I used the dir command to look for my other files—Microsoft Excel spreadsheets, Word documents, Quicken files, and anything else I could think of. They were still intact, so I backed up all those files, for fear I'd lose them.

After backing up, I started over again. I reinstalled Windows 95, then Office 97 and my other programs. But after this installation was complete, I couldn't get any of my Windows Shortcuts to work. When I clicked on a Shortcut, I'd get a message saying Windows was searching for the file that was linked to the Shortcut icon. I'd have to tell Windows manually where each of those files was. But even then the Shortcuts didn't work.

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### SEEKING OFFICE HELP

**MICROSOFT HAS HEARD your Office 97 upgrading tales of woe loud and clear and has taken steps to ease the transition.**

**• The Office 97 service release fixes many problems reported by early users. Among those fixes are a Word binary converter utility that gives files a .doc extension when you save them in Word 6.0/95 format. The Office 97 service release is available on Microsoft's Web site (www.microsoft.com/office), or you can get it on a CD-ROM by calling 800/426-9400.**

**• You can read the latest news and browse FAQs on Microsoft's site at www.microsoft.com/office/migration. There are also a number of utilities that promise to ease some of Office 97's file incompatibilities with earlier Office versions. Included are a viewer that lets you open and print Word 97 documents, even if you don't have that application, and a utility that reduces the file size of RTF documents with graphics.**

At this point, I knew I couldn't do any more on my own. I tried calling Microsoft's tech support again, but I grew impatient spending so much time on hold. I posted more messages on CompuServe as well as on Microsoft's Web site, describing the frustrations I'd had and asking for help. No one seemed to know what the precise cause was, not even Microsoft.

The advice that I got was to reinstall everything again. I was also warned that I should first make sure my virus protection program was turned off. I had left virus protection on the first time. The Office 97 manual warns you to turn off virus protection before installing the suite, but I hadn't read the manual. And there was no similar warning in any of the Office 97 installation wizard screens or on the instructions inside the CD-ROM jewel case. [Cynthia Sample, an Office 97 product manager for Microsoft, says that the Office 97 service release can detect whether virus protection software is active before installation is begun, and if so, recommend deactivating the program. —*Editor*]

Before taking another step, I deleted everything I thought I could. Then to be sure all Office files were gone, I ran the Upgrade Wizard. This is launched automatically during the installation process, but you can also use it as a stand-alone utility; it's in the ValuPack folder on the Office 97 CD-ROM. Surprisingly, the wizard found some old Office files, which I deleted. I disabled virus protection, then reinstalled Windows 95 and Office 97.

Once all the reinstallations were done, I had no other significant problems. I've heard that many people have had trouble with backward file format compatibility, but fortunately that hasn't been a problem for me. Word 95 doesn't read Word 97 files unless you download special software from Microsoft's Web site. And Word 97 saves files to Rich Text Format when you save files in Word 6.0/95 format. As a result, your file carries the .rtf extension. What's more, you have to make sure you open that .rtf file from within Word—if you double-click on the file from the desktop, Windows doesn't know which application to use to open it.

My experience taught me the importance of looking at the manual. You can't depend on the software itself to tell you the whole story, including warning you to turn off virus protection before installing applications and to back up important files before a major installation.

In the end, I still love Microsoft Office, the way you do a wayward child. It misbehaves from time to time and gives you grief, but you love it just the same.

*Edited by James A. Martin*

**• Microsoft Office 97 Standard Edition** (includes Word 97, Excel 97, PowerPoint 97, Outlook 97) $499 list, upgrade $249; **Professional Edition with Bookshelf Basics** (Standard Edition plus Microsoft Access 97) $599 list, upgrade $349; **Small Business Edition** (includes Word 97, Excel 97, Outlook 97, Publisher 97, Small Business Financial Manager 97, Automap Streets Plus) $499 list, upgrade $249; Microsoft Corp.; 800/426-9400; www.microsoft.com/office

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*James A. Martin is a* PC World *contributing editor. If you've solved a problem in your business using a PC application or hardware device, we'd like to hear about it. We pay $300 for published columns. See page 14 for contact information.* ■


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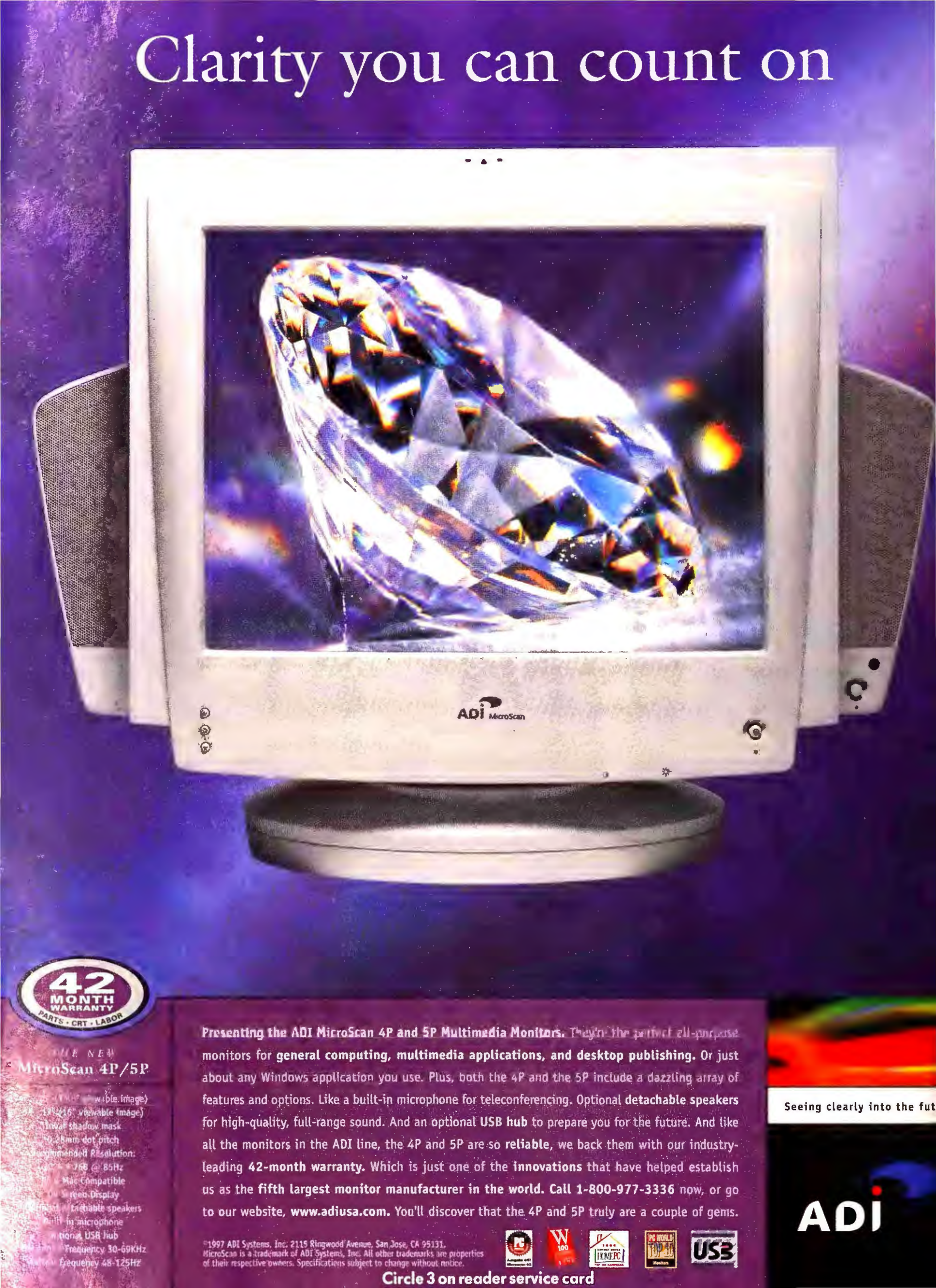
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# Communicator 4.01—No Small Fix

NAVIGATOR 4.0 FINALLY emerged from the beta mists on June 11 as part of Netscape's Communicator 4.0 Internet suite. But the latest, greatest Web browser quickly ran aground. Within two days, Netscape acknowledged that its new browser suffers from a security flaw that allows Web authors to access files on browsing computers. The malicious Web page must know the name of the file in advance, limiting the danger somewhat. Network firewalls may not be adequate protection. The problem also exists in earlier versions of Netscape Navigator, but it does not occur in other browsers such as Microsoft's Internet Explorer.

According to Netscape, the trick is obscure, and hasn't yet been exploited successfully out in the real world. Nevertheless, within a few days of this announcement, the company posted a 4MB fix. To download and install the Navigator 4.01 update, choose *Help•Software Updates*. As we went to press, Netscape planned to release Navigator 3.02 to fix the problem in the 3.0 and 3.01 versions. By the time you read this, Navigator 3.02 will be available from ftp5.netscape.com/pub/navigator, and Navigator Gold 3.02 from ftp5.netscape.com/pub/navigator/gold/3.02/windows.

## MORE SECURITY PATCHES FOR WINDOWS 95

HAD IT WITH WINDOWS 95's security—or the lack thereof? Microsoft is finding out the hard way that the Internet audience is a difficult crowd to satisfy. Most recently Microsoft posted fixes that prevent a Trojan horse (a program that masquerades as a useful utility or screen saver) from capturing log-in passwords for Windows 95's built-in networking. Download the fix for versions 4.00.950 and 4.00.950a from ftp.microsoft.com/Softlib/MSLFILES/secupd.exe or for version 4.00.950B (OSR 2 and OSR 2.1) from ftp.microsoft.com/Softlib/MSLFILES/secupd2.exe.

But the holes don't stop there—another Windows 95 security lapse allows the operating system to send your log-in password without encryption when it logs into another SMB (Windows 95 or NT Microsoft Networks) server. If you don't want to share your password with the universe, download the 200K patch from ftp.microsoft.com/Softlib/MSLFILES/vrdrupd.exe.

ICON: JEFFREY PELO

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**IN BRIEF**

### WinFax Pro 8.01

THIS UPDATE INTEGRATES WinFax with Microsoft Outlook, allowing you to view the contents of one program's folder from the other. To get the 2MB upgrade, use WinFax Pro's Live Update option, or download the patch from Symantec's FTP server (ftp.symantec.com/public/Updates/win95nt/winfax/v80/Patch801.exe).

### QEMM 8.03

QUARTERDECK'S 865K QEMM 8.01-to-8.03 update (at ftp.qdeck.com/pub/qemm/us/ver-8/patches/qemm803w.exe) better accommodates Windows 95 OSR 2's larger DOS kernel, and is more compatible with Plug and Play utilities. The 845K DOS-only version (qemm803d.exe) resides at ftp.qdeck.com/pub/qemm/us/ver-8/patches/.

## HELIX TIGHTENS NUTS & BOLTS

IF YOU TRIED USING Helix Software's new troubleshooting and system maintenance utility with Windows 95 OEM Service Release 2, you may have encountered problems with Nuts & Bolts' DiskMinder, DiskTune, EZ-Setup, Discover Pro, and WinGauge features. A 750K Windows 95 fix is available for downloading at ftp.helixsoftware.com/pub/techsupp/n&b/updates/NB101W95.EXE. Even if you have Windows 3.*x* you'll want to retrieve the version 1.01 patch, which contains other enhancements and fixes; this is available at ftp.helixsoftware.com/pub/techsupp/n&b/updates/NB101W3.EXE. Alternatively, you could get both update files on a maintenance CD-ROM from Helix Software at 718/392-3100.

*Files from this article are available on PC World Online (www.pcworld.com/files). Scott Spanbauer is a* PC World *contributing editor.* ■

**BUG OF THE MONTH**

### Paint Update Cures Office 97 Clash

**BUG** You try opening a .jpg or .gif file (file formats widely used on the Web), in Microsoft Office 97 and Windows displays a nasty message—'This program has performed an illegal operation and will be shut down'—and then closes Paint. The same thing occurs when you try to open almost any image type except Windows bit map (.bmp) or PC Paintbrush (.pcx) files. Turns out some of the graphics filters in Office 97 clash with the Microsoft Paint program bundled with Windows 95 and NT.

**FIX** New versions of Paint smooth over the problems. Find the 735KB Windows 95 version at ftp.microsoft.com/Softlib/MSLFILES/Paint95.exe; the 1.2MB Windows NT update is at ftp.microsoft.com/Softlib/MSLFILES/Paintnt.exe.

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**Circle 187 on reader service card**

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**Circle 103 on reader service card**

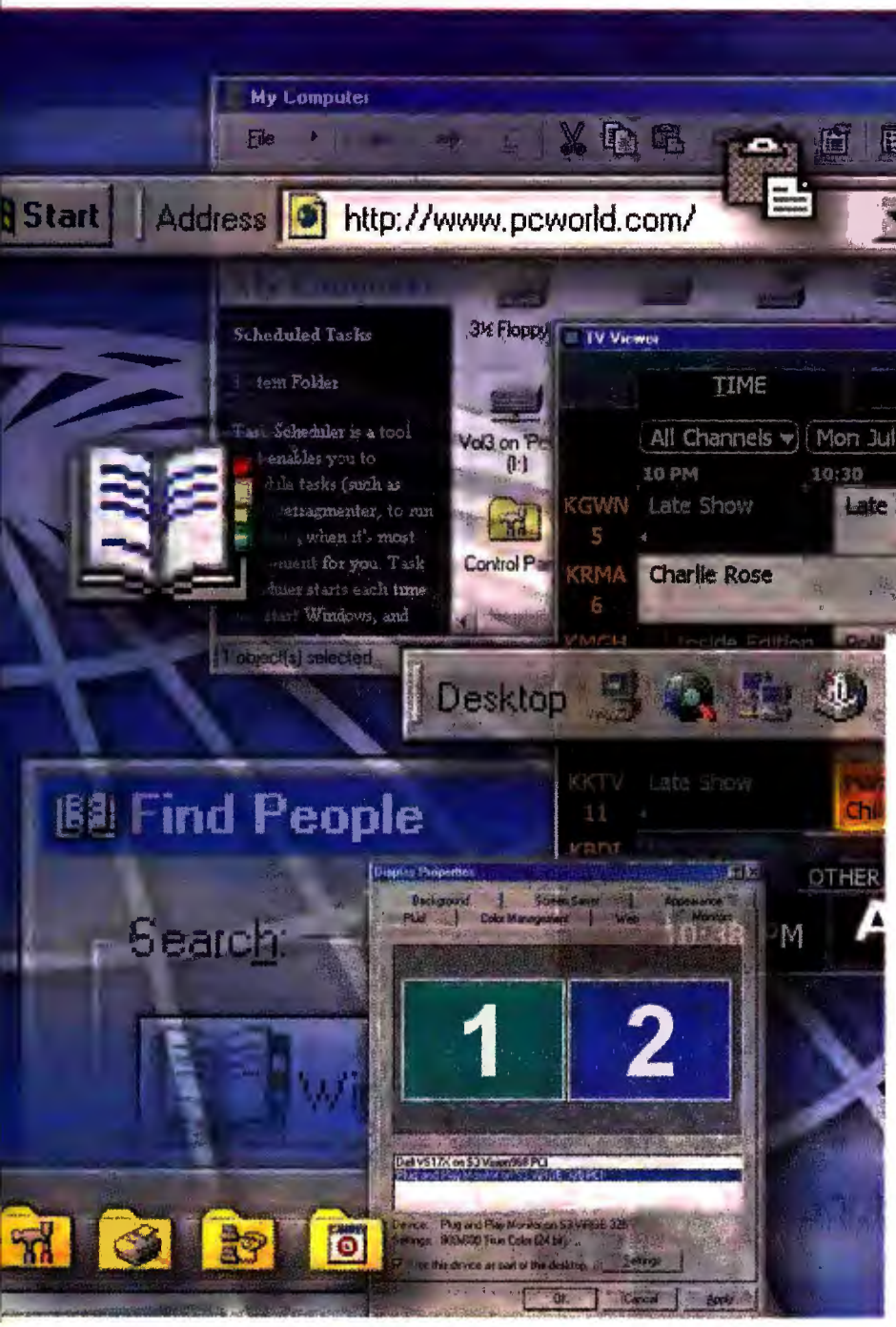
INSIDE 64 56-kbps Modems: More Complications | 66 First Encounter With NetPCs Raises Questions

# TOP OF THE NEWS

# WINDOWS 98

## A Convenience You Can Live With—Or Without

Our first hands-on tests reveal that Windows 95's successor offers convenience but little else: It's a collection of patches, add-ons, and slightly improved hardware support built around an Internet Explorer–like interface.




BETA

SHOULD YOU upgrade to the next version of Windows? Based on hands-on testing of the first beta version of Windows 98, we can't recommend this upgrade to everyone. If the shipping product delivers on the beta's promises and is priced right, it will offer something for some Windows 95 users and little for others. The chief attraction is the simple convenience of having all the latest patches, drivers, and add-ons available on one easy-to-install CD-ROM. The product, previously code-named Memphis, is expected to ship late this year or early next year.

At press time Microsoft had not settled on a price—a factor that is likely determine how many Windows users make the switch, and how quickly. Previous upgrades have sold for about $90.

## BREAKING THE MOLD

UNLIKE THE transition from Windows 3.1 to Windows 95, the move from Windows 95 to 98 involves no major changes to the operating system, system requirements, or software compatibility.

Moreover, Microsoft has undercut the value of the upgrade by releasing portions of Win 98 on its Web site. The most significant of these components, Internet Explorer 4.0 (available as a beta), functions identically in Windows 95 and Windows 98. The only cost to Windows 95 users is for the online time required to download the 22MB file.

And if you bought a new PC this year, chances are it came with a copy of Windows 95 OEM Service Release 2—an interim version that Microsoft released late last year through system manufacturers. OSR2 includes most of the downloadable features (though not IE 4.0), plus DriveSpace3 disk compression and interface enhancements from the Microsoft Plus add-on program, as well as support for the more efficient FAT32 file system, Universal Serial Bus devices and more (see "Not Quite Windows 98—How Close Can You Come With Windows 95?").

Still, adding all the software is a pain. Under ideal conditions, downloading the available enhancements using a 28.8-kilobits-per-second modem could take you more than 2 hours. Then you have to install the software—another hour or so. If ▶

EDITED BY
Charles Piller, Randy Ross, and Bill Snyder

PHOTO ILLUSTRATION: JEFF BERLIN; ICONS: JEFFREY PELO

## JUST IN

### Lotus SmartSuite 98: Sneak Peek

THE NEXT VERSION of Lotus's application suite is expected to include capabilities that let you dictate text into Word Pro; performance improvements to 1-2-3 and the Freelance Graphics presentation program; and integration with a suite of Java applets designed for use by both PCs and Network Computers (terminal-like computing devices). Lotus says the Java suite will include scaled-down versions of popular desktop applications such as a word processor, a spreadsheet, and a calendar. At press time Lotus was unsure if the Java applets would be bundled with SmartSuite. SmartSuite is expected to ship early next year.

### New Low-Price Color Printers

CANON WILL soon deliver three color ink jet printers for small businesses. The $180 Canon BJC-250 has a rated speed of 4 pages per minute for text and can print at resolutions of up to 720 by 360 dots per inch. The faster $240 BJC-4304 Photo includes a new smoothing technology for improved print quality, and for $99, it can be upgraded to act as a color scanner. The $450 Canon BJC-7000 offers higher resolution—up to 1200 by 600 dpi. ▶

INTERNET

GET UP-TO-THE-MINUTE NEWS, including RealAudio daily news summaries, hot game demos, the latest reviews, and productivity shareware, at PC World Online. Just point your browser to www.pcworld.com/news.

# Windows 98 Offers Little That 95 Doesn't

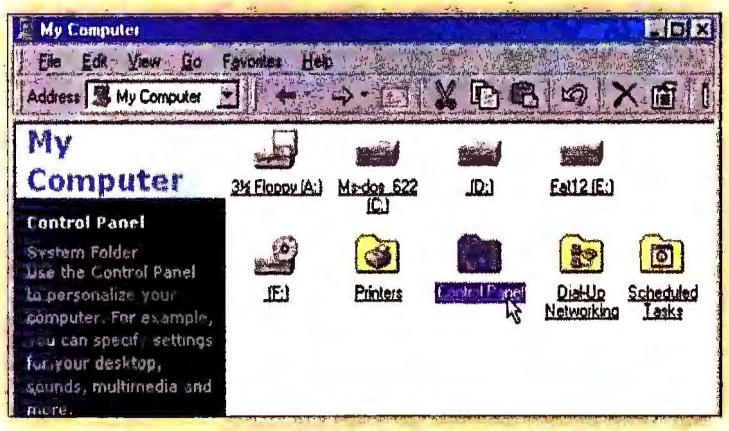
**Windows 98's most obvious improvement is its spiffed-up user interface. Most of the new capabilities shown below are also available to Windows 95 users who install Internet Explorer 4.0.**

**INTERNET EXPLORER 4.0 kicks Windows' Taskbar into overdrive, allowing you to add overlapping subtoolbars of folders (such as Control Panel or the Desktop (1) and park individual bars (2) anywhere on screen.**

**INTERNET EXPLORER adds a Shortcut to your Internet Explorer Favorites to the Start menu (3), so you don't have to fire up a copy of the browser first.**

**LOST COUSIN VIKTOR'S e-mail address? IE 4.0 lets you access several new Internet directories right from the Start menu (4).**

**ACTIVE DESKTOP (5) lets you anchor downloaded ActiveX, Java, or HTML applets, such as Microsoft Investor and MSNBC, to the Windows background.**




**INSTALL INTERNET EXPLORER 4.0 (or upgrade to Windows 98), and your folders will receive a makeover (6). Open icons and run files and Shortcuts with a single click, navigate with browserlike Forward and Back buttons, and use HTML to illustrate the contents of folders.**

you need to reinstall Win 95, you'll have to reapply the add-ons and patches. Next time you set up a new PC, you'll wish you had everything on one disc.

For users who've been downloading the new fixes and features all along, Windows 98 is less attractive. And those still clacking away on plain-old PCs, without the latest hardware, may not see much value in the new OS, either.

I installed Windows 98 on Dell Pentium-166 and Gateway 2000 Pentium MMX-200 desktops and on a Pentium-75 based Toshiba notebook. I installed the OS on empty hard disks and over existing Win 95 installations. (Win 98 doesn't currently upgrade Win 3.1, an option Microsoft says will be available by the time Windows 98 ships.) I also ran popular programs, including Microsoft Office 95, Lotus SmartSuite 97, cc:Mail Mobile, Netscape Navigator 3.0 and 4.01, and Id Software's Quake.

Most programs ran with nary a glitch, but there were a few problems. For example, changes to Windows' telephony module prevented cc:Mail Mobile 7 from dialing after the upgrade. The source of this bug was still unclear at press time. In mid-July, reports in the popular press claimed that IE 4.0 discourages people from using Netscape Navigator as a default browser. I discovered that this allegation is mostly untrue. When I set Navigator as the default browser, it launched whenever I typed URLs into the Start menu's Run dialog box. However, entering URLs into an Explorer window's address field opens the site in IE 4.0, even if your default browser is Navigator. This is inconvenient for Navigator users. However, Microsoft says it's intentional because the address window is actually part of IE 4.0.

## SETUP TRADE-OFFS

MICROSOFT streamlined Windows 98 installation. The setup program requires less user input and is optimized for installation over Win 95, which is good for less-experienced users. Just insert the CD-ROM and respond to the upgrade dialog box. After setup starts, only one procedure—creating a start-up floppy—requires your assistance. (Windows 95's installation requires that you

respond to various questions.) Once that's done, setup proceeds with the installation, mimicking your current configuration. (When installing to an empty hard disk, however, you need to respond to setup queries, since no previous configuration exists.) The whole upgrade process took up to 40 minutes on my test systems.

But power users may find this convenience inconvenient. Adding or removing options requires the extra step of opening the Windows Setup page of Control Panel's Add/Remove Programs applet.

Microsoft has yet to announce its minimum and recommended memory and disk space requirements. But if the beta is any indication, clear out the dead wood: Even when installing only basic options, it required about 200MB.

## NOT-SO-NEW INTERFACE

ANYTHING THAT makes your computer easier to use is a must-have. And the latest prerelease version of Internet Explorer 4.0, which I examined for this article, meets that requirement. IE 4.0 imbues Windows with browserlike features that can save time and effort. It lets you open files or fire up Shortcuts with a single mouse click. To select files or icons, which previously required a single click, you simply place the cursor over them. You can even navigate your hard disk with Forward and Back buttons. I found it easy to adjust to these new features and don't think that less-experienced users will be confused by the changes.

Notably, IE 4.0 can act as an interface for Win 95 or Win 98—it worked well with either. IE 4.0's integration with Windows is optional—you can uninstall it, or turn off some or all of the modifications it makes to the interface.

I was also impressed by the Active Desktop, which lets you anchor HTML-based applets on your Windows desktop. These applets can automatically retrieve information from specific Web sites whenever you log on to the Internet, say, to check your e-mail or browse a Web site. I tried several applets that automatically updated my desktop with the latest news on certain stocks, local weather, and sports. So far, the only applets available are on a Microsoft site. But it should be easy for Web publishers to create new ones from existing bits of Java and ActiveX controls. If you tire of all the blinking and flashing, turn Active Desktop off and return to your previously scheduled wallpaper.

The IE 4.0 interface includes a new Taskbar with a multiple-toolbar feature that can display the contents of almost any folder. This feature can get out of hand; adding too many toolbars results in an overcrowded mess. Another beef: Although Microsoft has made drag-and-drop more pervasive in the IE 4.0 interface, some inconsistencies persist. For example, I couldn't drag the Control Panel from the Start menu and drop it on the Taskbar.

Tired of launching your browser, then clicking a ▶

## Windows 98: What's Missing?

LIKE ITS predecessors, Windows 98 is missing some key features:

**Macro recorder.** Windows 3.1 came with a Recorder utility that turned your mouse clicks and keystrokes into macros. Windows 98 introduces Windows Scripting Host 8, which enables you to run VisualBasic or JavaScript programs from a command line, provided that you you know those languages.

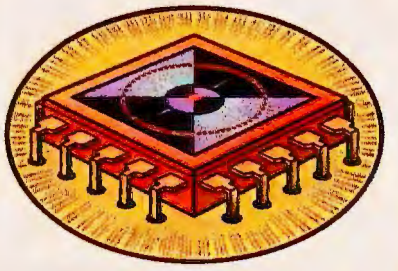
**Real log-in security.** When you start up Windows 95, you have to log in with a user name and password. But the OS is insecure: If an intruder presses <Esc> at the log-in dialog box, Windows merrily boots up anyway, allowing the invader to do anything they want, which makes Windows an unwise choice for systems in public places like schools and libraries. This problem hadn't been corrected in the Win 98 beta. The forthcoming Zero Administration Kit may help, but can it foil TeenHacker 98?

**Modem sharing.** You've been able to share the fax portion of your fax-modem since Windows for Workgroups 3.1 came out—but not the data part. This capability isn't added in Win 98; you have to pay for an add-on program.

**Registry repair.** Nothing is more mysterious than the Windows Registry. That's fine, until your Registry—and the automatic backup copy—becomes corrupted. In most cases, the only resolution is to delete it and reinstall Windows and your applications from scratch. This situation has not changed a bit in Win 98.

## Latest MMX Upgrade Chips

INTEL HAS RELEASED 200-MHz and 180-MHz **Pentium OverDrive upgrades with MMX technology.** The 200-MHz version lists for $349; it upgrades existing Pentium-100, -133, and -166 systems. The 180-MHz version costs $299 and boosts Pentium-90, -120, and -150 PCs. Although we had not tested the new chips at press time, we have seen their predecessor, the 166-MHz MMX OverDrive chip. When we upgraded a P-100 PC with the 166-MHz MMX version, we got a **system that performed as well as a brand-new PMMX-166.** Each upgrade chip comes with a CD-ROM sampler of MMX software. This inclusion is fortunate, since there aren't many MMX titles currently on the market.



## Will Apple Fall?

FACED WITH MOUNTING problems, Apple Computer canned CEO Gilbert Amelio. Is this curtains for the Mac? Should PC users care? Amelio's departure was not surprising, given the company's financial problems. Apple still has assets that could help it survive: a great product line, a viable operating system strategy, and performance that now matches or surpasses that of PCs. **PC users should be concerned about Apple's fate.** For decades, Apple has provided the inspiration for technologies that PC makers copied. Even in its weakened state, Apple offers a hedge against the complacency of a total Microsoft monopoly. ▶

bookmark? Windows adds your IE 4.0 Favorites menu to the Start menu, which makes viewing an oft-visited page as convenient as opening a file. Managing your Start menu—a laborious cut-and-paste affair in Win 95—is simpler, too. To rearrange items in the menu, just drag and drop, or drag an icon to another submenu. To maintain updated versions of your favorite Web pages, try IE 4.0's subscriptions feature, which downloads sites at regular intervals.

## HARDWARE SUPPORT

LIKE ANY Windows upgrade, Win 98 comes with a new crop of updated drivers. But it also supports new classes of devices that earlier versions did not handle well, if at all. OSR2 introduced the FAT32 file system, which stores individual files more efficiently than the FAT16 system inherited from MS-DOS and lets you format drives larger than 2GB as a single partition. Windows 98 adds a converter, not included in OSR2, that allows you to switch from FAT16 to FAT32. Unfortunately, converting prevents you from dual-booting to DOS or to Windows NT.

Unlike Windows 95, Win 98 will include support for the new Accelerated Graphics Port video hardware coming this fall. (PC vendors plan to build AGP support into new systems that come with Windows 95.) The technology should improve the performance of tasks such as 3-D rendering, if you are using applications

## Not Quite Windows 98—How Close Can You Come With Windows 95?

**Many of Windows 98's features are already part of Windows 95 OSR2 (which ships with new PCs) or are available as free downloads. But free is a relative term—what if it takes hours to download the features? Moreover, just because it's free doesn't mean you need it. To use this chart, find the Win 98 feature you want and see if and where it's available for your current version of Win 95.**

| Windows 98 feature | Windows 95 OSR2 | Windows 95 |
|---|---|---|
| **Ease of use** | | |
| Internet Explorer 4.0 adds single-click icons, browserlike navigation, and Taskbar improvements | Internet Explorer 4.0, www.microsoft.com/ie/ie40 (22MB) | Internet Explorer 4.0, www.microsoft.com/ie/ie40 (22MB) |
| **Connectivity** | | |
| Combine multiple modems and ISDN channels for faster connections; Dial-Up Server; scripting | included | ISDN 1.1 Accelerator Pack, www.microsoft.com/kb/softlib/mslfiles/MSISDN11.EXE (533K) |
| Point-to-Point Tunneling Protocol | Dial-Up Networking 1.2, www.microsoft.com/ntserver/info/PPTPdownload.htm (1.4MB) | Dial-Up Networking 1.2, www.microsoft.com/ntserver/info/PPTPdownload.htm (1.4MB) |
| Infrared Connectivity Interface | included | Windows Infrared Driver 2.0, www.microsoft.com/kb/softlib/mslfiles/W95IR.EXE (434K) |
| **Hardware support** | | |
| FAT32 for hard disk partitions larger than 2GB | included | not available |
| USB plus drivers for hubs and peripherals, such as cameras, scanners, printers, and speakers | USB and drivers for hubs. Device manufacturer must provide drivers. | USB support not included. Peripherals makers plan to provide support for some devices by year-end. |
| APM 1.2, as offered in OSR2, plus ACPI power management, which can control more of the PC | APM 1.2 (APM 1.1, as offered in Win 95, plus wake-up on incoming calls, multiple-battery support for laptops) | APM 1.1: basic support for powering down CPU, drives, and monitor |
| Drivers for DVD, AGP, and IEEE1394 (Firewire) | device manufacturer must provide drivers | device manufacturer must provide drivers |
| Multiple displays | not available | not available |
| DriveSpace3 compression | included | requires Microsoft Plus, a $50 add-on |
| **Performance** | | |
| Application launch optimization | requires third-party disk optimizer | requires third-party disk optimizer |
| Faster shutdown | not available | not available |
| **Bug fixes/add-ons** | | |
| File sharing, OLE, and log-in password security updates, ECP port support | included | Service Pack 1, www.microsoft.com/kb/softlib/mslfiles/SETUP.EXE (1.2MB) |
| Post-Service Pack 1 add-ons and fixes: Internet Mail, OLE, fax, Backup, Exchange, and fdisk | included | System Updates, www.microsoft.com/windows95/info/system-updates.htm (4MB) |
| Imaging utility for viewing faxes | included | Imaging for Windows, www.microsoft.com/kb/softlib/mslfiles/IMGINST.EXE (2MB) |
| Additional fixes: TCP/IP, password security, remote access, Microsoft Paint | miscellaneous files and utilities, www.microsoft.com/windowssupport/default-sl.htm (2MB) | miscellaneous files and utilities, www.microsoft.com/windowssupport/default-sl.htm (2MB) |
| **Cost and download size/time** [1] | | |
| Price unknown; [2] available on CD-ROM | free, 25.4MB/about 2 hours | $50, 33.5MB/3 hours |

[1] Using 28.8-kbps modem (approximately 11MB per hour, under ideal conditions). [2] Past upgrades have cost $90.

that are designed for it.

Win 98 also supports high-capacity DVD-ROM drives, the Advanced Configuration and Power Interface power management specification, and Universal Serial Bus. ACPI can power down a PC's drives, monitor, power supply, and even fans, after a period of disuse, then wake the device instantly when you touch the keyboard or mouse or receive an incoming call.

We couldn't test DVD and ACPI support, but we did evaluate USB (see "Universal Serial Bus Flops in First Hands-On Tests," in this section). Overall, Windows 98 supports more USB devices out of the box than OSR2, which means you'll spend less time hunting around for driver disks when installing or reinstalling USB devices. A few USB device vendors plan to provide Windows 95 drivers, but in general support is slim.

## COOL STUFF

WINDOWS 98 will handle up to nine graphics boards and monitors on one system and spread the desktop and applications among them. A second monitor might allow you to keep a word processor running full-screen on one display and a spreadsheet on another, or view a Web page in both IE and Navigator (good for Web designers). Currently, this works only with PCI-bus graphics boards based on a limited number of graphics chip sets—Microsoft plans to support most PCI boards by ship time. The feature turned up another software incompatibility: Quake 1.09 runs fine in the primary display, but when you drag its window to the other display, it disappears.

We also tested a new capability, available only in Windows 98, that promises to save time on routine tasks. An enhanced disk defragmenter arranges most frequently used application files sequentially on the hard drive for faster loading. On one test system, this reduced application load times noticeably, particularly with Word 95 and Excel 95. Also, Microsoft said that on a local area network Windows 98 will shut down faster than Win 95. We were unable to test this at press time.

Microsoft has demonstrated a new subsystem for Windows 98 that can display broadcast TV on your computer screen. It lets you receive analog or digital broadcasts (via airwaves, cable, or satellite) that interleave data in the video signal. Though such broadcasts are still in the testing phase, they could turn out to be a fast, free medium for delivering Web data. And Microsoft is making Windows easier for users to maintain. An HTML-based help file in the Windows 98 Start menu contains a link to a software update Web site that should automate the process of downloading and installing operating system patches—a substantial improvement over Windows 95's scattered collection of online fixes.

## WHAT'S IT WORTH?

DESPITE Windows 98's many attractive improvements, it's not a must-have. When you subtract the elements that are free or already available in Win 95, no single feature stands out. If you're a small-business owner who has to write the check—even if it's only $50—you may decide to hold off. Sure, you'll miss out on FAT32, support for multiple monitors, and convenient support for USB and the latest power management—but those are new technologies that you may want to wait for anyway.

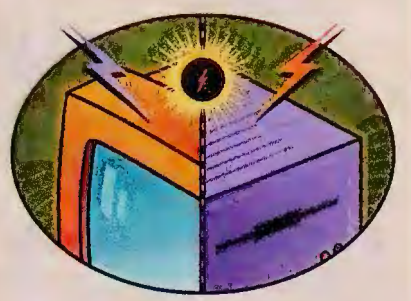
But if you work in a large organization or manage multiple PCs, consider shelling out for the upgrade, even if you don't use cutting-edge hardware. Frequent downloading and installing of patches and add-ons, not to mention Internet Explorer, is a hassle. A reasonably priced upgrade would make Windows 98 attractive to anyone who wants a stable, state-of-the-art operating system but can't spend hours tweaking it into shape.

*—Scott Spanbauer*

## Need More Power? Wait for NT 5.0

NT 5.0 promises to be easier to use and even more attractive to current Windows users. Microsoft will add Windows 95 features that did not make it into NT 4.0, such as power management and Plug and Play support for newer devices. NT 5.0 will also appropriate a number of features from Windows 98, including the IE 4.0 interface, the ability to read and write to the FAT32 file system, and support for multiple monitors. Moreover, you will be able to upgrade from Windows 95 to NT 5.0 (NT 4.0 could install over Windows 3.1, but not over Windows 95).

As well, Microsoft will boost NT 5.0's core strengths: security, stability, and its server features. It is expected to ship in mid-1998.



## Revised Net Offerings From Prodigy, MCI

MCI INTERNET will offer the first three months of unlimited access for $9.95 per month. Thereafter, the fee is $19.95 per month. Subscribers also will receive frequent flyer points or free Blockbuster movie rentals. Prodigy Internet, which also charges $19.95 per month for unlimited access, is sporting a slick new interface. The software now includes a prominent icon telling you if new mail has arrived. Prodigy includes 2MB of space for a personal Web page; additional space costs extra. This fall Prodigy Internet will add paging support technology that could alert you when e-mail arrives from a designated party.

## TidBytes

**EASIER ONLINE TAX RETURNS:** Congress is considering a plan to make filing income tax returns online a paperless affair. The new bill would change an old law that requires you to sign and mail a paper form even if you file electronically. Lawmakers are also working on provisions to make online filing free (it usually costs $25). **BE YOUR OWN PRIVATE EYE:** Get the lowdown on potential business partners online for a low price. For $3 per report, American Business Credit's Web site (www.businesscreditusa.com/) sells credit information about more than 10 million U.S businesses. Reports include company name and address, competitors' names, and of course, a credit rating.

# 56-kbps Illusions: High-Speed Access Not as Widespread as Advertised

**CONSUMER ALERT**

IN THE BATTLE against the world wide wait, 56-kilobits-per-second modems have been welcome news. But a *PC World* investigation strongly suggests that 56-kbps marketing exaggerates the rates of adoption by Internet service providers. This exaggeration could complicate 56-kbps modem buying decisions.

There are two competing 56-kbps protocols—3Com's x2 (developed by U.S. Robotics) and Rockwell/Lucent's K56flex. If you have been to either of the warring protocols' Web sites or strolled up the modem aisle of your local computer store, you've seen the lists of supporting service providers each camp boasts. As we went to press, Rockwell/Lucent claimed 650 supporters—on its own Web site (www.k56flex.com) and on a nearly identical site administered by CMP's TechWeb(www.techweb.com/speed). U.S. Robotics (x2.usr.com) listed 500. But what does *support* actually mean?

## K56FLEX CONFUSION

ACCORDING TO Ray Labadie, manager of key programs development for Rockwell, to be listed on the K56flex marketing materials ISPs had to have equipment that could be upgraded to K56flex and certify that they "supported and planned to deploy" K56flex. ISPs did not have to commit to a specific deployment date.

A check of 18 ISPs found that 11 had no idea they were listed on the K56flex marketing materials until *PC World* informed them. (Three others asked Rockwell/Lucent to remove them from the rolls after learning from *PC World* that they were listed.) Among 18 ISPs, only 3 offered K56flex service at press time; 8 others planned eventual support.

**DESPITE BEING ON x2 support rolls (left), Zachariah Johnson of the California ISP Mother.com doesn't plan x2 support. And a check of 18 ISPs listed on K56flex rolls shows that only 3 support that protocol.**

For example, Concentric Network, a national ISP based in Cupertino, California, was listed as providing K56flex beginning August 1, but spokesperson Katie Greene says Concentric will not offer the service until next year.

What about 3Com's protocol? The criterion for an ISP to appear on the x2 support list, says 3Com spokesperson Philip Anast, is "to commit to deploying x2 technology within 90 days of the code's release" (which was in March). All 21 ISPs on the x2 list contacted by *PC World* had signed support agreements. Anast acknowledges that the company hadn't verified whether ISPs pledging to support the protocol actually do.

*PC World* found that 14 of the 21 ISPs offer x2 support, and 4 others plan to do so. The other 3 had no immediate plans to support x2. Zachariah Johnson, CEO of Mother.com, an ISP in Davis, California, signed the x2 agreement last November, but nine months later had neither x2 servers nor any plans to install them.

What about the nation's largest ISP? America Online "can't commit to supporting both protocols in all locations," says Matt Korn, AOL Network's senior vice president for operations. But AOL expects to support both x2 and K56flex in most metropolitan areas by year's end.

## SERVICE MAY VARY

IF YOUR ISP does support your protocol of choice, does this guarantee 56-kbps performance? Unfortunately not. There is no minimum number of ports an ISP must allocate to either K56flex or x2 to substantiate support for that protocol. A consumer could battle hundreds of other users for limited port availability. In that case, users would get busy signals or be bumped to a 33.6-kbps line, says communications expert John Navas.

Such problems should gradually recede as 56-kbps capacity increases. For example, Ascend, the largest maker of K56flex modems and servers, plans aggressive deployment of K56flex digital modem ports. However, Bobbi Murphy, an analyst for Dataquest, reports that Ascend has encountered technical difficulties with server upgrades to 56 kbps. Ascend spokesperson Steve Thomas declined to comment specifically about the upgrade problems but says the company is offering free upgrades to ISPs that have recently purchased servers.

Until 56-kbps technology matures, consumers should question ISPs carefully about the degree of support they offer. When buying a 56-kbps modem, consumers should get a guarantee that it will be upgradable to the final standard, expected next year.

*—Eric Hellweg* ▶

PHOTOGRAPH: ANDY FREEBERG

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**Circle 153 on reader service card**

# The NetPC Arrives: Back to the Future for User Control?

ORACLE's brash CEO Larry Ellison drew a line in the sand in late 1995. Now the big cigars of the PC industry are crossing it. The NetPC, an answer to Oracle's Network Computer (or NC), is about to ship. By the end of the year, at least 12 PC vendors, including Compaq, Dell, Hewlett-Packard, IBM, and NEC, are expected to deliver stripped-down, sealed boxes designed to make life simpler for network administrators—and less fun for users.

Soaring costs of ownership, downsizing budgets, and disappointing gains in productivity are convincing IS managers that power users have had it their way long enough. User empowerment is out. Central control is in. "The PC," says Gartner Group analyst Bill Kirwin, "is getting a lot less personal."

Does this sound like empty rhetoric? It's not. We tested an early version of a NetPC manufactured by NEC, took a good look at a similar unit made by IBM, and found both units rich in features that make systems easier—and above all cheaper—to manage. They are powerful, moderately priced, and quite compact. But the very features that make them attractive to the bean counters in IS may make them anathema to users accustomed to controlling their own desktops.

Consider the humble floppy and CD-ROM drives. With them you can load software, import data, copy files to work on at home, or play a game. But not on a NetPC, which by and large doesn't include those familiar peripherals. Want to add a sound card or a new video device? Forget it. From the end-user point of view, these boxes are sealed. NEC's NetPC, for example, is secured with 40 hard-to-turn screws and has just one PCI expansion slot.

This network control may suggest Big Brother to you, but execs at companies like IBM view it as common sense. Big Blue's HelpCenter in Raleigh, North Carolina, gets thousands of calls a week from business users. And 62 percent of them are related to user-added hardware or software, says Jim McGann, director of marketing for the IBM PC brand. Add it up, and corporations spend lots of money resolving those problems. The most recent—and highly controversial—study by the Gartner Group puts the annual cost of acquiring and maintaining a single Windows 95 PC on a LAN at a staggering $9476.

This network control **may suggest Big Brother** to you, but execs at companies like IBM **view it as common sense.**

**PC IN A SMALLER PACKAGE: NEC's NetPC packs the same power as its larger desktop PC sibling, but without expansion options.**

## UPKEEP IS EXPENSIVE

SOUND INFLATED? Could be. Plenty of anecdotal evidence from both vendors and customers indicates that the real number is lower. Nevertheless, there is general agreement that a PC's total cost of ownership—known these days by the buzzword *TCO*—has gotten out of hand. That means some sort of network-based management device could well be coming your way in the next year or two.

Don't confuse the NetPC with terminals or other fixed-function devices. It really is a computer. The NEC NetPC we tested will sell for $1499 without a monitor. It's based on a Pentium MMX-200 CPU ▶

PHOTOGRAPHS: ARNOLD TIOSEJO

# ake Roo

Disk space a problem? Too many disk drives? Here's the solution. Make Room. 120MB of room. Introducing SuperDisk™ and the LS-120 drive. Unlike the Zip™ drive, the LS-120 drive is compatible with standard 3.5" disks. So you only need one drive. In other words, don't buy a PC without it. To learn more about the SuperDisk™ diskette and other LS-120 solutions for notebook, desktop, and add-on drives, call 1·800·888·1889, ext. 4050 or visit www.imation.com.

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IMATION

*Borne of 3M Innovation*

and has 32MB of SDRAM, a 3.2GB IDE hard drive, and an S3 Virge GX video board with 2MB of SGRAM. And except for the NetPC's lack of peripherals, you probably wouldn't realize you were working on anything but a standard business desktop while running typical productivity applications. In fact, the NetPC scored about 5 percent higher on our PC WorldBench suite of business productivity tests than a similarly configured $1975 NEC PowerMate standalone computer.

**NETWORK COMPUTER**

No local storage, data resides on network
**Acquisition cost:** $700 to $800
**Software support:** Windows through emulation, Java
**Remote manageability/user flexibility:** very high/very low
**Suitability:** terminal replacement, Internet- and e-mail-intensive jobs

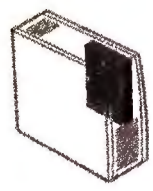
Although we used Windows NT Workstation 3.51 for testing, we could have gone with Windows 95, Windows 3.1, or even DOS. The NetPC we tested was part of a mininetwork that included another NetPC and Intel's LANDesk Configuration Manager 1.0, which is essentially a server containing special firmware and a layer of management software.

The install was easy. All it took at the client end was one tap on a spacebar prompt to activate a disk format, and NT and Word for Windows were automatically installed. Not counting the time to format, this operation took less than 16 minutes and required no further response to the numerous prompts. The same install on the stand-alone unit was only slightly slower but required a fair amount of button pushing. According to Intel, LCM can simultaneously configure five machines on a 10-megabits-per-second network.

Then it was time to crash-test the NetPC by deleting system files until the operating system went down. We rebooted, got back to the initial menu, pressed the spacebar, and successfully replaced everything that had been on the local drive. Of course, if data or configuration information had been stored on the drive, it would have been lost.

IBM showed us its beta NetPC but could not make a unit available for testing in time for this story. The IBM product contained a larger array of remote management features than the NEC beta. Most important, it supports Wake-On-LAN, which lets the server boot systems on the network even if they have been completely shut down. An IBM engineer "woke up" the NetPC, flashed a new BIOS to it, and did a total OS install from his console without ever touching the client PC.

**NETPC**



No local storage, data resides on network
**Acquisition cost:** $1000 to $1500
**Software support:** Windows, Java
**Remote manageability/user flexibility:** high/moderate
**Suitability:** task-oriented jobs in large and medium-size businesses

IBM's NetPC doesn't require Intel's $10,000 LCM. It operates with a standard server and IBM's free LANClient Control Manager. However, Intel's LCM supports features that IBM's software can't match, like configuration over a wide area network or a TCP connection. (A version due in the fall will add those features, says IBM's McGann.)

By October, Intel expects to ship LCM 1.5, which supports Wake-On-LAN and other features similar to IBM's program. And that's the version NEC expects its NetPC customers to use, so they should have a lot more remote manageability than we were able to demonstrate.

## CHEAP ENOUGH?

WHEN MICROSOFT and Intel (the companies that authored the NetPC spec) began hyping the new platform last year, many people assumed NetPC systems would be nearly as cheap as the roughly $700 NC boxes touted by Oracle and Sun. No way. Most NetPC vendors expect their products to cost from $1000 to $1500, depending on configuration. One reason for their estimates: The items missing from the NetPC (such as floppy, CD-ROM, and hard drives, as well as the large chassis) are relatively cheap. The real savings—and this theory has yet to be proved—are supposed to derive from the NetPC's reduced long-term support and maintenance bills.

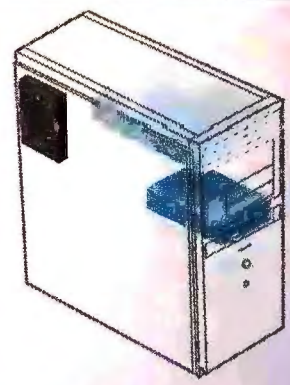
If the NetPC doesn't sound like your cup of tea, don't worry. Most analysts figure that it won't make up much more than 5 to 10 percent of the business computing market in the next few years. And if your job demands a full-featured PC, it's hard to imagine many IS departments forcing you to do without. But manageability is here to stay.

Intel, Microsoft, and a number of system vendors are already talking about the next leap in manageability. It's called the Managed PC and should be on sale this fall. In essence, it's a fully featured PC that includes both floppy and CD-ROM drives and multiple expansion slots. But it also contains the same centralized management features found in the NetPC, and it gives network administrators the power to turn off any of the peripherals. "The two platforms could even merge," says Ron Peck, Intel's director of net client marketing.

And although Intel might not like it, Oracle's NC has a place in that future, too. For business computing, manageability—whether with the inflexible NC or a platform that gives users a lot more power—is something you'd better learn to live with.

*—Bill Snyder* ▶

**MANAGED PC**



Floppy, CD-ROM, and hard drives can be locked out
**Acquisition cost:** $1300 to $1600
**Software support:** Windows, Java
**Remote manageability/user flexibility:** high/high
**Suitability:** most users in large and medium-size businesses

# So why is this OK when it's e-mail?

If the Post Office treated your mail like garbage, you'd be outraged. So why put up with it from your e-mail program? Now there's a way to make sure you're never ever left staring at garbage text instead of an e-mail attachment. It's a hot new clean up program called **e-ttachment Opener™**. From DataViz, the file compatibility specialists.

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If you need even more help handling foreign file formats, DataViz delivers again. Even after **e-ttachment Opener** has turned garbage back into a readable file, you may not have an application that can open it. Our *Conversions Plus®* program converts hundreds of different file formats between PC applications or Macintosh and PC applications. Quickly and accurately. It contains all the features of **e-ttachment Opener** plus over 1,000 file translation combinations. It also contains our *MacOpener®* utility, which is the perfect solution for reading and writing Macintosh disks on your PC.

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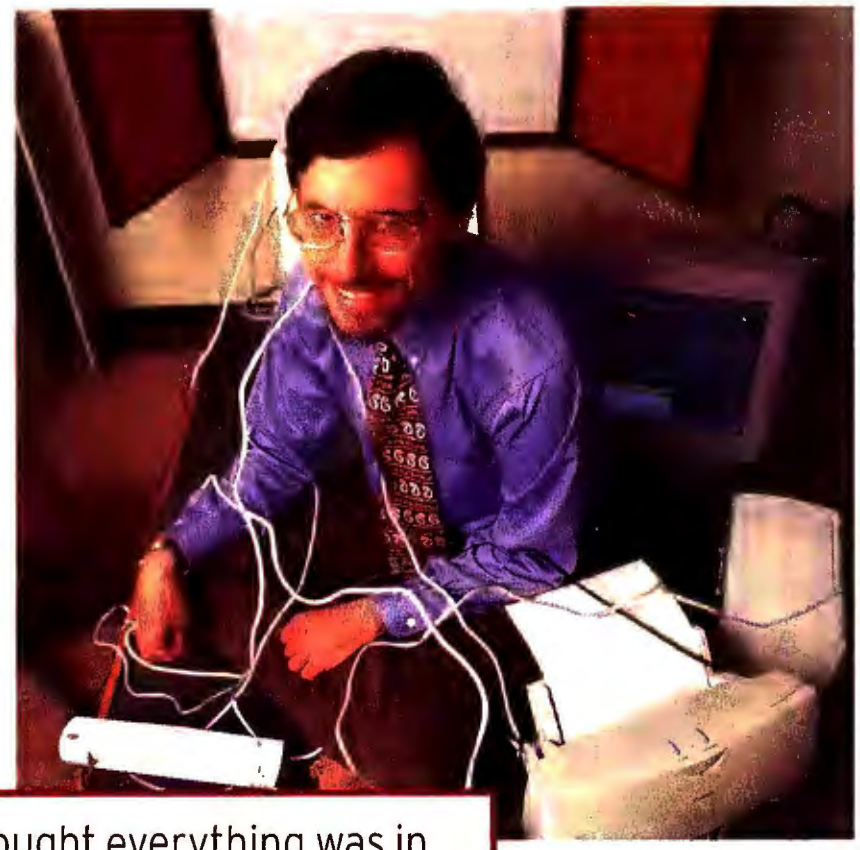
# Universal Serial Bus Flops in First Hands-On Tests



USB WAS supposed to be a magic bullet that would take the pain out of hooking up peripherals. Well, sorry about that. Universal Serial Bus may live up to that promise someday. But this is one bus you may not want to board just yet.

Created by Microsoft, Intel, Compaq, and other major PC players, USB is a specification for a single port designed to handle anything from a keyboard to an LCD projector. And it was supposed to do many things at once, with true Plug and Play and the freedom to hot-swap devices. But in our first hands-on tests, it didn't do them very well.

Although USB PCs and a few peripherals are available now, our experiences suggest that the technology introduces unexpected headaches. Even vendors selling USB peripherals admit that the technology is raw. "USB isn't finished yet," concedes John Gwynn, director of technical marketing at Philips Consumer Electronics, which is shipping a USB monitor. "It holds a ton of promise, but I can understand being frustrated."

## SHORT SUPPLY

USB WAS SUPPOSED to make a big splash last fall, but products have been slow to arrive. PCs with USB ports have been shipping for months. And with the most recent maintenance release of Windows 95 (OSR2.1, shipping on most new computers), Microsoft added USB support to the operating system.

What's been missing are peripherals. By early July, we were able to scare up only three preproduction models (a set of Altec-Lansing speakers, a Canon ink jet printer, and a Logitech sheetfed scanner), plus three shipping units (a Kodak video camera and monitors from Philips and Sony). We tried these devices with four USB PCs: desktops from Dell, Gateway 2000, and NEC, and a Panasonic notebook.

When USB worked as advertised, it was great. We connected the Philips monitor to the Dell PC, then plugged the camera, scanner, and printer into the monitor—and they all coexisted on one USB port. Moreover, the camera and scanner drew power from the USB connection and were free of the clunky power bricks that such devices often require.

> Even when we thought everything was in sync, **USB sometimes stopped us cold.**
>
> **PC World's Harry McCracken wrestled with USB technology—and lost.**

## NOT-SO-HOT SWAPPING

BUT EVEN WHEN we thought everything was in sync, USB sometimes stopped us cold. We spent hours trying to get the Panasonic notebook's USB port to work, then ▶

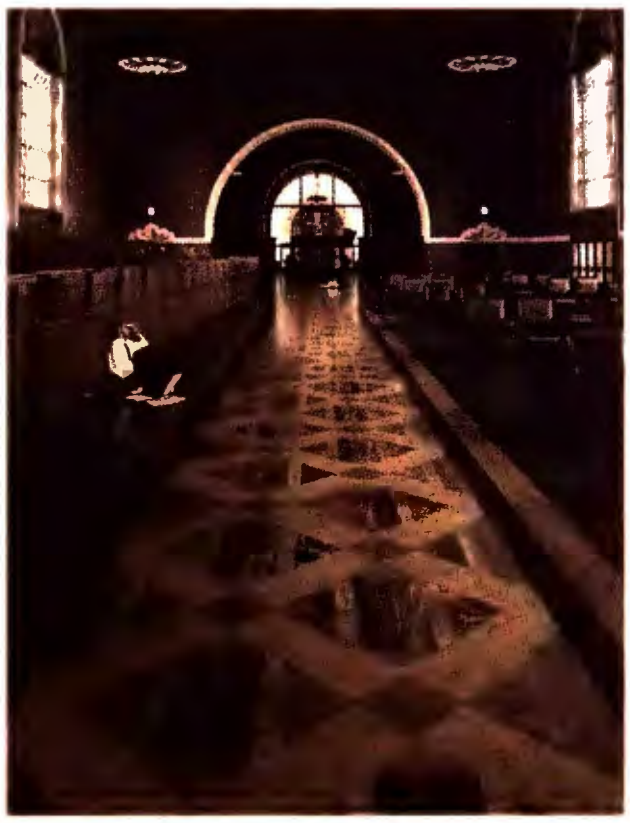
## USB Reality Test: A Trying Experience

Is USB all it's cracked up to be? We compared claims made on the official USB site (www.usb.org) to our experiences. Here's what we found.

| CLAIM | REALITY |
|---|---|
| "Personal computers equipped with USB will allow computer peripherals to be automatically configured as soon as they are physically attached." | Hardly worked for us under Windows 95, although the next version of Windows will permit instant configuration for some—but not all—peripherals. |
| "Users with a USB-equipped PC will be able to switch out compatible peripherals as needed as easily as they would plug in a lamp." | Switching live made the PC unstable. "For the time being, make sure you don't unplug devices until you're ready to turn the PC off," advises John Gwynn of Philips. |
| "All kinds of peripherals can be hooked to the computer through the same connector simultaneously." | You won't be able to daisy-chain a high-current peripheral, such as a scanner, through a peripheral that provides only a low-current port, like a keyboard. |
| "USB will also allow multiple peripherals—as many as 127—to run simultaneously on a computer." | PCs typically have only one or two USB ports. Daisy-chaining many devices will require external hubs or peripherals with built-in hubs, like monitors or printers. |

PHOTOGRAPH: SETH RESNICK

# A BATTERY DOESN'T CARE WHERE YOU ARE, WHAT YOU'RE DOING, OR IF YOU EVEN GET THERE.



***Someone does.*** *A notebook computer is no guardian angel. It is microchips, buttons, and batteries that don't know the meaning of the word "DELAYED." So if you want to make sure your notebook keeps up with your itinerary, talk to AST.® We'll look after you with a dedicated support staff that's available around the clock. As well as an optional 24-hour replacement service that delivers anywhere in the United States.* For more information about AST Ascentia™ notebooks featuring Intel® Pentium® processors with MMX™ technology, call* 1-800-945-2278.

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found out the port had been disabled. Panasonic believes that USB with Windows 95 OSR2.1 is so unreliable that users are better off without it.

There were other odd problems, too. The Logitech scanner worked fine with one of the Philips monitor's ports, but when we tried to hot-swap it to another port, it crashed the PC. Curiously, the Kodak camera sporadically refused to work with the Gateway 2000 PC, unless we daisy-chained it through the Canon printer.

Several of the products we tested were in beta, so some of this behavior is understandable. But even shipping products such as the Kodak camera misbehaved. And when we called vendors for help, they responded with a flurry of finger-pointing. No one seemed surprised that our USB experience wasn't smooth sailing: Nearly all vendors reported incompatibilities related to everything from motherboards to drivers to the different versions of USB software shipped by Microsoft.

Steve Whalley, Intel's USB evangelist, expressed surprise at the range of our difficulties and says most users will have a better experience. Still, he "didn't want to paint a picture that USB is rock solid. It looks simple, but there's a lot of complexity behind it."

### WINDOWS 98 MAY HELP

SO WHAT'S A PC user to do? "As with any new technology, it's better to wait until it's been proven, until the software is there, until there are lots of devices," answers Tom Ventura of Progressive Strategies, a New York research firm.

If all goes well, the next version of Windows may help. "We acknowledge that support [for USB in Windows 95] is very limited," acknowledges Stacey Breyfogle, a Microsoft product manager.

> **"Wait until the software is there, until there are lots of devices," says analyst Tom Ventura of Progressive Strategies.**

Vendors must write complex drivers to make their USB peripherals work under Windows 95 OSR2.1, but Microsoft will build more of the USB technology into Windows 98 and plans to bundle many device-specific USB drivers. In theory, this means most USB devices will install without a driver disk—just plug them in and let the OS do the work. And that should encourage vendors to get more USB peripherals to market.

Our test drive of a beta version of Windows 98 with the Logitech scanner started out beautifully. We plugged the device into the USB port, and the operating system identified and configured the scanner—no disk required. But the beta didn't come close to fixing all our USB woes: Peripherals, including the scanner, worked only intermittently, and fully digital streaming audio over USB speakers isn't supported.

If USB eventually realizes its potential, it wouldn't be the first time a PC technology overcame a bumpy start to become an essential feature. Windows went through three major versions before Microsoft got it right. But the history of computing is strewn with promising ideas that fizzled—remember Micro Channel Architecture? Only time will tell which route USB will take.

*—Harry McCracken and Randy Ross* ■

WEB BROWSER

## Good-bye, ATM. Hello, Web Banking

EVERYBODY'S talking about Internet time these days. So how come your banker, and even your broker, are still working on horse-and-buggy time?

Well, hallelujah. They're catching on. The cowpokes at venerable Wells Fargo Bank have hitched their ponies to the Internet and are offering some of the handiest online financial services around. And they're not alone. Online banking and other financial services that started as basic direct telephone dial-ups have become glitzy, transactional Internet sites that are well worth visiting.

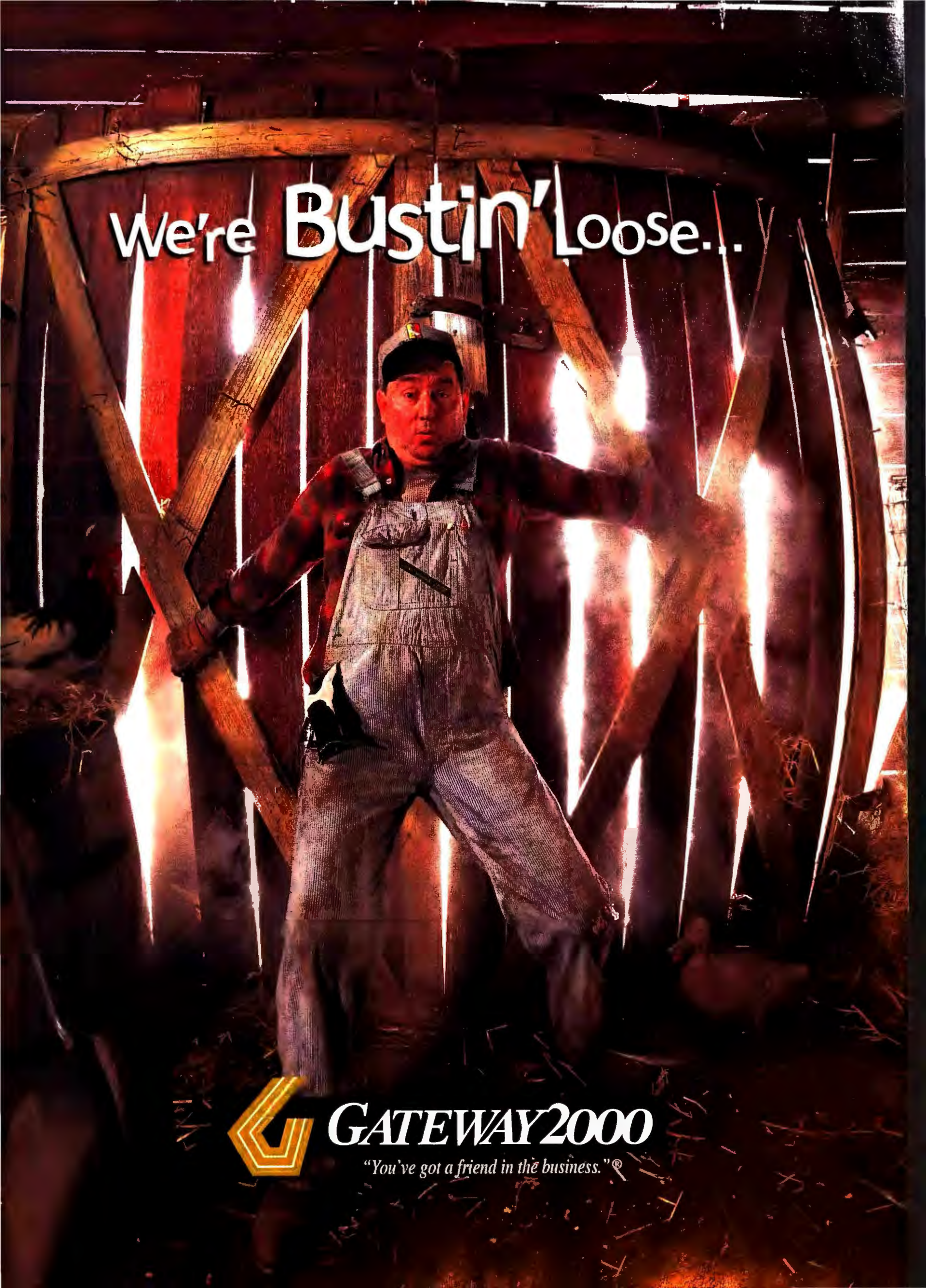
**Wells Fargo** (www.wellsfargo.com) uses its trademark stagecoach logo to project an image of old-style Western integrity and dependability. And analysts say the site is one of the safest places to do business on the Web. It boasts numerous security features, including domestic-level (128-bit) encryption, which requires billions of combinations to decode. The site's varied services include personal finance and international banking tuned for small businesses. Customers can update, transfer, and withdraw funds using tabular forms designed to work with Microsoft Money 97 and Quicken.

**SchwabNow** (www.schwab.com) is attracting would-be Gordon Gekkos with its screens full of research tools. The splashy Market Buzz tracks over 13,000 securities and 1500 mutual funds while offering independent views from sources including *Business Week* and the analytical Thomson MarketEdge. Just open an account and then type in the quantity, symbol, and price. And here's a bonus: You get 20 percent off Schwab's standard commission fee for trading online.

**WELLS FARGO'S ONLINE SITE offers secure financial services for customers.**

**Quicken.com** (www.quicken.com) aggregates a wide variety of services. Start by going to linked research areas such as the Wall Street Journal and Fortune magazine (though you'll have to pay for some of these). Then obtain quotes from Quicken.com, and create a portfolio and trade stocks or mutual funds through Charles Schwab, ETrade, American Express, or Waterhouse. You can use personal financial software such as Quicken to track checks, make transfers and deposits, and schedule bill payments.

*—Randy Legge*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When it comes to delivering more for less, stopping the folks at Gateway 2000 is about like heading off a stampede with a motor scooter.

So when component prices started to dive, we cut prices lower than a rattler's belly in a wagon rut. But we reckon that's just the beginning. Gateway field hands also amble around the world, looking for great value and working with component manufacturers to corral fresh technology.

On top of that, we've created five broad product lines to meet our customer's diverse needs. We mean business with our **E-Series**, designed for corporate customers. **Gateway Solo™** portable PCs deliver mobile computing power, modularity and flexibility. The **Destination™ Big Screen PC/TV** rules group computing. The **GP-Series** handles small office/home office needs. And classic Gateway multimedia value is what the [illegible] is all about.

*Gateway offers a complete line of systems featuring Intel Pentium® Processors.*

## Quality And Service Wear Our Brand

If you see the Gateway mark branded into the hide of anything, you know it's been tested more times than a bull rider in August and backed by customer service pros who know the business end of a chip set.

Once you join the Gateway customer family, the relationship is only beginning. You'll have a technical support friend just a toll-free phone call away, 24 hours a day.

We back our systems with a three-year limited warranty on desktops and one-year limited warranty on portables. Call or write for a free copy. Or you can upgrade to Gateway Gold™ premium service and support and add two years onto the standard one-year on-site service agreement†† included with desktops, and get three years of priority access to technical support phone lines.

## Highest Brand Loyalty, Bar None

No wonder an IDC/ACNielsen survey of computer owners showed Gateway had the highest brand loyalty of any computer maker in the U.S. home market, even better than those guys with the fruit logo*.

Give Gateway a holler today and get in on the stampede of value. We'll be glad to cut one from the herd and deliver it to your door.

*Based on percentage of computer owners planning to buy another computer of the same brand as they currently own between 11/1/96 and 7/31/97.

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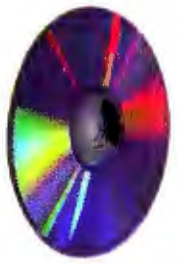
Because we talk to about 30,000 customers a day, Gateway has a unique perspective on what folks want in their computers. But we're only getting warmed up. We also ask Gateway employees who market, build, sell and service our PCs what they think customers would like.

With all that information, we hunker down with customer survey research and huddle with our vendor allies to anticipate when new technology will come onto the market.

It's all about looking six months or more down the road and lining things up to make it easy for our customers to get the latest technology. Take a gander at the new features we're offering and give us a call.

## DVD (Digital Versatile Disc)



The new multimedia sheriff goes by the initials DVD, and is fixin' to create a whole new standard throughout the computer territories. Now Gateway gives you the option of including this heir apparent to CD-ROM in your next computer. One Digital Versatile Disc holds 4.7GB of data, a veritable sprawling data prairie that's seven times the size of a CD, room enough for up to 133 minutes of video that makes your VCR tapes seem as fuzzy as the Badlands in a duststorm.

## EV900 Monitor

A while back, we saddled up some jet airplanes and searched the world for a better monitor. First we found a great monitor tube. Custom designed a case around it. The resulting EV900 is a 19-inch monitor (18-inch viewable) that takes up about the same space on your desktop as our 17-inch monitor (15.9-inch viewable) without skimping on quality.

## Boston Acoustics® Speakers

What good is great multimedia if your computer has speakers as tired as a draft horse on Saturday? We sat a spell with the folks at Boston Acoustics and found a way to bring their award-winning sound to our PCs. Gateway yokes these great speakers to some mighty fine sound cards to break new PC audio ground.

## Pentium® II Processor

More powerful than a galloping buffalo, more agile than a Black Hills mountain lion. The Intel **Pentium II** processor combines optimum 32-bit performance and MMX™ technology at speeds that reach **300MHz**. Gateway worked with Intel to round up a supply of **Pentium II** processors for our customers' homes *and* offices.

## Gateway Solo™ Portable Modularity

Our portable components are modular. That means many of them can be swapped between different Gateway Solo portables. Now you can mix and match one set of batteries, AC power packs and memory chips between several 2300 and 9100 portables. More flexible than a well-oiled lasso and twice as sleek.

MMX™ intel inside pentium® II PROCESSOR

GATEWAY2000

*"You've got a friend in the business."®*

800-846-5257

www.gateway.com

# Prairie Value, City Savvy

When you grow from nothing to $5 billion in 11 years, you tend to know what it takes to run a business. Experience from our own amazing growth and suggestions from our customers, sales groups and manufacturing teams led to our GATEWAY™ E-Series PCs. After we designed the series, we put it through extreme network environment tests. Geared just for business, education and government customers, the E-Series line kicks up its heels with:

**Manageability** — DMI-compliant PCs let your IS team know what's going on without popping the case.

**Product Stability** — Nothing more annoying than having skitterish PC vendors constantly changing their base platforms. Gateway's solid platforms let you standardize on a configuration that fits your unique needs. Then you can manage technology upgrades when they make sense for your particular outfit.

**Serviceability** — Easy-open cases let you get into our systems in a flash. And our team of highly trained, dedicated technical support pros are ready around the clock just in case you need the digital cavalry.

**Flexibility** — As with all Gateway PCs, you make the decisions on what goes into your E-Series systems. Your sales rep will listen to your needs and help you find a configuration that gets it done. You call the shots at Gateway 2000.

Call your Gateway 2000 Major Accounts Sales rep today and we'll charge toward your business goals like a herd of bulls. We mean business.

**Custom Integration Services** — Say your corporation uses a specific inventory control program or certain type of backup storage device. For volume purchasers, Gateway's CIS crew can help you get some of that hardware or software built into your new systems, pre-tested and shipped to your door. It doesn't matter if we normally sell it or not. That means you don't have to pay any other outfit to add hardware and software to your Gateway systems. They come right to your corral ready to go to work.

## *Gateway E-Series PCs*

- Intel Pentium,® Pentium® Pro or **Pentium® II** Processors
- High-Performance SCSI, EIDE or Ultra ATA Hard Drives
- 2-D or 3-D Video Adapters
- Pre-installed High-Bandwidth Network Options
- Low Profile, Desktop or Mid-Tower Case
- Pre-loaded with Microsoft® Windows® or Windows NT® Workstation 4.0
- Hardware Management Features
- Desktop Management Interface (DMI) 1.1 Compliant
- Gateway Gold™ Service and Support for Desktop PCs

*Prices starting at* **$929** *(Quantity 1)*

## *Gateway Extras*

*(All available to existing and new Gateway customers with system purchase.)*

- 16-Bit Token Ring Adapter **$149**
  3Com® PCI 10/100 TP Adapter **$49**
  *(both upgrades from ISA TPO 10BASE-T Adapter)*
- MS® Windows NT Client 4.0 Upgrade **$99**
- 3.2GB Ultra ATA Hard Drive
  6.4GB Ultra ATA Hard Drive
  *(Call for upgrade pricing.)*
- Printers *(Call for information and pricing.)*
- Customized Service Options
  *(Call for information and pricing.)*

*Please call for current pricing on RAM and other upgrades.*

MMX™ intel inside pentium® II PROCESSOR

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**800-779-2000**

www.gateway.com/majoract/majoract.htm

Gateway E-Series PCs For Business

# Computing That's At Home On The Range

Gateway Solo portable PCs are thundering through the mobile computing world, leaving a flutter of blue ribbons and trophies in their wake.

When Gateway's mobile PC crew designed our flagship Gateway Solo 9100 portable they had one priority: features. The result is a portable loaded for bear with features normally found only in desktop PCs. If you're looking for a more classic mobile PC, the 2300 line delivers plenty of power and performance. It's ideal for the corporate fleet. The 2100 fits mobile users like college students who want a lot of computer for a little money.

No matter which portable fits your needs, with Gateway you get:

**Modularity** — Besides being loaded, Gateway Solo 9100 portables can swap many components with their counterparts in the 2300 series. Now IS can buy one supply of components interchangeable with the entire fleet of 2300 and 9100s. Modularity also helps protect your investment with easily changeable components.

**Choices** — Not only does Gateway have multiple lines of mobile PCs, but you'll never get some pre-built portable that's been sitting on a shelf. Gateway customers decide what goes into their mobile PCs and then we build them fresh and ship them out.

**Fresh technology** — No hand-me-downs from the desktops here. Gateway gets the freshest mobile PC components on the market and only builds your Gateway Solo portable PC after you order it.

Slip a Gateway Solo portable PC into your saddle bag and you're ready for the road, no matter where you're going.

*"Maximum data transfer rate dependent on certain variables including particular modems with which you are communicating, telephone lines, communications software and communications protocols*

# *Gateway Solo™ Portable PCs*

## *2100SE*

- 11.3" SVGA DSTN Color Display
- Intel® 133MHz Pentium® Processor
- 16MB EDO DRAM (expandable to 72MB)
- 256K Pipelined Burst Cache
- 1MB EDO Video RAM
- Modular 6X min/11X max CD-ROM Drive
- Modular 3.5" Diskette Drive
- Zoomed Video
- 1.3GB Hard Drive
- 16-Bit Sound & Stereo Speakers
- NiMH Battery & AC Pack
- 85-Key MS® Windows® 95 Keyboard
- EZ Pad® Pointing Device
- Casual Carrying Case
- Microsoft® Windows 95
- MS Works 95
- Gateway Gold™ Service & Support for Portable PCs

**$1899** As low as[x] $66/mo.

## *2300LS*

- 12.1" SVGA TFT Color Display
- Intel 150MHz Pentium® Processor with MMX™ Technology
- 32MB SDRAM (expandable to 192MB)
- 256K Pipelined Burst Cache
- 1.15MB Integrated Video RAM
- Modular 8X min/11X max CD-ROM Drive
- Modular 3.5" Diskette Drive
- USB Ports & Zoomed Video
- NTSC/PAL Video Output
- 3GB Hard Drive
- 16-Bit Wavetable Sound & Stereo Speakers
- PCMCIA Data/14.4 Fax Modem**
- 12-Cell Li-Ion Battery & AC Pack
- 85-Key MS Windows 95 Keyboard
- EZ Pad Pointing Device
- Casual Carrying Case
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta® 97
- Gateway Gold Service & Support for Portable PCs

**$3849** As low as[x] $134/mo.

## *9100XL*

- 13.3" (1024 x 768 resolution) TFT Color Display
- Intel 166MHz Pentium Processor with MMX Technology via IMM® Package
- 64MB SDRAM (expandable to 192MB)
- 256K Pipelined Burst Cache
- 4MB EDO Video RAM (1280 x 1024 external)
- USB Ports & Zoomed Video
- Removable Combo 8X min/11X max CD-ROM & 3.5" Diskette Drive (allows for second battery pack)
- Two 12-Cell Lithium Ion Batteries & AC Pack
- NTSC/PAL Video Input & Output with frame capture capability
- 5GB Hard Drive
- Premium Sound System with 16-Bit Wavetable Sound & Yamaha Stereo Speakers
- PCMCIA Modem with x2 Technology**
- Full 88-Key MS Windows 95 Keyboard with 19mm pitch & 3mm travel
- EZ Pad Pointing Device
- 15-Pin MIDI/Game Port
- Carrying Case
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta 97
- Gateway Gold Service & Support for Portable PCs

**9100XL $5699** As low as[x] $198/mo.

**9100LS $4699** As low as[x] $163/mo.

*(150MHz Pentium processor with MMX Technology, 2GB Hard Drive, 32MB SDRAM and One Li-Ion Battery)*

## *Gateway Extras*

*(Some items only available to new or existing Gateway customers or with the purchase of a system.)*

- Gateway Solo Docking Station **$599**

- Gateway Solo Mini Docking Station **$199**

- Additional 2300/9100 Lithium-Ion Battery **$200**
  *(with system purchase)*

- Canon® BJC®-70 Color Bubble Jet Printer **$299**

*Please call for current pricing on RAM and other upgrades.*

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www.gateway.com

Gateway Solo Portable PCs For The Ro
Road

# Bigger Than All Outdoors

Hailing from South Dakota, wide open spaces have always attracted Gateway. So it's no wonder we invented a whole new computer category by introducing the Destination Big Screen PC/TV in April 1996.

Its huge 31-inch monitor, wireless keyboard and Field Mouse remote make the Destination Big Screen PC/TV a system born and bred for group use. And, with a click of the mouse button, the Destination system becomes a fully functional television. The Destination Big Screen PC/TV includes options like the power of a **Pentium® II** processor and the amazing digital video of DVD. Custom configure one to fit your needs and yank computing out of the den and into the:

Family room — Computing and exploring the Internet just became group activities. After a year on the market, 61% of Destination system owners we surveyed said they spent more time with their families as a result of the Destination Big Screen PC/TV.

Conference room — Now you can combine the presentation power of a big screened computer with the functions of a video system. Add your video cassette player, cable TV hookup and phone line and you've got one system that does it all, at a price that will let you outfit all your conference rooms.

Classroom — How do you teach computer-based lessons to a class? The screen size of a traditional desktop made it tedious at best. Now educators can wheel the Destination Big Screen PC/TV to the head of the class and give all students a great view. And Gateway value delivers a lot without consuming the ever-shrinking budget.

*Gateway Destination D5-166 Big Screen PC/TV with Boston Acoustics MicroMedia Speakers*

# GATEWAY™ Destination™ Big Screen PC/TVs

## D5-166

- Intel® 166MHz Pentium® Processor with MMX™ Technology
- 32MB SDRAM
- 512K Pipelined Burst Cache
- Destination 31" VGA Monitor
- 2MB Graphics Accelerator w/ Cable-Ready TV Tuner
- 2GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Ensoniq® Wavetable Audio
- **Boston Acoustics® MicroMedia™ Speakers**
- TelePath® Modem *for Windows* with x2™ Technology**
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated EZ Pad® Pointing Device
- Wireless Field Mouse® Remote
- Microsoft® Windows® 95
- Home Software Gallery
- Gateway Gold™ Service & Support◆ for Big Screen PC/TVs

**D5-166 $2499** As low as× $87/mo.

**D5-200 $2999** As low as× $104/mo.

*(200MHz Pentium Processor with MMX Technology, 4GB Hard Drive, DVD-ROM Drive and DVD Decoder)*

## D6-233

- Intel 233MHz **Pentium® II** Processor with 512K Cache
- 32MB EDO DRAM
- Destination 31" VGA Monitor
- 2MB Graphics Accelerator with Cable-Ready TV Tuner
- 6.4GB 10ms EIDE Hard Drive
- **DVD-ROM Drive & DVD Decoder Card**
- 3.5" Diskette Drive
- Ensoniq Wavetable Audio
- **harman/kardon® High-Fidelity Sound System**
- TelePath Modem *for Windows* with x2 Technology**
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated EZ Pad Pointing Device
- Wireless Field Mouse Remote
- MS® Windows 95
- Home Software Gallery
- Gateway Gold Service & Support◆ for Big Screen PC/TVs

**$3999** As low as× $139/mo.

◆*The Destination 31-inch monitor is covered by a one-year limited warranty. Call or write for a free copy.*

## D6-300XL

- Intel 300MHz **Pentium II** Processor with 512K Cache
- 64MB EDO DRAM
- Destination 31" VGA Monitor
- 2MB Graphics Accelerator with Cable-Ready TV Tuner
- 6.4GB 10ms EIDE Hard Drive
- **DVD-ROM Drive & DVD Decoder Card**
- 3.5" Diskette Drive
- **EasyPhoto Drive™ Photo Scanner**
- Ensoniq Wavetable Audio
- **harman/kardon High-Fidelity Sound System**
- TelePath Modem *for Windows* with x2 Technology**
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated EZ Pad Pointing Device
- Wireless Field Mouse Remote
- MS Windows 95
- Home Software Gallery
- Gateway Gold Service & Support◆ for Big Screen PC/TVs

**$4699** As low as× $163/mo.

## Gateway Extras

*(Some items only available to new or existing Gateway customers.)*

- Logitech™ WingMan® Extreme™ Joystick **$39**
- Additional Destination 31-inch VGA Color Monitor **$999**
- EasyPhoto Drive Photo Scanner **$149** *(with system purchase)*

- Epson® PhotoPC™ 500 Digital Camera **$499**

*Please call for current pricing on RAM and other upgrades.*

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**800-846-5257**

www.destination.com

Destination Big Screen PC/TVs For Group Computing

# Big Systems For Small Operations

The GATEWAY™ GP-Series professional PCs aim to deliver one system that can do many things for small and medium-sized business. Head-of-the-pack technology lets our GP-Series PCs take care of everything from inventory to accounting. We deliver MMX™ technology across the line and options that include the **Pentium® II** processor, huge backup storage devices and software that can boost business productivity. The GP-Series systems tackle your business needs like a steer wrestler in the championship go-round.

You Call The Shots — Because you know more about your business needs than anyone, you decide what goes into your GP-Series system. Our sales representatives can help you assess your needs and explain your options. But you make the final call.

Fresh Technology — Intel Pentium processors with MMX technology can take care of your business needs, thanks to our philosophy of combining them in fresh configurations. Things like 512K cache, plenty of RAM and Ultra ATA hard drives up to 6.4GB make Pentium processors perfect for your small office/home office needs.

Software That's Part Of The Deal — Gateway knows hardware is just part of the bargain. You also need software and we've got it in standard and optional packages. So while some companies charge you extra for the basics like anti-virus software and productivity programs, Gateway throws them in with the system, no extra charge.

*Gateway GP-Series Professional systems*
*offered in your choice of tower and desktop models*

# *Gateway GP-Series PCs for the Office Professional*

GP-Series PCs For The Office Professional

## GP5-166

- Intel® 166MHz Pentium® Processor with MMX™ Technology
- 32MB SDRAM
- 512K Pipelined Burst Cache
- CrystalScan®500 .28 Screen Pitch 15" Monitor (13.9" viewable)
- 2MB 3-D 64-Bit PCI Graphics
- 2GB 10ms Ultra ATA Hard Drive
- 12X min/16X max CD-ROM & 3.5" Diskette Drives
- Desktop Case
- 104+ Keyboard & MS® IntelliMouse™
- Microsoft® Windows® 95 & MS Office 97, Small Business Edition plus Encarta® 97
- Gateway Gold™ Service & Support for Desktop PCs

**$1449** Business Lease† $54/mo.

## GP5-200

- Intel 200MHz Pentium Processor with MMX Technology
- 32MB SDRAM
- 512K Pipelined Burst Cache
- CrystalScan500 .28 Screen Pitch 15" Monitor (13.9" viewable)
- 2MB 3-D 64-Bit PCI Graphics
- 2GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Desktop Case
- 104+ Keyboard & MS IntelliMouse
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta 97
- Gateway Gold Service & Support for Desktop PCs

**$1799** Business Lease† $66/mo.

## GP6-233

- Intel 233MHz **Pentium® II** Processor with 512K Cache
- 64MB EDO DRAM
- CrystalScan700 .28 Screen Pitch 17" Monitor (15.9" viewable)
- 4MB 3-D 64-Bit PCI Graphics
- 4GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Mid-Tower Case
- 104+ Keyboard & MS IntelliMouse
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta 97
- Gateway Gold Service & Support for Desktop PCs

**$2499** Business Lease† $92/mo.

## GP6-266

- Intel 266MHz **Pentium II** Processor with 512K Cache
- 64MB EDO DRAM
- ▸ **EV900 .26 Screen Pitch 19" Monitor** (18" viewable)
- 4MB 3-D 64-Bit PCI Graphics
- 6.4GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Mid-Tower Case
- 104+ Keyboard & MS IntelliMouse
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta 97
- Gateway Gold Service & Support for Desktop PCs

**$2999** Business Lease† $110/mo.

## *Gateway Extras*

*(Some items only available to new or existing Gateway customers or with the purchase of a system.)*

- Hewlett®-Packard DeskJet 820Cse Color Printer **$299**
- TR4 IDE 4GB Tape Backup Unit with Tape **$199** *(with system purchase)*
- TelePath® Modem *for Windows* with x2™ Technology** **$79**
- Iomega® Internal ZIP™ Drive with Two Discs **$99** *(with system purchase)*

*Please call for current pricing on RAM and other upgrades.*

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**800-846-5257**

www.gateway.com

# High-Tech Multimedia, Down-Home Values

No sense in making things complicated. Give customers fresh technology at amazing prices. That's the long and the short of GATEWAY™ G-Series multimedia PCs. These systems deliver the latest multimedia wonders, including MMX technology priced for everyone and the unbeatable value of the amazing **Pentium® II** processor.

## Freshness That Puts The Competition On Edge

By refusing to build even one system before someone orders it and keeping our component inventory among the freshest in the industry, we've spooked our competitors for years.

Gateway constantly searches for the greatest deals on the latest technology, like the **300MHz Pentium II** processor. Then we pack our systems with value and wrap our desktop systems in a three-year limited warranty and one-year on-site service agreement.††

## Pentium II Processor Power, MMX Technology, DVD Magic

When the **Pentium II** processor was coming out, we took a look-see and discovered this processor was a great deal for *everyone*. So we worked with Intel to secure a processor pipeline so we could deliver for our customers. We moseyed around the globe and found a way to lasso DVD-ROM drives. Same deal on the breakthrough EV900 monitor and the pristine sound of Boston Acoustics speakers.

## Large Needs? Small Budget? We've Got You Covered

Looking for something to ease yourself into the computing world or to use as a second system? No problem. Check out the G5-166 multimedia PC complete with printer for $1,599. No matter what your needs or budget, we've got a system that fits.

We're always out there, looking for the great deals and the next technology that will benefit our customers. It's all part of leading the multimedia computing stampede.

*Gateway G6-233 Multimedia PC with Boston Acoustics Speakers*

# *Gateway G-Series Multimedia PCs for the Home*

## G5-166

- Intel® 166MHz Pentium® Processor with MMX™ Technology
- 16MB SDRAM
- 512K Pipelined Burst Cache
- CrystalScan®500 .28 Screen Pitch 15" Monitor (13.9" viewable)
- 2MB 3-D 64-Bit PCI Graphics
- 2GB 10ms Ultra ATA Hard Drive
- 12X min/16X max CD-ROM & 3.5" Diskette Drives
- Ensoniq® Wavetable Audio
- Altec™ Lansing ACS-41 Speakers
- TelePath® Modem *for Windows* with x2™ Technology**
- Desktop Case
- 104+ Keyboard & Microsoft® Mouse
- MS® Windows® 95 & Home Software Bundle
- **Color Ink Jet Printer**
- Gateway Gold™ Service & Support for Desktop PCs

**$1599** As low as× $56/mo.

## G5-200

- Intel 200MHz Pentium Processor with MMX Technology
- 32MB SDRAM
- 512K Pipelined Burst Cache
- CrystalScan700 .28 Screen Pitch 17" Monitor (15.9" viewable)
- 2MB 3-D 64-Bit PCI Graphics
- 2GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Ensoniq Wavetable Audio
- Altec Lansing ACS-41 Speakers
- TelePath Modem *for Windows* with x2 Technology**
- Desktop Case
- 104+ Keyboard & MS IntelliMouse™
- MS Windows 95
- Generations III Software Collection
- Gateway Gold Service & Support for Desktop PCs

**$1899** As low as× $66/mo.

## G6-233

- Intel 233MHz **Pentium® II** Processor with 512K Cache
- 32MB EDO DRAM
- CrystalScan700 .28 Screen Pitch 17" Monitor (15.9" viewable)
- 4MB 3-D 64-Bit PCI Graphics
- 4GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Ensoniq Wavetable Audio
- **Boston Acoustics® MicroMedia™ 3-Piece Speaker System**
- TelePath Modem *for Windows*, with x2 Technology**
- Mid-Tower Case
- 104+ Keyboard & MS IntelliMouse
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta® 97
- MMX Technology-Enhanced Software
- Gateway Gold Service & Support for Desktop PCs

**G6-233 $2549** As low as× $89/mo.

**G6-266 $2999** As low as× $104/mo.

*(266MHz Pentium II Processor, EV900 Monitor and 6.4GB Hard Drive)*

## G6-300XL

- Intel 300MHz **Pentium II** Processor with 512K Cache
- 64MB EDO DRAM
- **EV900 .26 Screen Pitch 19" Monitor** (18" viewable)
- 4MB 3-D 64-Bit PCI Graphics
- TV/FM Tuner Card
- 6.4GB 10ms Ultra ATA Hard Drive
- **DVD-ROM Drive & DVD Decoder Card**
- 3.5" Diskette Drive
- Ensoniq Wavetable Audio
- **Boston Acoustics MicroMedia 3-Piece Speaker System**
- TelePath Modem *for Windows* with x2 Technology**
- Tower Case
- 104+ Keyboard & MS IntelliMouse
- MS Windows 95 & MS Office 97, Small Business Edition plus Encarta 97
- MMX Technology-Enhanced Software
- Gateway Gold Service & Support for Desktop PCs

**$3799** As low as× $132/mo.

## Gateway Extras

*(Some items only available to new or existing Gateway customers or with the purchase of a system.)*

- Epson® Stylus® COLOR 400 Ink Jet Printer **$199**

- MS SideWinder™ 3D Pro Joystick **$59**

- Education Software Bundle Grades K-3 or Grades 4-8 **$99** (each)

*Please call for current pricing on RAM and other upgrades.*

††*On-site service is available to most locations in the continental United States, Alaska, Hawaii, Puerto Rico and Canada after you and your Gateway technician determine an on-site visit is necessary. On-site service is provided by PC Technology Services, Inc. On-site is not available for any monitor, mouse, keyboard, or portable system. Write or call for a free copy of the on-site service agreement.*

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G-Series Multimedia PCs For The Home

# Barn Burnin' Values

**Get more for your money with GATEWAY™ PCs!**

## *Gateway G-Series* Multimedia *PC*

### *G6-233*

- Intel® 233MHz **Pentium® II** Processor with 512K Cache
- 32MB EDO DRAM
- CrystalScan®700 .28 Screen Pitch 17" Monitor (15.9" viewable)
- 4MB 3-D 64-Bit PCI Graphics
- 4GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Ensoniq® Wavetable Audio
- ▸ **Boston Acoustics® MicroMedia™ 3-Piece Speaker System**
- TelePath® Modem *for Windows*, with x2™ Technology**
- Mid-Tower Case
- 104+ Keyboard & Microsoft® IntelliMouse™
- MS® Windows® 95 & MS Office 97, Small Business Edition plus Encarta® 97
- MMX™ Technology-Enhanced Software
- Gateway Gold™ Service & Support for Desktop PCs

**$2549** As low as× $89/mo.

## *Gateway GP-Series* Professional *PC*

### *GP6-266*

- Intel 266MHz **Pentium II** Processor with 512K Cache
- 64MB EDO DRAM
- ▸ **EV900 .26 Screen Pitch 19" Monitor** (18" viewable)
- 4MB 3-D 64-Bit PCI Graphics
- 6.4GB 10ms Ultra ATA Hard Drive
- 12X min/24X max CD-ROM & 3.5" Diskette Drives
- Mid-Tower Case
- 104+ Keyboard & MS IntelliMouse
- MS Windows 95
- MS Office 97, Small Business Edition plus Encarta 97
- Gateway Gold Service & Support for Desktop PCs

**$2999** Business Lease† $110/mo.

## *Gateway Destination™* Big Screen *PC/TV*

### *D5-200*

- Intel 200MHz Pentium® Processor with MMX Technology
- 32MB SDRAM DRAM
- 512K Pipelined Burst Cache
- Destination 31" VGA Monitor
- 2MB Graphics Accelerator with Cable-Ready TV Tuner
- 4GB 10ms Ultra ATA Hard Drive
- ▸ **DVD-ROM Drive & DVD Decoder Card**
- 3.5" Diskette Drive
- Ensoniq Wavetable Audio
- ▸ **Boston Acoustics MicroMedia 3-Piece Speaker System**
- TelePath Modem *for Windows* with x2 Technology**
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated EZ Pad® Pointing Device
- Wireless Field Mouse® Remote
- MS Windows 95
- Home Software Gallery
- Gateway Gold Service & Support◆ for Big Screen PC/TVs

**$2999** As low as× $104/mo.

## *Gateway Solo™* Portable *PC*

### *9100XL*

- ▸ 13.3" XGA TFT Color Display
- Intel 166MHz Pentium Processor with MMX Technology
- 64MB SDRAM (expandable to 192MB)
- 256K Pipelined Burst Cache
- 4MB EDO Video RAM (1280 x 1024 external)
- USB Ports & Zoomed Video
- ▸ Removable Combo 8X min/11X max CD-ROM & 3.5" Diskette Drive
- Two 12-Cell Lithium Ion Batteries & AC Pack
- NTSC/PAL Video Input & Output
- 5GB Hard Drive
- Premium 16-Bit Wavetable Sound & Stereo Speakers
- PCMCIA Modem with x2 Technology**
- 88-Key MS Windows 95 Keyboard
- EZ Pad Pointing Device
- Deluxe Carrying Case
- MS Windows 95
- MS Office 97, Small Business Edition plus Encarta 97
- Gateway Gold Service & Support for Portable PCs

**$5699** As low as× $198/mo.

*(See portables page for more detailed configuration.)*

**GSA Schedule #GS-35F-4565G**

Toll Free from Canada
800-846-3609

Toll Free from Puerto Rico
800-846-3613

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TDD 800-846-1778 • Fax 605-232-2023 • FaxBack 800-846-4526 • International FaxBack Access 605-232-2561
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**Circle 221 on reader service card**

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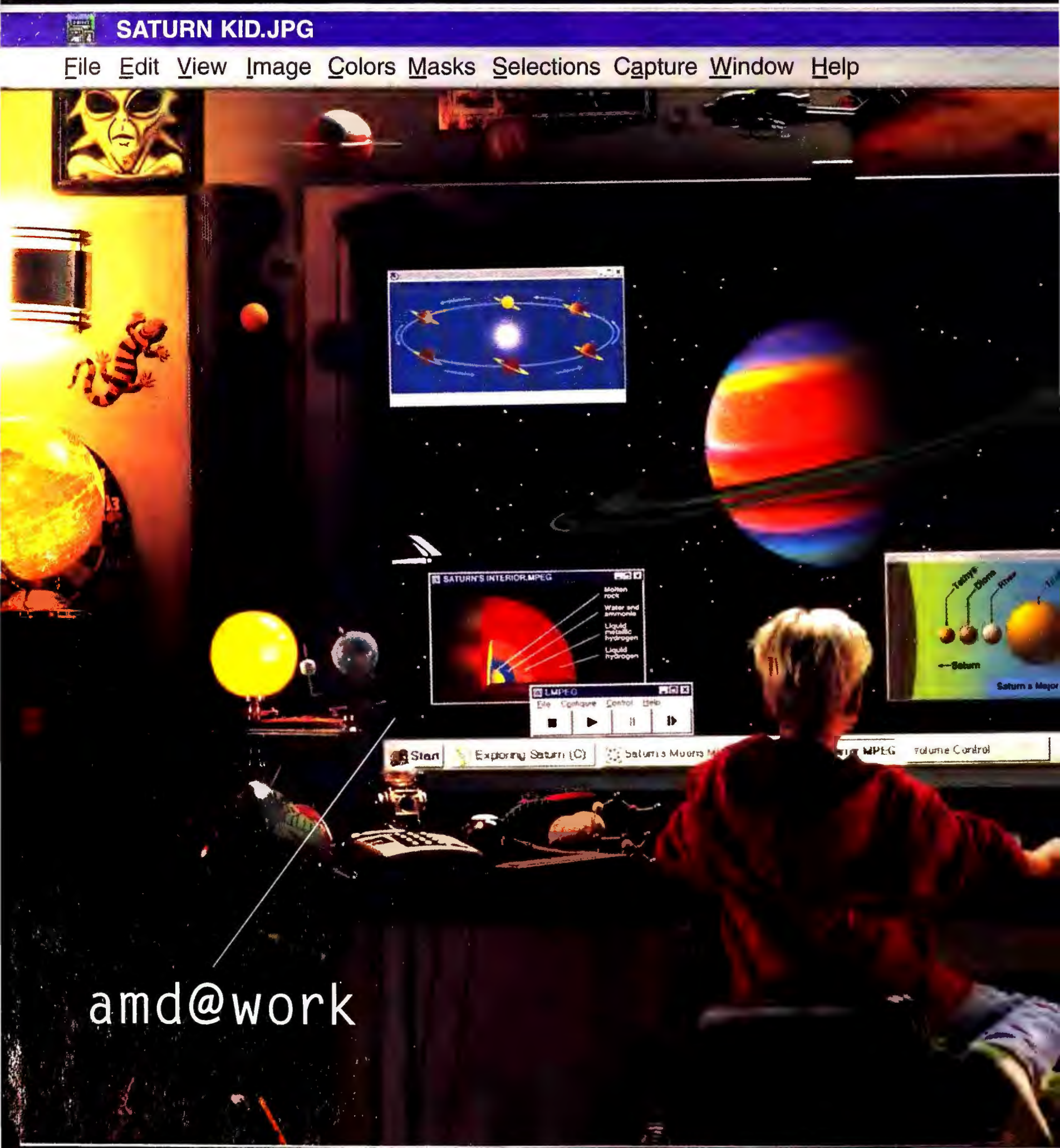


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**Circle 16 on reader service card**

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**Top 20 Budget Desktops, May '97**

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**PC MAGAZINE EDITORS' CHOICE**

**June '97**

**PCComputing**

**5-Star Rating June '97**

*"Loaded to the nines; outstanding price; stunning performance."*

**COMPUTER SHOPPER**

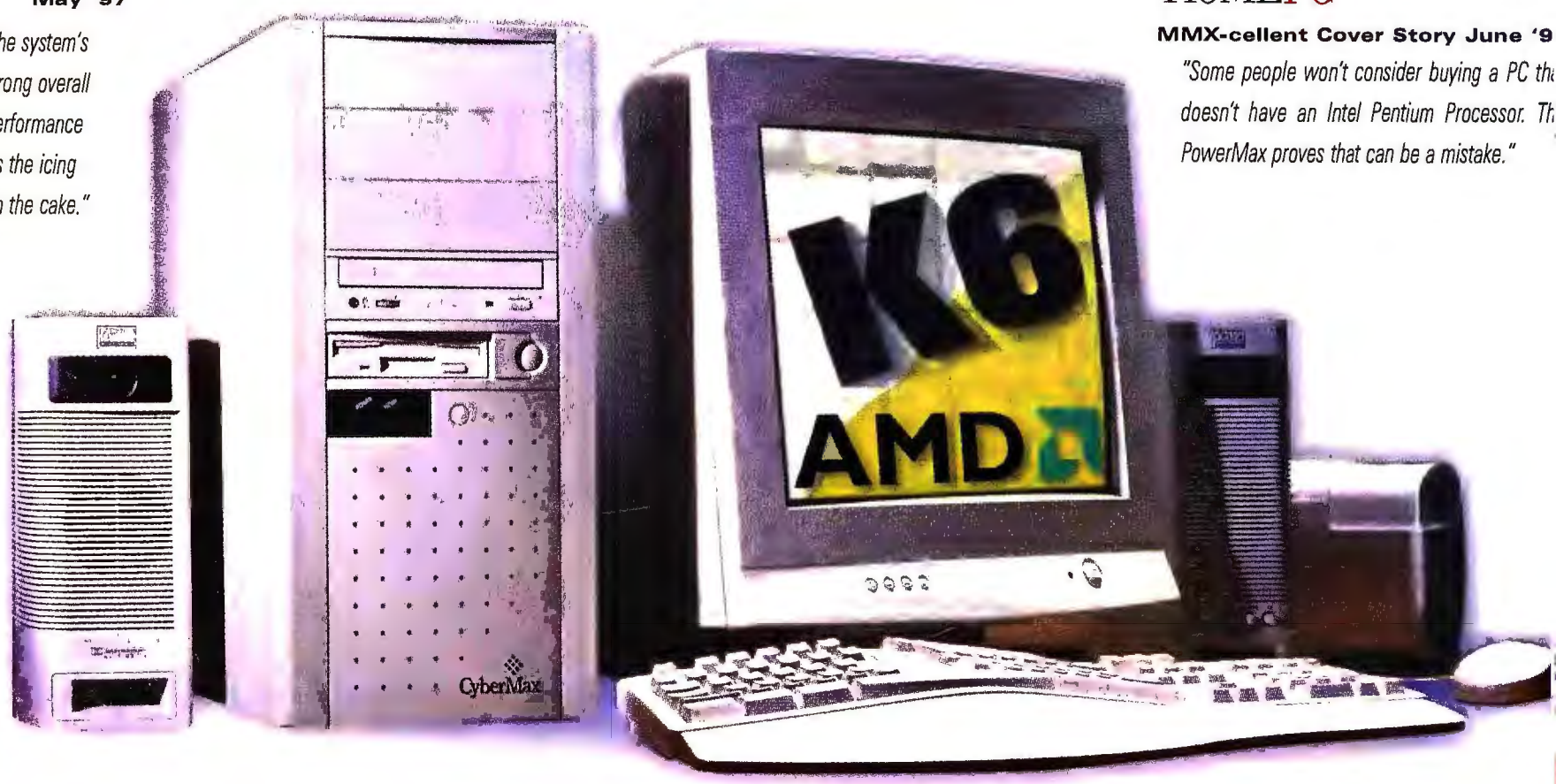
**May '97**

*"The system's strong overall performance is the icing on the cake."*

**HOMEPC**

**MMX-cellent Cover Story June '9**

*"Some people won't consider buying a PC tha doesn't have an Intel Pentium Processor. Th PowerMax proves that can be a mistake."*

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**PC Magazine — Editor's ChoiceAward — June 1997**

DO906 **$2499**

## BusinessMax A19 233MMX

Business Lease.... $87

- AMD-K6™ 233MHz Processor w/ MMX™ Technology
- 64MB SDRAM Memory
- Matrox MGA Millennium Video Card w/4MB WRAM
- 6.0GB Hard Drive
- 24x Max CD-ROM, Ensoniq Wavetable Sound Card
- K56flex™ Protocol Fx/Mdm w/Voicemail & Speakerphone
- 17" (16.1"VA) 1600x1200 Color Monitor
- Altec Lansing ACS45 Powercube Speakers & Subwoofer
- MS Office 97 Small Business Edition

K6-200.....$2399
Upgrade to 21" monitor..... $699

DO904 **$1999**

## System of the Month!

Business Lease.... $70

- AMD-K6™ 233MHz Processor w/ MMX™ Technology
- 32MB EDO RAM Memory
- STB Velocity 3D Video Card w/4MB VRAM
- 5.0GB Hard Drive
- 24x Max CD-ROM, Ensoniq Wavetable Sound Card
- K56flex™ Protocol Fx/Mdm w/Voicemail & Speakerphone
- 17" (15.8"VA) 1280x1024 Color Monitor
- Altec Lansing ACS45 Powercube Speakers & Subwoofer
- Corel WordPerfect Suite 8 w/Max's Software Toolbox

K6-200.....$1899
Upgrade to ACS400 w/ 250 sub.....$99

DO902 **$1499**

## PowerMax A2 200 MMX

Business Lease.... $52

- AMD-K6™ 200MHz Processor w/ MMX™ Technology
- 32MB EDO RAM Memory
- STB Velocity 3D Video Card w/4MB VRAM
- 3.2GB Hard Drive
- 16x Max CD-ROM, Ensoniq Wavetable Sound Card
- K56flex™ Protocol Fx/Mdm w/Voicemail & Speakerphone
- 15" (13.8"VA) 1024x768 Color Monitor
- Altec Lansing ACS-90 Speakers
- Corel WordPerfect Suite 8 w/Max's Software Toolbox

K6-233.....$1599
Upgrade to 6.0GB HDD.....$149

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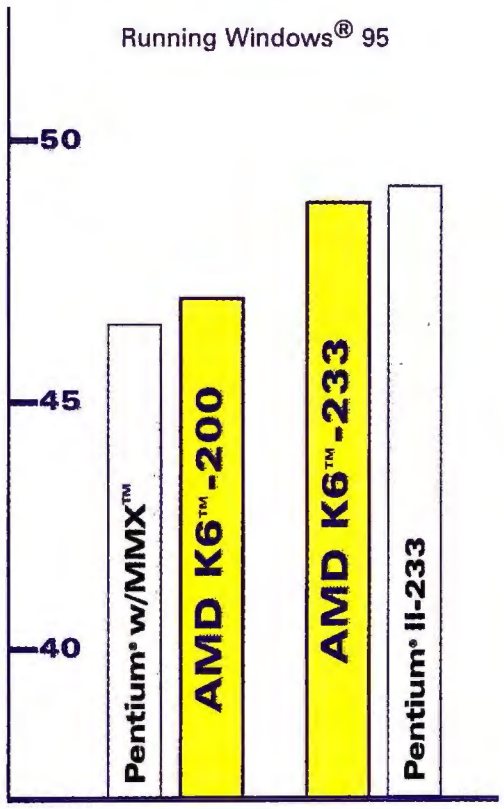
Running Windows® 95




DO905 **$2199**

## BusinessMax A18 233MMX

Business Lease.... $77

- AMD-K6™ 233MHz Processor w/ MMX™ Technology
- 32MB SDRAM Memory
- Matrox Mystique 3D Video Card w/4MB SGRAM
- 6.0GB Hard Drive
- 24x Max CD-ROM, Ensoniq Wavetable Sound Card
- K56flex™ Protocol Fx/Mdm w/Voicemail & Speakerphone
- 17" (15.8"VA) 1280x1024 Color Monitor
- Altec Lansing ACS45 Powercube Speakers & Subwoofer
- MS Office Small Business Edition

K6-200.....$2099
Add 3.2GB Tape Backup.....$189

DO903 **$1799**

## PowerMax A3 200 MMX

Business Lease.... $63

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- STB Velocity 3D Video Card w/4MB VRAM
- 4.0GB Hard Drive
- 16x Max CD-ROM, Ensoniq Wavetable Sound Card
- K56flex™ Protocol Fx/Mdm w/Voicemail & Speakerphone
- 17" (15.8"VA) 1280x1024 Color Monitor
- Altec Lansing ACS45 Powercube Speakers & Subwoofer
- Corel WordPerfect Suite 8 w/Max's Software Toolbox

K6-233.....$1899
Upgrade to 24x Max CD-ROM.....$49

DO901 **$1349**

## PowerMax A1 200 MMX

Business Lease.... $47

- AMD-K6™ 200MHz Processor w/ MMX™ Technology
- 16MB EDO RAM Memory
- STB Velocity 3D Video Card w/4MB VRAM
- 2.0GB Hard Drive
- 16x CD-ROM, Ensoniq Wavetable Sound Card
- 33.6Kbps Fax/Modem w/Voice Mail
- 15" (13.8"VA) 1024x768 Color Monitor
- Altec Lansing ACS-90 Speakers
- Corel WordPerfect Suite 8 w/Max's Software Toolbox

K6-166.....$1249
Upgrade to 17" monitor.....$199

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**Circle 74 on reader service card**

# NEW PRODUCTS

## New Digital, USA Flex Systems: Intel Is Not Inside

**USA FLEX HOME PC (left) doesn't shine; Digital's basic business PC (right) is worth a look.**

**DESKTOP**

IT'S A BUYERS market right now for those seeking a low-cost PC: Alternatives to Intel's Pentium MMX processor have hit the marketplace, and price competition is keen. If you need a fast system to run business applications, two new PCs from Digital and USA Flex tempt with low prices. These two companies are among the first to sell computers based on the AMD K6 and Cyrix 6x86MX processors, respectively. But be sure that you know just what you're getting: These machines are not for multimedia mavens.

The no-frills $1670 **Digital Venturis FX-2 6166K** makes a speedy choice for business applications. The $2399 **USA Flex 6x86MX-PR200** packs plenty of multimedia components but isn't a real bargain for the home and small office. In *PC World* tests, both systems more than hold their own when running standard applications, compared to similarly configured Pentium MMX machines. But neither system shines in multimedia performance tests.

The Venturis, Digital's first K6-based system, meets its goal to be an affordable entry-level business machine. The basic configuration provides you with 16MB of RAM, 256K of secondary cache, a 15-inch monitor, and a 16X CD-ROM drive. It comes with Windows 3.*x* or 95 and runs on the 166-MHz K6 chip.

This well-designed computer runs everyday business applications quickly—fast enough to beat the average comparable Pentium MMX-166 system on our PC WorldBench test suite by 10 percent. But clearly you're paying for the Digital brand name. For $129 more, you can buy an even speedier Pentium MMX-200 featuring twice as much RAM (32MB), plus a 3.2GB hard disk, a 17-inch monitor, full multimedia, and a modem from ProGen, a lesser-known PC maker. (For more information on this system, see the Budget Desktops Top 20 in this issue.)

While the AMD chip includes MMX support, the Digital system is not well suited to run the applications that benefit most from MMX—games, MPEG, image editing software, and the like. The Venturis has a small hard drive

**Digital Venturis FX-2 6166K**

**PRO:** Fast, reliable basic business system.

**CON:** Poor MMX performance.

**VALUE:** A good under-$2000 choice.

**Digital**

800/772-9332

www.windows.digital.com

Street price: $1670

READER SERVICE NO. 699

**USA Flex 6x86MX-PR200**

**PRO:** Loaded small office or home system.

**CON:** Rock-bottom performance on MMX tests.

**VALUE:** Not a lot cheaper than loaded Pentium MMX-200 PCs.

**USA Flex**

800/933-0249

www.usaflex.com

Street price: $2399

READER SERVICE NO. 700

PHOTOGRAPHS: KEVIN CANDLAND

(1.2GB) and minimal video memory (1MB of video SDRAM standard; our system came with an added 1MB of video SDRAM). This PC produced average results in Adobe Photoshop tests, and among the slowest results we've seen to date in the Macromedia Director and Ray Dream Studio tests.

For top multimedia performance, you should consider $3000-range Pentium II-266 systems.

If you'd like a less expensive PC that still does well on multimedia, Pentium MMX-233 systems are selling for as little as $2449. Or, consider upcoming Digital systems with the 233-MHz version of the K6. (Units were not ready for testing at press time.)

Based on *PC World* testing of other early systems, this chip provides speeds on business applications similar to those of Pentium MMX-233 and Pentium II-233 PCs, for less money. Digital plans to ship the Venturis with 200- and 233-MHz K6 processors by late July. Street prices will range from $1670 to $2016 for basic configurations.

### CYRIX TAKES ITS SHOT

CYRIX also hopes to give Intel Pentium MMX machines a run for their money, with the Cyrix 6x86MX processor (though at press time Cyrix had yet to sign on any big-name PC vendors to use the chip). We tested the $2399 USA Flex 6x86MX-PR200, which is priced on par with similarly loaded Pentium MMX-200 multimedia PCs. It runs a bit faster than the average Pentium MMX-200 on business applications. But contrary to our expectations, it's not a big bargain compared to them.

The preproduction unit we tested had 32MB of RAM, a 4GB hard drive, a 17-inch monitor, a 56-kbps 3Com/U.S. Robotics internal modem, a 16X CD-ROM drive, sound support, and speakers. The shipping configuration will have a 20X CD-ROM drive.

The system's PC WorldBench score for business applications fell between scores for comparable Pentium MMX-200 and Pentium MMX-233 systems.

However, the USA Flex did very poorly on MMX benchmarks. It produced the worst results to date for any MMX-capable system in the Director and Photoshop tests. Running well behind typical Pentium MMX-200 systems, this machine is a poor choice for applications that rely heavily on MMX technology.

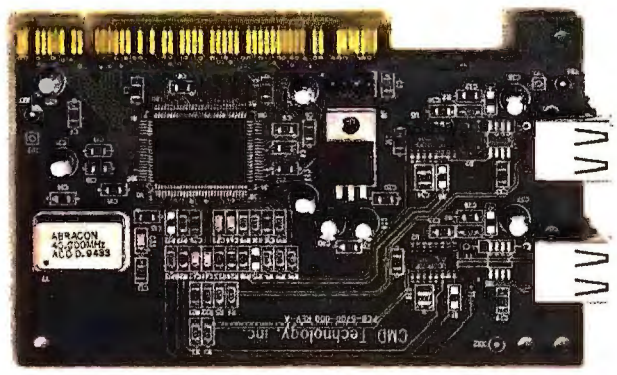
—*Susan Silvius*

Posted by
Yardena Arar and
Laurianne McLaughlin

# Add USB Ports to Your Old PC

**USB CARD**

A NEW ADD-IN CARD lets you add Universal Serial Bus ports to older PCs. USB technology is far from perfect right now (see this month's *Top of the News*) but promises advantages: Plug and Play installation of peripherals; faster data transfer than via serial or parallel ports; the ability to daisy-chain numerous devices, such as keyboards and modems, to one USB port; and the ability to hot-swap devices without rebooting.



**PORT CALL: The CSA-6700 add-in card provides two USB ports but won't work with all Win 95 PCs.**

CMD Technology's $59 **CSA-6700** plugs into a PCI slot on a Pentium PC motherboard and provides two USB ports (useful since not every USB device has the necessary connector to daisy-chain to another).

There's one big catch to using the CSA-6700: For now, it works only on PCs with Windows 95 OEM Service Release 2.1 or later, the versions currently shipping on new PCs. (CMD says later this year, some USB peripheral makers will ship products with drivers that let the card work with older versions of Win 95. But you'll have to wait and see.) Microsoft will add USB support in Memphis, the next release of Windows 95 expected in 1998.

Still, if you have a compatible computer and are dying to have a USB port, the CSA-6700 card is the first of its kind. I had no trouble installing a preproduction version in a Pentium-200 system, using the default settings.

One other option: Your PC may have a USB-enabled motherboard that's upgradable with a plug-in USB connector. Check with your computer seller: Depending on the board, this costs $10 to $100.

—*Richard Jantz* ▶

**CSA-6700**

**PRO:** Gives a PC two USB ports.

**CON:** Needs Win 95 OSR2.1 or later.

**VALUE:** Okay choice if you're dying for USB peripherals, but USB technology is not perfect yet.

**CMD Technology Inc.**
800/426-3832
www.cmd.com
Street price: $59

READER SERVICE NO. 701

CONTENTS

94 Digital Venturis FX-2 6166K, USA Flex 6x86MX-PR200 PCs
95 CSA-6700 add-in card
96 Cross iPen, Gateway 2000 G6-266XL PC
100 Toshiba PDR-2 digital camera, eShare Reunion
102 TView PresoCard, DynaTek DVD471TII kit, ByHand
106 Voice Pilot 3.0 for Windows 95, Business Traveler's Suite, Lotus Organizer 97 GS
108 Visioneer, Microtek, and Plustek color scanners
112 PC-cillin HouseCall, DiskMapper with Office 97 Zoom
119 Kai's Photo Soap, Mind Path PocketPoint Remote Control, pcAnywhere32 version 8.0
124 Decisioneering Analytica, UnInstaller 4.5, Hyundai DeluxScan HL7870s
126 Safeguard Interactive Backup and Atrieva, Secure iQ
128 Pictra Album, CD Traveler 820
133 Mitsubishi DJ-1000
134 EarthLink Website Inc.

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# Grand Gadget: A Cross Pen for Your PC

INPUT DEVICE

REMEMBER THAT Cross pen you got for high school graduation? Meet its sophisticated sibling, the **iPen.** A.T. Cross has created this new PC input device, an electronic pen that includes a companion mousepadlike tablet. The iPen not only does everything a mouse can, but also lets you sign and mark up on-screen documents within certain programs.

**IT'S A PEN. IT'S A MOUSE: The Cross iPen is both. This pen and desktop tablet let you navigate on screen easily.**

Due in September for a street price of $149, the iPen isn't cheap, but it is unique. A bundle with Symantec's WinFax Pro software costs $199.

The iPen certainly looks executive: It resembles a traditional Cross pen, including the gold touches. The pen's synthetic ruby tip lets you write on the included gray desktop tablet, which resembles a mouse pad (it's 6.5 by 8.5 inches). The pen runs on one AAAA battery, and communicates with the tablet wirelessly using radio frequency technology. The tablet connects to your PC's serial port; your keyboard stays attached to its regular port. (Your mouse stays attached as well; you can use it at any time.)

For left mouse clicks, you tap the pen once or twice on the desktop tablet. For right mouse button features, you press a tiny button near the top of the pen. The preproduction unit I used for several days worked well for navigating file menus, minimizing documents, and copying and pasting.

As for writing, it took me about 15 minutes to become adept at printing words and signing my name. The tablet's surface compares to matte brochure paper, on which you must bear down a bit.

To mark up an on-screen document, you write on the corresponding area of the tablet: For a signature in the lower right corner of the screen, you sign on the lower right corner of the tablet.

The drawback: Markup features don't work with all Windows 95 programs, notably Microsoft Word (Cross is working on a module to add this capability). However, you can scribble on documents created in WinFax Pro; Visioneer PaperPort Deluxe and other imaging programs; and most desktop publishing and graphics programs, such as Corel Draw, Adobe Illustrator, and Microsoft Publisher. The markup features also work with Adobe Acrobat.

In November, Cross plans to introduce a $249 version of the iPen that bundles handwriting recognition software codeveloped with IBM.

*—Laurianne McLaughlin*

**Cross iPen**

**PRO:** Sleek input device is comfy and convenient.

**CON:** Markup features don't work with all documents.

**VALUE:** A bit pricey, but well done.

**A.T. Cross**

401/333-1200

www.cross-pcg.com

Street price: $149, with Symantec WinFax Pro $199

READER SERVICE NO. 702

# Fit to Be Envied: Gateway's Loaded Home PC

DESKTOP

GATEWAY 2000's newly released **G6-266XL** comes in one size only—extra large. The $5128 street price will keep the G6-266XL off *PC World*'s Top 5 Home PCs chart, but if you can afford it, this system makes a potent combination of home PC and entertainment center.

High-performance components—a Pentium II-266 CPU, a whopping 64MB of RAM, and a 9GB SCSI hard drive—combine to give the G6-266XL a PC WorldBench performance score of 263, one of the fastest we've ever seen. With a 64-bit 3-D graphics card and a 21-inch monitor, this system could also serve as a top-notch image editing and desktop publishing workstation. There's also a 56-kbps Telepath modem (made by 3Com/U.S. Robotics) and an 8GB SCSI internal tape backup drive.

The G6-266XL provides you with a sophisticated blend of multimedia hardware, including a Toshiba DVD-ROM drive powered by a media processor board. With wavetable-equipped sound and a speaker set the size of a Buick, gaming on this system is a whole lot of fun.

Gateway earned a fair system reliability rating in the latest *PC World* Reliability and Service report, and as if on cue, our system produced a few minor problems. With no DOS drivers installed for the mouse and DVD drive, you'll have to run DOS games under Windows 95. That's not a big deal, but our PC froze occasionally in that situation.

Still, the G6-266XL is a top-of-the-line computer, with a large supply of RAM, oversize monitor, and huge hard drive. The word *upgrade* won't need to be uttered in your house any time soon.

*—Susan Silvius* ▶

**Gateway 2000 G6-266XL**

**PRO:** Fast, huge hard drive and monitor, DVD-ROM.

**CON:** Some problems with DOS games.

**VALUE:** A treat, if you can afford it.

**Gateway 2000**

800/846-2000

www.gw2k.com

Street price: $5128

READER SERVICE NO. 703

# Robert Schienberg plans hostile takeovers for a living. But at least his monitor is user friendly.

When Robert Schienberg plans a corporate takeover, he has a lot to think about. Profit and loss statements, price/earnings ratios, product potential, and much more.

But the one thing he doesn't have to think about is the monitor he uses to do it all on. The Hansol 700P (15.7" viewable). Its .26mm dot pitch really helps him see clearly. While its quick set-up, drop down control panel with 20 on-screen settings, modern design, reliability, and simplicity of operation, can't help but make his life a little bit easier.

Designed for Microsoft Windows 95

So whether you're planning a takeover or a makeover, downsizing or upgrading, get the monitor that treats you like a friend.

After all, you never know when you may need one. Especially if you're Robert Schienberg.

Ideas that Shine

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Michael Johnson, Double Olympic Gold Medalist

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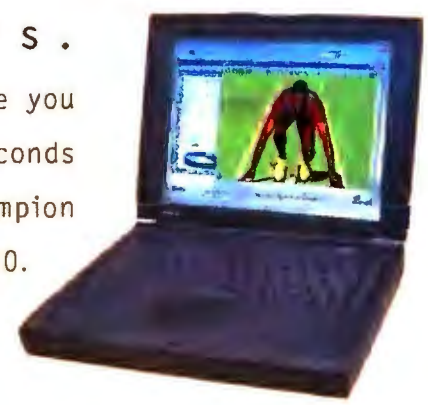

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# Toshiba PDR-2: A Digital Camera for the Road

DIGITAL CAMERA

SIZEWISE, Toshiba's new **PDR-2** trumps most tiny digital cameras. No larger than a deck of cards, the $499 PDR-2 is as easy to use as small competitors such as the $399 Casio QV-10Aplus and the $199 Kodak DC20. The Toshiba produces better-quality images than the Casio or the Kodak. However, in my tests of a preproduction model, the Toshiba provided slightly inferior image quality in some situations (namely indoors, low light, and shadowed light) compared to the $399 Epson PhotoPC and the $599 Olympus D-200L digital cameras, which we recommend if quality is your top concern.

Toshiba's 5.3-ounce camera is designed for use with a notebook in the field: Its built-in PC Card plugs directly into a corresponding slot.

You can also use the camera with a desktop system that has a PC Card reader. And Toshiba plans to offer an optional adapter that allows any PC to transfer images from the PDR-2's removable memory cards via a floppy drive. The adapter wasn't available for this review, and its price had not been set.

The PDR-2 has a fixed-focus 50-mm lens and captures 24 to 48 images at standard 640 by 480 resolution, depending upon which of the two compression modes you use. The camera uses two 2MB stamp-size memory cards. (Optional 4MB cards double image capacity.)

**SMALL SIZE and a bit of a compromise: Toshiba's PDR-2 camera is tiny but lacks a flash.**

Note there's no LCD screen for previewing images, since you're expected to view pictures on your notebook. And there's no built-in flash and no way to add one. The PDR-2 makes sense if you want a tiny camera that stores many pictures, but it doesn't offer perfect images in all lighting.

*—Richard Jantz*

**Toshiba PDR-2**

**PRO:** Tiny digital camera connects to notebook via built-in PC Card.

**CON:** Pricey, no built-in flash.

**VALUE:** Nifty design, but not the best-quality images we've seen.

**Toshiba America Information Systems Inc.**

800/288-1354

www.toshiba.com/taisisd/dsc

Street price: $499

READER SERVICE NO. 704

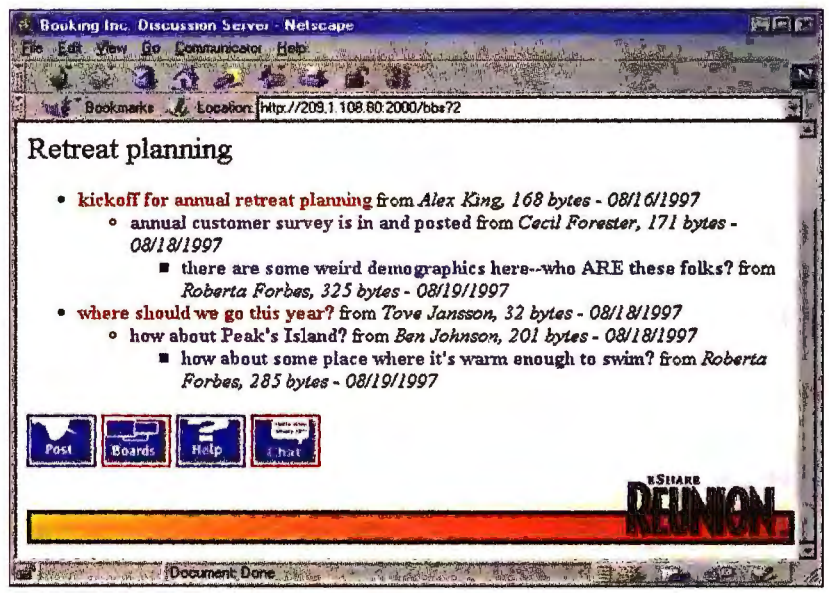
# Create Online Bulletin Boards and Chats

WEB TOOL

"FREEDOM OF THE press belongs to those who own one," A. J. Liebling wrote half a century ago. Today freedom of the press belongs to anyone who owns a Web server. You can go the old newspaper magnates one better—by throwing open the doors to electronic meetings on your PC.

If you have eShare's **Reunion,** anyone who browses the Web can join online bulletin boards and chat rooms that you host. This $79 software package for Windows 95 and Windows NT supports up to 15 people logged on at the same time. (A free version, available until mid-September, supports 5 concurrent users.) Reunion works for anyone on a TCP/IP network or on the Internet, depending on how you set it up. You can use it for discussions within your department or with outside colleagues, or for tech support or chats.

Bulletin boards (also known as newsgroups) and chat rooms aren't new; what is new is software that lets you set them up without fumbling with UNIX or modem banks.




**EASY REUNION: eShare's Reunion software lets you host chats and browsable bulletin boards. It's affordable and easy to set up.**

I installed a beta version of Reunion in less than 10 minutes. The only tweak required was changing the HTTP port to work on our intranet.

You administrate Reunion through an easy, tabbed interface. You can support either Java-enabled or plain HTML browsers and deny or allow user access as you wish.

Most Web bulletin boards look needlessly complicated, but not Reunion. A drawback for intranets: You can't directly attach files to messages.

Reunion is an affordable tool for families and community groups, unlike most of its pricey competitors.

*—Eric Bender* ▶

**Reunion**

**PRO:** Run bulletin boards and chat rooms from your own PC.

**CON:** Can't post file attachments to bulletin boards.

**VALUE:** Far easier and more affordable than most alternatives.

**eShare**

516/864-4700

www.eshare.com

List price: $79 for 15 users, version for 5 concurrent users free until mid-September

READER SERVICE NO. 705

THE DOCUMENT COMPANY
XEROX

# Hey, wait a minute, you could easily pay that much for black & white.

The Xerox DocuPrint C55 is the first fully featured color laser printer at a breakthrough price. Now, networked offices can truly afford to add the impact of color to any document.

Besides the price, many of the innovative features offered in the DocuPrint C55 are also breakthroughs. With an embedded Web server, you can remotely access and manage printers via the Internet. And our exclusive Fax Friendly™ option converts colors to patterns of black & white, so now they're readable when faxed.

Even the footprint of the Xerox DocuPrint C55 is a breakthrough. It's the smallest printer of its kind–up to 40% smaller than comparable color laser printers. It prints at 3 pages per minute for color, and 12 for black & white. And it prints at 600 dpi, so you can get world-class performance.

*Base model, estimated street price

The DocuPrint C55 is just one of a full line of network laser printers from Xerox, available through your local computer reseller.

Considering the DocuPrint C55's very affordable price and ingenious features, now's the time to call Xerox at 1-800-34-XEROX, ext. 2991. Or you can visit our Web site at www.xerox.networkprinters.com.

THE DOCUMENT COMPANY

XEROX

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**Circle 257 on reader service card**

# Card Links Notebooks to Big-Screen TVs

**PRESENTATIONS**

DESKTOP PC–TO-TV video conversion systems, which display computer output on large television screens, have long been the envy of traveling presenters. Notebook PCs held no slot for the necessary hardware card. But now Focus Enhancements offers a PC Card scan converter designed for notebooks: the $199 **TView PresoCard.** During my test of a shipping version with a Toshiba Satellite T2155CDS notebook, the PresoCard performed quite well.

The simple-to-install PresoCard comes with all necessary cables and software, plus documentation that clearly explains setup (for either Windows 3.1 or Win 95 PCs). The PresoCard plugs into your notebook's Type II or Type III PC Card slot and connects via cable to both your notebook's VGA port and your television's S-Video or Composite Video port. The cable also has a VGA pass-through port, in case you want to keep the notebook attached to an external monitor during your presentation.

The product bundles software that lets you use your mouse (or other notebook pointing device) as a highlighter pen to mark up your presentation on the fly.

On the downside, this version of the PresoCard supports only up to 640 by 480 resolution; be aware of that as you create your presentations.

Additionally, I had a slight "overscan" problem. The edges of a full-screen presentation were cut off when viewed on the TV; this cutoff area was about one-quarter to one-half an inch wide on the TV. (With some newer TVs you won't have this problem.) You could also modify presentation slides so that information doesn't run to the very edge of the notebook screen.

*—Dean Andrews*

**TView PresoCard**

**PRO:** Easy setup, includes needed cables and highlighter software.

**CON:** May need to modify existing presentation slides.

**VALUE:** Presentation tool that's worth the money.

**Focus Enhancements Inc.**
800/538-8865
www.focusinfo.com
Street price: $199

READER SERVICE NO. 706

## QUICK TAKES

### Computer Calligraphy

IF YOU LOVE the look of pen-and-ink handwriting, get your mitts on Sagittal Software's ByHand. This simple shareware word processor turns your typing into scripted characters that connect smoothly. The quality surpasses that of other script fonts we've seen. The package comes with ten formal fonts; you can also create a password-protected font based on your own handwriting using a pen tablet or mouse (the latter is awkward). Customize fonts by choosing from different writing instruments (ballpoint, quill, or felt-tip pen) and changing character size, ink color, and thickness of the stroke. Laser printed, the writing looked real. It's perfect for invitations. List price is $49.95. Sagittal Software; 800/800-5555; www.sagittal.com.

READER SERVICE NO. 707

*—Yardena Arar*

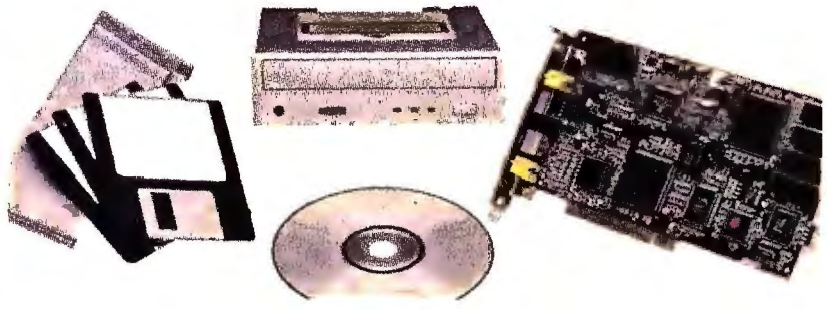
# Dying for DVD? DynaTek Has Early Upgrade Kit

**DVD-ROM KIT**

DYNATEK'S new **DVD471TII,** one of the first kits for adding a DVD-ROM drive to your PC, worked fine in our tests of a shipping model. But at a $579 street price it's not cheap, and at press time few DVD-ROM titles were shipping. The big wave is expected this fall.

The DVD471TII kit provides Toshiba's SD-M002 DVD-ROM drive and a CineMaster DVD playback card, which supports MPEG-2 video and Dolby AC-3 sound. You also receive six DVD titles.

Be aware of a few negatives as you consider the first DVD-ROM kits, including this one. Toshiba's DVD-ROM drive doesn't read CD-Recordable discs, though today's CD-ROM drives can, and so can some upcoming DVD-ROM drives. Also, like other early DVD-ROM drives, the Toshiba runs only about 8X speed while spinning CD-ROMs; CD-ROM speed will likely increase to 20X in the next round of DVD-ROM drives.



**FIRST MAY NOT BE BEST: DynaTek's DVD471TII is an easy way to add DVD to your PC, but there are reasons to wait.**

I had little trouble installing the kit, which requires at least a Pentium-133 PC with Windows 95 and 16MB of RAM. The DVD-ROM drive is easy to plug in and is recognized under Windows 95 Plug and Play. For the CineMaster card, you need one bus-mastering PCI slot. Check your system's documentation on this and your graphics card: CineMaster's documentation lists eight compatible graphics chip sets.

If you buy some additional cables, you can connect the PC to your television to watch DVD movies. You'll still need to control them from your PC.

*—Dean Andrews* ▶

**DVD471TII**

**PRO:** DVD-ROM kit that's easy to install.

**CON:** Doesn't read CD-R discs; low-end CD-ROM performance.

**VALUE:** Not cheap, and you may want to wait.

**DynaTek Automation Systems**
800/461-0052
www.dynatek.ca
Street price: $579

READER SERVICE NO. 708

# A LAN COULD CARE LESS IF YOU'RE UNDERSTAFFED, OVERWORKED, OR EVEN EMPLOYED.

***We can help.*** *A server isn't here to hold your hand. It's here to perform millions of operations per second. That's why at AST,® we're here to help you every step of the way. With management software that notifies you if there's a problem. And with a dedicated server support staff that's ready to solve those problems 24 hours a day, 7 days a week. We even have an option that includes on-site technician response within 4 hours. Because, sometimes, a helping hand is exactly what you need. For more information about AST Manhattan™ servers with Intel® Pentium® Pro processor, call* 1-800-945-2278.

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PENTIUM•PRO PROCESSOR

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# "They thought that my new
# just a big surge suppresso

**1 User-replaceable Batteries**
*Cells can be easily swapped out, saving time and expense: no need to return to the factory for service. Batteries last 3-6 years under normal usage.*

**2 Integrates the Security of a Surge Suppressor with the Power of a UPS**
*Back-UPS Office provides enough outlets to protect your customers' entire system. Six outlets guard your hardware with full time surge protection. Three of the six provide instantaneous battery backup to keep your system from crashing in the event of a brownout or blackout.*

**3 Battery Replacement Warning Prevents Downtime**
*An LED signals when the Back-UPS Office's internal self-test finds the battery near the end of its life. Users have 6-8 weeks warning.*

**4 Site-Wiring Fault Indicator**
*Without a proper ground, most surge protection is useless. Back-UPS Office alerts you to wiring problems such as missing ground and reversed polarity, two common wiring mistakes which otherwise would require an electrician's visit to diagnose.*

**5 Convenient BlockSafe™ Outlet Spacing**
*Back-UPS Office's outlets are spaced to accommodate all size plugs, including large transformer blocks. No need to sacrifice the use of any outlets to accommodate large block plugs.*

**6 Circuit breaker**
*Provides protection in the event of an overload or short circuit; no fuse, no hassle.*

*Under the Lifetime Equipment Protection policy, APC will repair or replace connected equipment damaged by surges, including lightning strikes, up to $25,000. See policy for details.*

*APC has won more awards for reliability than all other UPS vendors combined.*

# nultipath Back-UPS® Office™ was - then the lights went out."

Back-UPS Office's compact design installs easily on desktop, floor, or mounts to wall. Its ninety-degree plug fits flush against the wall.

**7 Recessed Master On/Off Switch**
*Prevents accidental shut-offs and conveniently controls power to the entire connected system.*

**nternet Ready Fax/Modem Protection**

*Back-UPS Office's built-in phone line/10 Base-T network cable surge protection prevents data ine surges from damaging internal and external nodems, motherboards, input/output cards, and other system components.*

**vailable at:** BEST Insight.

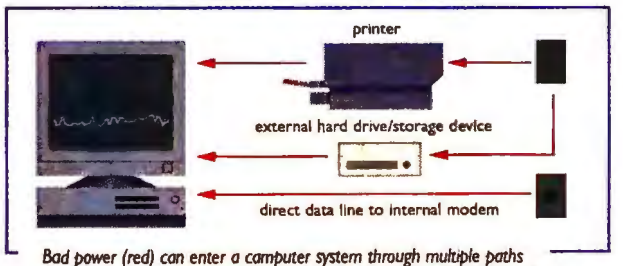
Power problems attack computers relentlessly. Did you know that you have a better chance of winning the lottery than of escaping power problems? They are the single largest cause of computer data loss and hardware damage.

Back-UPS Office provides clean, reliable power for your entire system. Instantaneous battery backup ensures uninterrupted operation of your CPU, monitor and an external storage device. Full-time surge suppression and site-wiring fault protection spreads a true multipath safety net under any remaining peripherals, like modems, printers, faxes and phone systems. Back-UPS Office also provides convenient BlockSafe™ outlet spacing to handle all size plugs – even large transformer blocks.

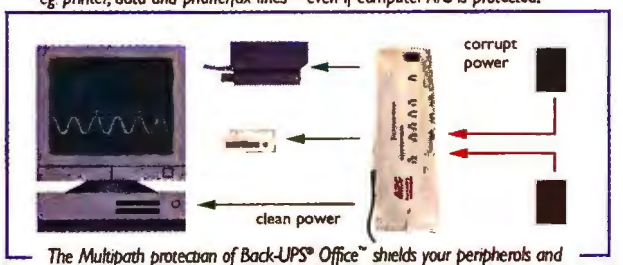
## Unique multipath protection keeps your PC and data safe

Plugging phone lines or other peripherals into your computer increases your vulnerability to power problems. When a surge hits an unprotected peripheral, it can blaze down serial cables and datalines, and toast your expensive PC. Multiple peripherals and datalines to and from your system are vital, but dangerous. Without them you can't do your job. If a power sag locks your keyboard or reboots your computer before you've saved work, or while you are downloading from the Internet, you can lose data, time and money. Don't spend another late night at the office to meet your deadline. Join over 8,000,000 computer users worldwide who prefer APC to protect hardware and data.

**MULTIPATH MEANS TOTAL POWER PROTECTION**




*Bad power (red) can enter a computer system through multiple paths – eg. printer, data and phone/fax lines – even if computer A/C is protected.*




*The Multipath protection of Back-UPS® Office™ shields your peripherals and guards your computer from bad power on every path, providing clean, safe power (green), to your entire system.*

## Back-UPS Office protects your entire system

Until now, protection for your entire system required several devices. Back-UPS Office means clean, safe power to every peripheral, and instant battery backup to keep your system from crashing. It means protection for less by integrating the security of a surge suppressor with the power of a UPS, guaranteed up to $25,000.

**Only Back-UPS Office provides single device Multipath protection for all your equipment**

| The Multipath Power Protection Advantage | Traditional Surge Protector | Traditional UPS | Back-UPS Office |
|---|---|---|---|
| Protected Paths | | | |
| AC | • | • | • |
| Data | | | • |
| Phone | | | • |
| Total Outlets | 7 | 2 | 4 |
| Number of Block Outlets | | | 2 |
| Protection from | | | |
| Surges | • | • | • |
| Spikes | • | • | • |
| Blackouts | | • | • |
| Brownouts | | • | • |
| Overvoltage | | | • |
| Typical Runtime in Minutes | | | |
| with Pentium 100 w/15" monitor | | 10 | 10 |
| Battery backup for | | | |
| PC | | • | • |
| Monitor | | • | • |
| Storage Devices/Zip Drives | | | • |
| Full-time surge protection for | | | |
| Fax/Modem | • | | • |
| Laser Printer | • | | • |
| Speakers | • | | • |
| Dataline protection for | | | |
| Internet or Network | | | • |

**$30 REBATE**

**With the Purchase of a Back-UPS Office between August 1 and October 31, 1997.**

Simply complete the attached redemption card and send along with an original UPC symbol from an APC Back-UPS Office box and the original store receipt with Back-UPS Office circled, and get a $30 Rebate.

See redemption card for more information. If redemption card is missing please call our **PowerFax** line at **800-347-FAXX** and request literature **#1301.** Or, download the redemption card from our Web Site at: **http://www.apcc.com/english/promo/promo025.htm.** You can also fax the coupon below to APC at **(401) 788-2797.**

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Circle 45 on reader service card

# Talk Is Cheap With Voice Pilot 3.0 PIM

P I M

A NEW personal information manager, **Voice Pilot 3.0 for Windows 95,** claims that it can help you chat your way to an organized life. Voice Pilot Technologies designed it to be controlled by spoken commands. Sounds great—but based on my test of a shipping copy, I'd say don't disconnect your keyboard just yet.

**Voice Pilot 3.0 for Windows 95**

**PRO:** Fair price, easy to learn and navigate.

**CON:** Limited feature set, cumbersome training process.

**VALUE:** Stick with a traditional PIM until dictation technology improves.

**Voice Pilot Technologies Inc.**
305/828-5600
www.voicepilot.com
List price: $149

READER SERVICE NO. 709

The program has eight modules: a calendar, a to-do list, a project planner, an address book, a memo pad, a note pad, a reminder, and voice chat that lets you participate in Internet chat room discussions.

To take full advantage of Voice Pilot, you must complete a tedious enrollment process in which you read hundreds of sentences aloud. This took about 4 hours, not counting the hour or so my PC took to process the data.

Once you've enrolled, you access the modules and features by telling the computer what to do: "Computer, appointments" shows a list of that day's appointments; "add" lets you add a new one. Most modules include a comment field where you can dictate detailed information. Dictation was disappointing, however: Running on a Pentium-90 (cited as the minimum hardware requirement), dictation accuracy averaged 60 percent or less. Also, the program hasn't yet resolved how to interpret proper names, so many fields need to be filled in by spelling words letter by letter or typing.

List priced at $149, Voice Pilot is affordable and has a clean interface. However, it lacks e-mail links and groupware features, and you can't schedule recurring meetings or sort address book entries.

For now, keep your keyboard and traditional PIM.

*—Anne Kandra*

## Lotus Organizer Eases Data Sharing

THE NEWEST VERSION of a veteran personal information manager, Lotus Organizer, makes it easier to share information with your workgroup. Organizer has caught up a bit with its rival Microsoft Schedule+. Organizer 97 GS lets workgroup members share schedules, tasks, and calendars on a LAN or intranet server. A combined calendar view lets you see up to 15 individual calendars at once. Organizer 97 GS also supports new Internet Mail Consortium standards: Users of compliant PIMs can easily exchange electronic business cards. Street price is $79; upgrade from Organizer 97 is $15; upgrade from Organizer 1.*x* or 2.*x* is $49. Lotus Development; 800/346-1305; www.lotus.com.

READER SERVICE NO. 710

*—Randy Legge*

# Rand McNally's Business Travel Companion

T R A V E L

RAND MCNALLY'S travel software kit, **Business Traveler's Suite,** has a lot to like: 1997 versions of the excellent TripMaker and StreetFinder programs; a business phone and address directory; an atlas; and intelligent online links. Street priced at $79, it's $11 less than TripMaker and StreetFinder when purchased separately.

I used a shipping copy of the suite to plan trips to New York and the Grand Canyon.

For this avowed New York–phobe, StreetFinder worked well. The program pinpointed my hotel on a city map with several levels of detail.

I set the program to screen for nearby attractions in a 2-mile radius, and it identified restaurants, public transit, and other likely stops with icons that I could click to get more details. StreetFinder also works out walking directions and driving maps.

TripMaker, designed for planning longer road trips, made me a Triple A–like printout with driving directions, maps, and lodging information for the Grand Canyon.

Both apps also have relevant online links, to weather sites for example.

With a unified interface and information as accurate as that of any product in its class, this suite is a wise buy.

*—Glenn McDonald* ▶

**LOCATION SCOUT: StreetFinder, part of Rand McNally's Business Traveler's Suite, finds the important spots in a neighborhood.**

**Business Traveler's Suite**

**PRO:** Good bundle; indispensable maps and info on U.S. cities.

**CON:** No product of this sort is 100 percent accurate.

**VALUE:** A real deal.

**Rand McNally**
800/671-5006
www.randmcnally.com
Street price: $79

READER SERVICE NO. 711

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**But you weren't expecting this.**
**www.microsoft.com/ie4/preview/**

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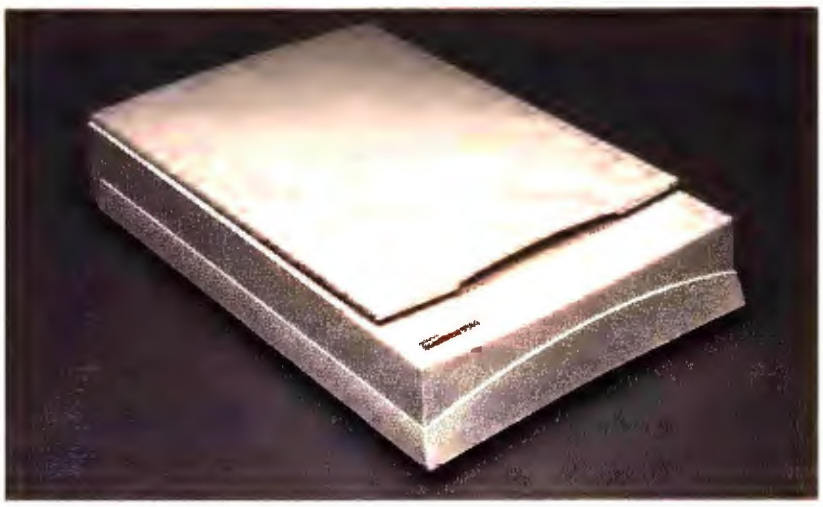
# Low-Cost Color Scanners, Upscale Features

SCANNER

THIS YEAR YOU can go shopping for a scanner and find one that's easy to install, produces first-rate color, comes with lots of software—and doesn't cost a fortune. Well-rounded models cost less than $300, which makes these versatile peripherals more practical than ever. Three new scanners from Visioneer, Microtek, and Plustek stand out for different reasons.



**THROW THE BOOK AT IT: Microtek's ScanMaker V300 gives you the flexibility of a flatbed scanner for only $229.**

### PaperPort Strobe

**PRO:** Small sheetfed scanner, easy to use, excellent software.

**CON:** Maximum color resolution of 300 dpi.

**VALUE:** A lot of color scanner in very little space.

**Visioneer**
800/787-7007
www.visioneer.com
Street price: $299

READER SERVICE NO. 722

### ScanMaker V300

**PRO:** Low price for a flatbed, good software bundle.

**CON:** Bulkiest model here.

**VALUE:** Flexible, high-quality unit produces great results.

**Microtek**
800/654-4160
www.microtekusa.com
Street price: $229

READER SERVICE NO. 723

### OpticPro 9630P

**PRO:** Flatbed supports 30-bit color, 600-dpi resolution.

**CON:** Default setting produces dark scans, skimpy software bundle.

**VALUE:** Nice price if you need 30-bit color.

**Plustek**
800/685-8088
www.plustekusa.com
List price: $299

READER SERVICE NO. 724

Visioneer pioneered the sheetfed scanner market with its gray-scale models, but the $299 **PaperPort Strobe** is the company's first color sheetfed scanner. Compared to other small sheetfed units, the Strobe is compact—about the size of a submarine sandwich. It easily plugs into a PC's parallel port, with a pass-through connector for a printer. My preproduction unit was extremely simple to use.

After you push a printed page or photo into the scanner's feeder slot, the device scans and places the image on an on-screen desktop within the PaperPort document management software. An unusually varied and useful selection of bundled software on CD-ROM lets you retouch photos (PhotoEnhancer), prepare expense reports (ExpensAble SE), capture business cards (CardScan SE), and use optical character recognition to convert paper documents into text that you can edit in a word processor (TextBridge).

The Strobe's color quality is quite good, without the muddy look you get from some sheetfed models. But like other sheetfed scanners, the Strobe emphasizes simplicity over flexibility and raw power. It can't handle bound volumes such as books and magazines, and its maximum color resolution is 300 dpi—fine for most tasks, but limiting if you want to enlarge an image without degrading its quality.

**NEED YOUR SPACE? Visioneer's PaperPort Strobe is submarine sandwich-size.**

If you need easy bound-volume scanning and high-resolution color, you really need a flatbed scanner. Microtek's $229 **ScanMaker V300,** which also connects to a PC parallel port, makes a good choice. As with any flatbed, you'll have to set aside plenty of desk space. Its footprint measures roughly 18.25 by 11.5 inches. But the V300 costs even less than the Strobe, and scanned images looked crisper in my tests of a shipping unit. I had to do almost no after-the-fact color adjustment. This scanner supports a maximum optical resolution of 300 by 600 dpi, or up to 4800 dpi through software enhancement.

Microtek provides PaperPort software for document management, OmniPage Limited Edition for OCR, and iPhoto Express for image editing.

I also tested a shipping version of Plustek's $299 **OpticPro 9630P,** a flatbed that doesn't stack up as well. Like the V300, it also connects through a parallel port but is slightly trimmer. Unlike the 24-bit Visioneer and Microtek units, the OpticPro is a 30-bit scanner, so it senses a wider range of colors as it scans. Also, the OpticPro offers 600-dpi resolution, or up to 9600 dpi through software enhancement.

The OpticPro captured some subtleties that the others didn't—skin tones, for example, looked more realistic. But at its default settings, the OpticPro tended to produce dark scans; I had to brighten them with the Photo Magic image editing program. Other bundled software falls short: Plustek does not include a document manager, and the TypeReader OCR program is less friendly than TextBridge and OmniPage.

*—Harry McCracken*

# *Seeing is Believing.*

*(fish not included!)*

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A MOTHERBOARD DOESN'T CARE WHO YOU ARE, WHAT YOU NEED, OR IF YOU EVEN KNOW WHERE IT IS.

MMX™ intel inside pentium® PROCESSOR

*We'll show you. A motherboard is made of metal, plastic, and solder — materials which have yet to show signs of human compassion. It doesn't care if you need to upgrade it, or get at anything around it. To help out, AST® introduces the FlexChassis design — a feature that allows easy access to the system's major components in seconds. No tools required. Since even the best technology will one day need upgrading, AST is here to help you do it right. For more information about AST Bravo PCs featuring Intel® Pentium® processors, call* 1-800-945-2278.

**Bravo (Desktop and Mini-Tower)**

200 MHz Intel Pentium processor with MMX™ technology

3 GB UltraDMA-33 hard disk drive

Integrated 10/100 Ethernet

2 MB graphics memory expandable to 6 MB

Manageability software utilities
- Intel LANDesk™ 3.0
- McAfee® VirusScan™ and WebScan™

512 KB L2 cache

16X maximum speed CD-ROM

Includes choice of Microsoft® Windows® 95 or Windows NT® 4.0

AST® COMPUTER

*Working for your business.™*

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# Free, Instant Antivirus Scanning: HouseCall

ANTIVIRUS

IF YOU STILL don't run an antivirus utility, Trend Micro just took away your last excuse. **PC-cillin HouseCall** is available free on the Web at www.housecall.antivirus.com. Sure, other makers of antivirus software provide free virus scanners on their Web sites, but they require that you download, decompress, install, and run the software offline. HouseCall, an ActiveX program, loads into your browser and runs immediately—albeit with annoying ads displayed on your screen at the same time.

And unlike free scanners that simply let you know whether your PC has a virus, HouseCall will also destroy any nasty visitors it finds.

If you're a Microsoft Internet Explorer user, you can run HouseCall directly. But if you prefer Netscape Navigator, you'll need to download the NCompass Labs ScriptActive plug-in (available from the HouseCall Web page) before you can run HouseCall.

Depending on the speed of your Internet connection, it takes 3 to 4 minutes for HouseCall to load into your browser the first time. You'll then see an Authenticode Security Technology certificate declaring HouseCall to be a genuine registered ActiveX control. A screen shows your local and network drives; you then choose which ones you want to scan, click the Scan button, and off you go.

Rather than check for all of today's 12,000 or so existing viruses, HouseCall looks strictly for the approximately 200 that are now circulating "in the wild," including the common Word and Excel macro viruses. It took a little over 15 minutes to check 12,654 files on my PC and find no viruses. If it does find one, HouseCall lists the name of the virus and the infected file. Most viruses can be removed with a click of the Clean button; if it's a virulent strain, you may have to delete the file.

One caution: HouseCall is effective, but it only takes a snapshot of your files. You still need a full-time virus scanner (like Trend's $50 PC-cillin II) for the best protection.

*—Stan Miastkowski*

**PC-cillin HouseCall**

**PRO:** Free, no-hassle virus scanning and removal.

**CON:** Irritating ads run on screen during scan.

**VALUE:** Can't beat the price.

**Trend Micro**

800/228-5651

www.housecall.antivirus.com

Price: free

READER SERVICE NO. 725

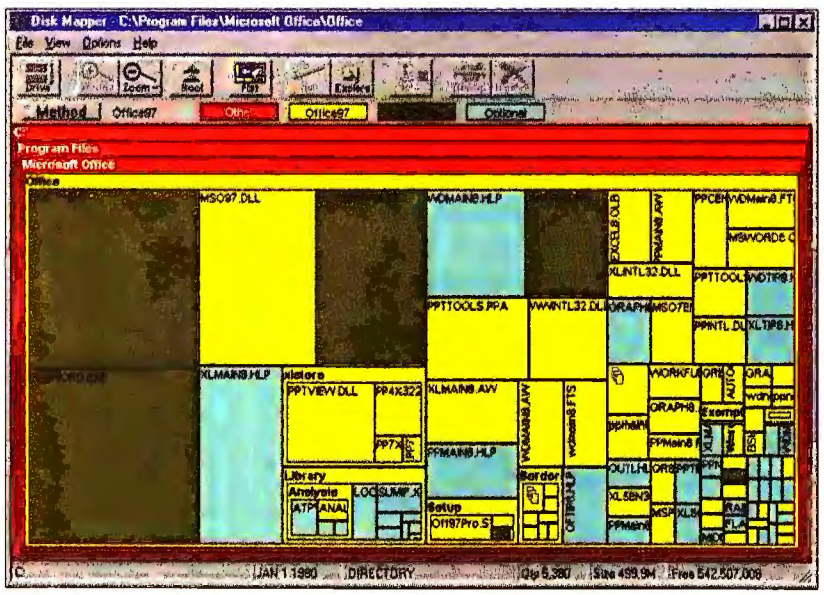
# Risky Business: New DiskMapper Utility

UTILITY

SOMETIMES "new and improved" applications are not so improved. Case in point: **DiskMapper with Office 97 Zoom.**

DiskMapper shipped last year, with the useful ability to map files on your hard disk using a graphic of nested rectangles. The graphic shows how files are stored and the relative amount of space each takes up. You can zoom in for details, and customize color coding to show file parameters—perhaps how long it's been since you used a file. Then you can organize or delete files to make more room on the hard drive.

DiskMapper with Office 97 Zoom adds special features for people who use the Microsoft Office suite (and includes all the features of the original DiskMapper). I tested a shipping copy. True, Office 97 is as big as Texas and as complex as presidential politics. If you used the "typical" Office 97 installation, your PC now holds many files and features that you've never used.




**THE GREAT UNKNOWN: DiskMapper lets you excise space-sapping Office 97 files, but cut too many and you'll be in trouble.**

You can point to any file in DiskMapper and delete or compress it. But there's a huge problem: The program doesn't tell you if the files are crucial to Office, except for an 'optional' tag that's not always correct. Also, you can't undo deletions within the program (though you can retrieve files from Win 95's Recycle Bin).

You may end up with a crippled Office 97 and have to reinstall. And DiskMapper's interface is extremely confusing.

DiskMapper with Office 97 Zoom works fine for experienced, technically savvy people who want to keep their hard disks lean and mean. But most folks could get into trouble with this utility.

*—Stan Miastkowski* ▶

**DiskMapper with Office 97 Zoom**

**PRO:** Graphic display effectively shows file usage.

**CON:** Much too easy to delete important files.

**VALUE:** Most people should skip it.

**Micro Logic**

800/342-5930

www.miclog.com

List price: $49.95

READER SERVICE NO. 727

# It's a No Brainer.

A. It's as fast as they come, and then some.

B. It's technologically, the state-of-the-state-of-the-art.

C. Its components are made by the best of the best.

D. It's got 7-day, 24-hour technical support from live human beings.

E. It's been commended and recommended by all the trade books.

F. It has a loyal following that swear by it - not at it.

G. And, here's the kicker. It actually costs less!

## Now Why Would You Consider Anything Else?

MMX™ intel inside pentium® II PROCESSOR

QUANTEX GOOD CHOICE.℠

# Choosing the right PC is as easy

## A.

### Top-Rated Performance

Quantex systems aren't just built to perform, they're built to out-perform. We're always raising the bar on standards a notch or two. We engineer our systems to the Nth degree and put everything through the toughest quality control tests. Just some of the reasons why Quantex PC's always put on a great performance.

**PC Computing, 4/97**

**Quantex QP5/200 SM-3**

★★★★★

**Verdict: The best-priced MMX(™ technology) machine you'll find---- and it's loaded with extras.**

Source: PC Computing Benchmarks

MMX™ intel inside pentium® II PROCESSOR

## B.

### Cutting-Edge Technology

If it's the newest, the fastest, or the most innovative development, you can bet Quantex will be one of the first to have it. We pride ourselves on being a leader, not a follower. Being among the first to incorporate the Pentium® II processor, K56flex modems and DVD into our systems are just a few examples of this forward thinking.

- ☑ **Pentium® II Processor**
- ☑ **K56 Flex Modem**
- ☑ **DVD**

## C.

### Brand-Name Components

Look inside any Quantex PC and you'll see lots of names you recognize. That's because we only use components made by the undisputed leaders in the PC industry. The best of the best! Why are we so fussy? Simple. At Quantex, we know a PC is only as good as the sum of its parts.

**Computer Shopper, 8/97**

**"The Quantex QP6/266 SM-4x offers high-quality components and field-leading performance at an alluring price."**

## D.

### Living, Breathing 24-hour support

We provide expert technical suppo 24 hours a day, 7-days a week. Talk to real-live people who will sol your problem - not a frustrating know-nothing recording. On top of that, over 95% of incoming calls ar answered in less than three minute

**We rate with the best.**

In a recent Windows Magazine Tech Support Survey, Quantex received a report card that put u right up there at the head of the class. And we're talking about t biggest names in the PC industr

**OVERALL RANKINGS FOR DESKTOP VENDORS**

| PC VENDOR | GRAD |
|---|---|
| Dell, Hewlett-Packard, IBM, Quantex | Excel |
| Compaq, Gateway 2000, Micron, NEC | Good |
| Acer, AST, Toshiba | Fair |
| AT&T, Digital, Packard Bell | Poor |

**Windows Magazine, 8/97**

as A, B, C, D, E, F, G.

# G.

## And Here's the Kicker. It Costs Less!

Quantex is, hands down, the undisputed leader in offering the most for the least. See for yourself.....

**$2899**

## QP6/266 SM-4x

***(featuring the Pentium® II Processor)***

**Business lease:$ 101/Mo.**

- 266MHz Pentium® II Processor
- 2 Universal Serial Bus (USB) Ports
- 64MB EDO Memory / 512KB Secondary Cache
- 6.4GB EIDE Mode 4 HD / 3.5" 1.44MB Floppy Drive
- Matrox Millennium II 3D w/ 8MB WRAM
- 17" Digital Monitor (16.1" viewable)
- K56flex™ protocol Fax/Modem w/Voice Mail and Speakerphone
- 24X Max EIDE CD-ROM Drive
- Ensoniq 32-Bit Wavetable Sound Card
- ▲ Altec Lansing ACS-45 Speakers w/subwoofer
- ATX Case
- 104-Key Keyboard with MS IntelliMouse
- MS Windows '95 with MS Plus

NEW! ▶ MS Office 97 Small Business Edition

- 3-year limited warranty, 24-hr./7-day Technical Support

QP5/200 SM-4 (with MMX™ Technology).....$2449
QP5/233 SM-4 (with MMX™ Technology).....$2549
QP6/233 SM-4x (featuring Pentium II Processor)...$2799

### DVD Upgrade Package

- Toshiba DVD ROM (upgrade from 24X Max CD-ROM)
- DVD Decoder Board
- ▲ Altec Lansing ACS-500 Speakers w/ ACS-250 subwoofer (upgrade from ACS-400 Speakers)

**Add $569**

# E.

## Highly Acclaimed

Read any good PC trade magazines lately? Well, if you have, you can't

help but notice the way Quantex keeps getting great reviews on its systems and lots of "thumbs up" from the trade press. Quantex has received over 10 PC World Best Buy awards and has been on PC World's Top 20 list over 61 times in the past 12 months. But don't think we're sitting on our laurels. These awards only spur us on to earn even more!

# F.

## Loyal Following

If you really want to know how good a Quantex PC is, check out the number of buyers who come back to buy from us a second time. And a third time. No one has a more loyal following than Quantex. For the past decade, we've sold hundreds of thousands of PC's into homes and businesses and the vast majority of customers have expressed their total satisfaction in the best way possible. By coming back for more.

### WOULD YOU BUY AGAIN?

| VENDOR | % WHO WOULD BUY THE SAME BRAND |
|---|---|
| Dell | 92% |
| Quantex | 91% |
| Hewlett-Packard | 89% |
| IBM | 89% |
| Micron | 81% |
| Gateway | 80% |
| Acer | 74% |
| AST | 74% |
| NEC | 71% |
| AT& T | 69% |
| Digital | 69% |
| Toshiba | 61% |
| Compaq | 58% |
| Packard Bell | 51% |

**Windows Magazine, 8/97**

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**1.800.896.4898**

**www.quantex.com**

# The Best Choice for Multimedia Power

Shown with optional ACS-400 speaker system

**Best Value!**

## QP6/266 SM-4x

***(featuring Pentium® II processor)***

**$2899** Business lease:$ 101/Mo.

- 266MHz Pentium® II Processor
- 2 Universal Serial Bus (USB) Ports
- 64MB EDO Memory / 512KB Secondary Cache
- 6.4GB EIDE Mode 4 HD / 3.5" 1.44MB Floppy Drive
- Matrox Millennium II 3D w/8MB WRAM
- 17" Digital Monitor (16.1" viewable)
- K56flex™ protocol Fax/Modem w/Voice Mail and Speakerphone
- 24X Max EIDE CD-ROM Drive
- Ensoniq 32-Bit Wavetable Sound Card
- Altec Lansing ACS-45 Speakers w/subwoofer
- ATX Case
- 104-Key Keyboard With MS IntelliMouse
- MS Windows '95 With MS Plus

NEW!▶ MS Office 97 Small Business Edition

- 3-year limited warranty, 24-hr./7-day Technical Support

**QP5/200 SM-4** (with MMX™Technology).....**$2449**
**QP5/233 SM-4** (with MMX™Technology).....**$2549**
**QP6/233 SM-4x** (featuring Pentium® II Processor)...**$2799**

Being the first to market with the latest products and technologies may seem like no big deal. But it is. By purchasing a PC with the most up-to-date products, you will significantly extend the life of your PC and of your hard-earned investment. Check out what Quantex is first to market with this month:

### The Pentium® II processor Delivers a Performance Punch

Quantex systems powered by the Pentium II processor deliver the horsepower you need for realistic graphics, full-screen, full-motion video, enhanced color and more. At clock speeds up to 266MHz, the Pentium II processor has the performance for today's and tomorrow's software. It's your best choice for both integer performance for productivity and floating point performance for compelling 3D graphics.

MMX™ intel inside pentium® II PROCESSOR

### Did You Know ?

**Quantex PC's consistently offer top-notch performance and usability.**

Along with many other awards, Quantex was recently awarded PC Computing's coveted "★★★★" 4-star rating in both May and June, 1997!

# Power Multimedia Series

## QP5/233 SM-1 (with MMX™ Technology) $1899

Business lease: $66/Mo.

- 233MHz Pentium® Processor with MMX™ Technology
- 2 Universal Serial Bus (USB) Ports
- 32MB EDD Memory / 512KB Pipelined Burst Cache
- 3.2GB EIDE Mode 4 HD / 3.5" 1.44MB Floppy Drive
- Matrox Millennium II 3D w/4MB WRAM
- 15" Digital Monitor (14.0" viewable)
- K56flex™ protocol Fax/Modem w/Voice Mail and Speakerphone
- 24X Max EIDE CD-RDM Drive
- Ensoniq 32-Bit Wavetable Sound Card
- Altec Lansing ACS-90 Speakers
- Mid-Tower Case
- 104-Key Keyboard With MS IntelliMouse
- MS Windows® '95 With MS Plus

NEW! ▶ MS Office 97 Small Business Edition

- 3-year limited warranty, 24-hr./7-day Technical Support

QP5/200 SM-1 (with MMX™ Technology)..... $1799
QP6/233 SM-1x (featuring Pentium® II Processor).... $2149
QP6/266 SM-1x (featuring Pentium® II Processor).... $2299

## QP5/233 SM-2 (with MMX™ Technology) $2149

Business lease: $75/Mo.

- 233MHz Pentium® Processor with MMX™ Technology
- 2 Universal Serial Bus (USB) Ports
- 32MB EDD Memory /512KB Pipelined Burst Cache
- 4GB EIDE Mode 4 HD / 3.5" 1.44MB Floppy Drive
- Matrox Millennium II 3D w/4MB WRAM
- 17" Digital Monitor (16.1" viewable)
- K56flex™ protocol Fax/Modem w/Voice Mail and Speakerphone
- 24X Max EIDE CD-ROM Drive
- Ensoniq 32-Bit Wavetable Sound Card
- Altec Lansing ACS-90 Speakers
- Mid-Tower Case
- 104-Key Keyboard With MS IntelliMouse
- MS Windows '95 With MS Plus

NEW! ▶ MS Office 97 Small Business Edition

- 3-year limited warranty, 24-hr./7-day Technical Support

QP5/200 SM-2 (with MMX™ Technology).... $2049
QP6/233 SM-2x (featuring Pentium® II Processor)..$2399
QP6/266 SM-2x (featuring Pentium® II Processor)..$2549

**Best Value!**

## QP6/233 SM-3x (featuring Pentium® II processor) $2499

Business lease: $87Mo.

- 233MHz Pentium II Processor
- 2 Universal Serial Bus (USB) Ports
- 32MB EDD Memory /512KB Secondary Cache
- 6.4GB EIDE Mode 4 HD / 3.5" 1.44MB Floppy Drive
- Matrox Millennium II 3D w/4MB WRAM
- 17" Digital Monitor (16.1" viewable)
- K56flex™ protocol Fax/Modem w/Voice Mail and Speakerphone
- 24X Max EIDE CD-RDM Drive
- Ensoniq 32-Bit Wavetable Sound Card
- Altec Lansing ACS-45 Speakers w/subwoofer
- ATX Case
- 104-Key Keyboard With MS IntelliMouse
- MS Windows '95 With MS Plus

NEW! ▶MS Office 97 Small Business Edition

- 3-year limited warranty, 24-hr./7-day Technical Support

QP5/200 SM-3 (with MMX™Technology)..... $2199
QP5/233 SM-3 (with MMX™Technology)..... $2299
QP6/266 SM-3x (featuring Pentium II Processor)..... $2699

*(includes 256KB Internal L2 Cache)

## UPGRADES (available with system purchase)

- Special DVD Upgrade ..... See Below
- Panasonic PD/CD-Rom Drive w/ one 650MB PD cartridge.. $249
- Three(3) Panasonic PD cartridges ..... $99
- APC Back UPS Office (price reflects $30 manuf. rebate)... $169
- 3Com 3c905 PCI NIC ..... $89
- Motorola ISDN Terminal Adapter ..... $189
- Microsoft Natural Keyboard (upgrade from 104-keyboard) .. $39
- Microsoft Sidewinder 3D Pro Joystick ..... $59
- HP Deskjet 692C Printer (w/ photo color kit) ..... $299
- HP Laserjet 5L-FS Printer ..... $399

(all upgrades are covered by manufacturer's warranty)

### Surf the Web at two times the speed

Utilizing the most widely-accepted standard, K56flex™ adopted by over 400 leading high-tech companies, your days of patiently waiting for files to download are over. K56flex technology was specifically created to allow you to download as much information as quickly as possible.

### Hop on the Newest PC Bus

Say goodbye to IRQ and COM port conflicts when adding hardware. Most Quantex systems now come standard with two Universal Serial Bus ports so you can take advantage of the newest USB peripherals like digital cameras, joysticks and more.

### DVD - A Whole New World

You've read all the hype, but now it's really here. Quantex is proud to be among the first to offer this revolution in CD technology. DVD (Digital Video Disk) technology offers unsurpassed video and outstanding audio. Add to that an enormous 4.7GB storage capacity. Experience movies and multimedia in a whole new way.

## DVD Upgrade Package:

- Toshiba® DVD ROM (upgrade from 24X Max CD-ROM)
- DVD Decoder Board
- Altec Lansing ACS-500 Speakers w/ACS-250 subwoofer (upgrade from speakers in system purchase)

| Your system purchase: | SM-1 or SM-2 | SM-3 or SM-4 |
|---|---|---|
| DVD Upgrade Package Cost: | $599 | $569 |

## POWER MULTIMEDIA SOFTWARE BUNDLE

- MS Office '97 SBE
- MS Money '97
- Office Mate
- Day Planner Pro
- Power Business Plans
- Form Designer Pro
- Project Manager Pro
- Labels Unlimited
- Compton's Reference Collection
- Dr. Solomon's Anti-Virus
- Windows 95 with MS Plus!
- AOL,Prodigy, Compuserve,Epoch

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**www.quantex.com**

# The Best Choice for Out-of-the-Box Networking

## Out-of-the-box-and-onto-your-Network

We've partnered with 3Com® to bring you a combination of peak system performance and unquestionable reliability on your network. All Quantex WS systems are 3Com-certified because the network-cards are pre-installed, pre-tested and certified to work within your network environment. And Novell® and MS Windows NT® certification give you real peace of mind.

## Featuring the Pentium® II Processor

Intel's latest Pentium II Processor was engineered specifically for high-performance desktops, workstations and servers. You'll get the best performance available for 32-bit apps running on advanced operating systems. Integrated 512MB cache makes it the right choice for power workstations.

## QP5/166 WS-1

**$1199** Business lease: $ 42/Mo.

- 166MHz Pentium® Processor
- 16MB EDO Memory/512KB Pipelined Burst Cache
- 1.2GB EIDE Mode 4 HD/3.5" 1.44MB Floppy Drive
- STB Nitro 3D w/2MB
- 15" Digital Monitor (14.0" viewable)
- 3Com 3c509 ISA Combo NIC
- 24X Max EIDE CD-ROM Drive
- Mini-Tower Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows '95 With MS Plus
- 3-year limited warranty, 24-hr./7-day Technical Suppor

QP5/166 WS-1.....$1249
(with MMX™Technology)

QP5/200 WS-1.....$1349
(with MMX™Technology)

## QP6/266 WS-4x

***(featuring Pentium® II processor)***

**$3199** Business lease: $ 104/Mo.

- 266MHz Pentium® II Processor
- 64MB EDO Memory/512KB Secondary Cache
- 4GB Ultra Wide SCSI HD / 3.5" 1.44MB Floppy Drive
- 2940UW PCI Ultra Wide SCSI Controller
- Matrox Millennium II 3D w/4MB WRAM
- 17" Digital Monitor (16.1" viewable)
- 3Com 3C905 PCI 10/100 NIC
- Toshiba 12X 115ms SCSI CD-ROM Drive
- ATX Case
- 104-Key Keyboard With MS PS/2 Mouse
- MS Windows NT 4.0 Workstation
- 3-year limited warranty, 24-hr./7-day Technical Suppor

QP5/200 WS-4.....$2649
(with MMX™Technology)

QP5/233 WS-4.....$2749
(with MMX™Technology)

QP6/233 WS-4x.....$3099
(featuring the Pentium II processor)

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Canada 1-800-793-4167

Puerta Rica 1-800-793-4185

# Kai's Image Editor: Innovative but Confusing

IMAGE EDITING

PHOTODELUXE, PhotoSuite, PhotoThis, PhotoThat—every software company on earth, it seems, now offers a package designed to let ordinary folks retouch snapshots. But you won't mistake **Kai's Photo Soap** for any existing product. MetaCreations' new $49.95 package is an image editor of a very different color. I worked with a shipping copy.

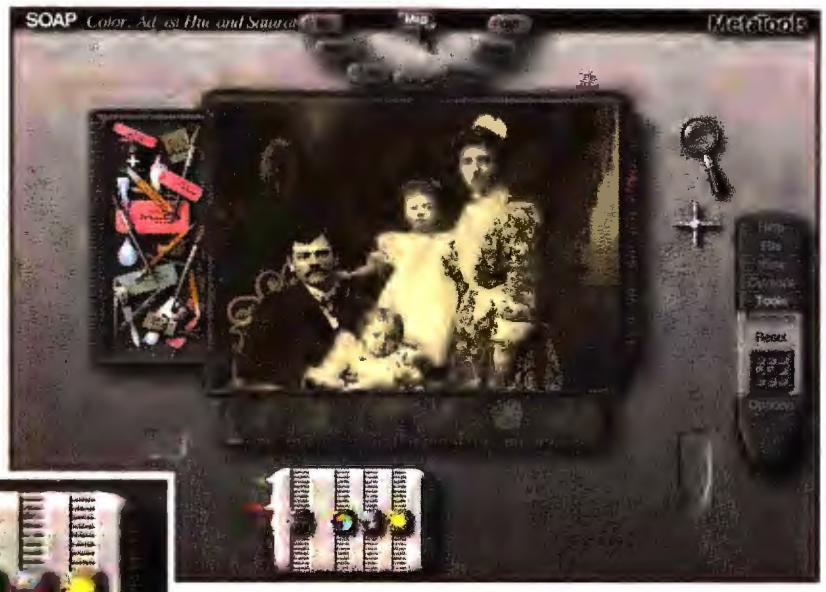
Like other Kai graphics products, such as the Power Goo morphing package, Photo Soap dispenses with the standard Windows 95 look for a highly imaginative but often impenetrable user interface. So instead of using ordinary drop-down menus, Photo Soap employs a variety of "rooms" that handle different functions, such as adjusting colors or applying special effects. And rather than using a standard toolbar, you access features through an on-screen remote control device and a bunch of ornately rendered, often unmarked gadgets.

Underneath its unique look, Soap provides a good selection of tools for dressing up photos that you've brought into your PC with a scanner or digital camera, or through PhotoCD film processing. You can fix overexposed or underexposed pictures, remove scratches, add interesting borders and cartoonlike clip art, or use the obligatory red-eye–removal feature to eliminate glowing pupils from an otherwise pleasing snapshot. All of these tools are highly interactive; for instance, the software updates the entire image instantly as you slide the brightness and contrast controls around, so you see immediately how changes will affect the picture. You don't need much artistic skill or manual dexterity to use Soap: I easily erased creases from a favorite family photo in a few seconds by simply painting over the damaged area, with excellent results.

More so than with other Kai products, however, Soap's quirky interface leaves you frustrated. Even when you end up with a good-looking photo, you may be hard-pressed to recall the steps that you took to create it or how to use a gadget to get the desired effect. Simply figuring out how to save a file or shut down the program is a challenge—you can do so in some rooms but not in others. The on-screen help system doesn't provide much assistance: It's a highly unorthodox collection of tips and tricks, not a full-fledged guide to the program's features.

All in all, using Kai's Photo Soap compares to exploring a mysterious factory, with the freedom to push buttons and pull levers just to see what happens. It's fun to experiment, but it's certainly not as efficient as using a typical image editor such as Adobe's PhotoDeluxe or MGI's PhotoSuite. Soap also demands a fairly high-powered PC: The recommended installation gobbles up 70MB of hard disk space, and the package ran painfully slowly on a Pentium-75 with 16MB of RAM. Using it on a Pentium-166 with 32MB of RAM was much more enjoyable.

*—Harry McCracken* ▶




**HARD TO GRASP: Soap does a fine job retouching photos, but the on-screen tools are often puzzling.**

**Kai's Photo Soap**

**PRO:** Powerful image retouching.

**CON:** Confusing, nonstandard user interface.

**VALUE:** Imaginative, but too unwieldy.

**MetaCreations**
800/472-9025
www.metacreations.com
List price: $49.95

READER SERVICE NO. 728

## QUICK TAKES

### Pint-Size Pointer

WHEN YOU REGULARLY lug a notebook PC and an LCD projector to give presentations, every ounce you carry counts. Mind Path's $99 **PocketPoint Remote Control** is the smallest such remote to date, fitting into a shirt pocket easily. It lets you control on-screen presentations from up to 50 feet away with an infrared receiver that plugs into a PC's serial port. (For notebooks with IrDA ports, it works within a 12-foot range.) Three customizable buttons let you advance slides, play sounds, display a timer, and perform other tasks. But unlike bigger presentation remotes, it can't substitute for your mouse. Mind Path Technologies; 800/736-6830, 972/233-9296; www.mindpath.com.

READER SERVICE NO. 729

*—Harry McCracken*

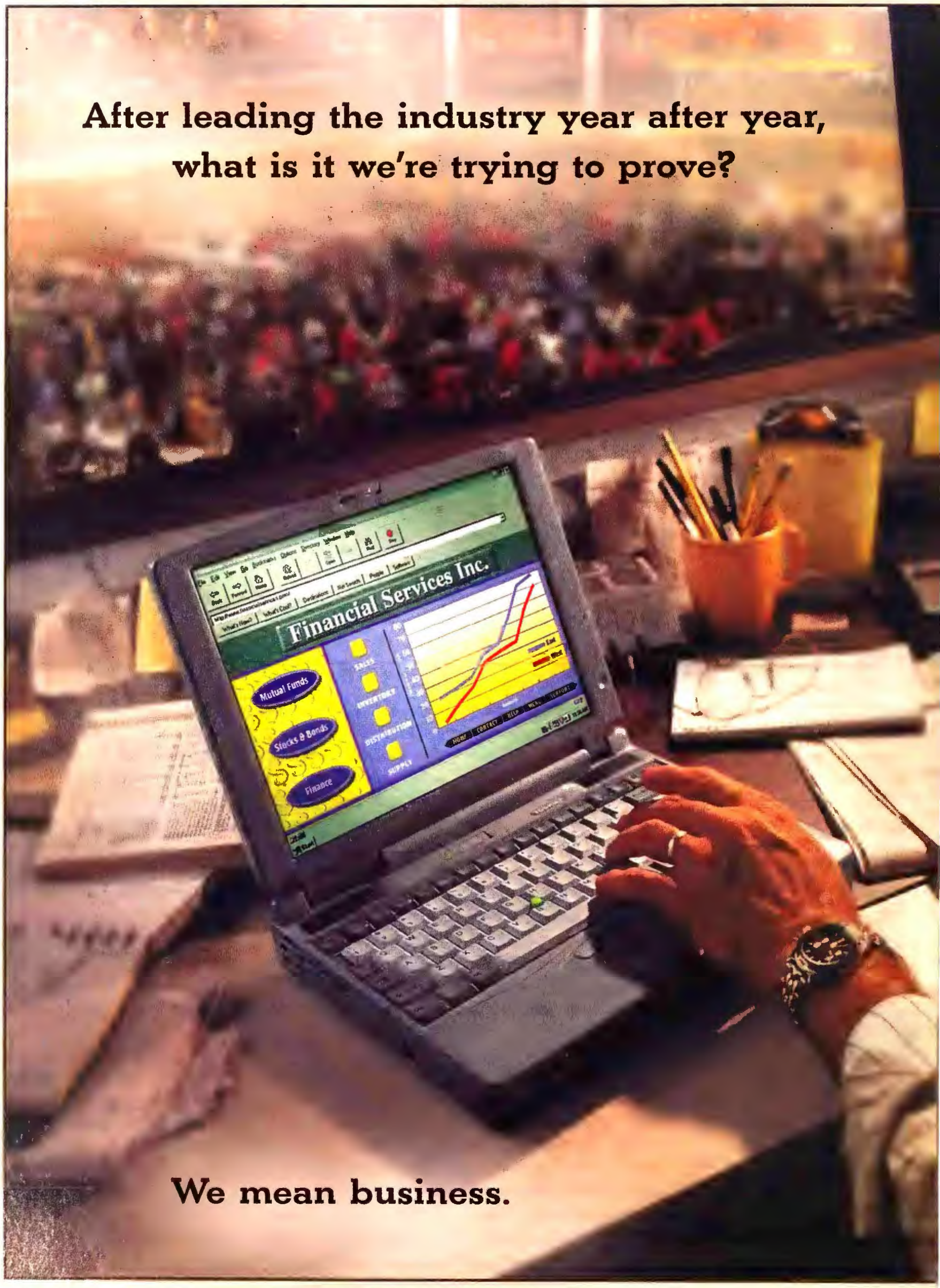
### Improved pcAnywhere

THE NEWEST Symantec remote control/remote file transfer application, **pcAnywhere32 version 8.0**, concentrates mostly on corporate computers. It adds Windows NT features, such as integration with NT's security and event logging, and remote printing from an NT host. Good improvements for Windows 95 include automatic reconnect when you lose a connection, encryption using Microsoft's Crypto API, and the ability to have multiple users access a single Windows 95 machine at the same time using TCP/IP. pcAnywhere32 version 8.0 supports voice/data switching and bundles CU-SeeMe 3.0 for videoconferencing (if you have a camera). List price is $149. Symantec Corp.; 800/441-7234; www.symantec.com.

READER SERVICE NO. 726

*—Stan Miastkowski*

# After leading the industry year after year, what is it we're trying to prove?




## We mean business.

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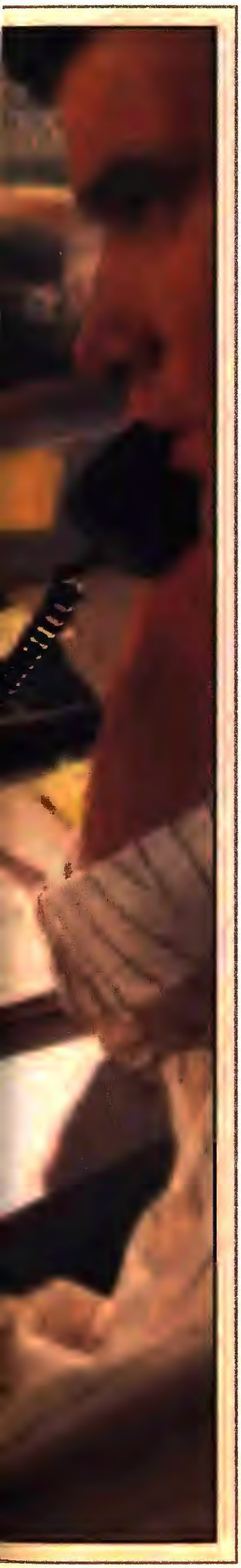
*10X average speed. All products indicated by trademark symbols are trademarked and/or registered by their respective companies.



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If there's one thing we know how to do well, it's raising portable industry standards to new levels. Something we couldn't do without the constant challenge of not only meeting your needs, but surpassing them. Introducing the Tecra™ 530CDT. A portable packed with the perfect balance of performance, portability and expandability. Delivering a high-resolution TFT display, large storage capacity and a 166MHz Intel Pentium® processor with MMX™ technology. All wrapped up in a sleek new design. The Tecra 530CDT. Experience the portable that will take the business world into the next millennium. When you do, you'll find yourself in a place where staying ahead of the game is a way of life. With one clear intention. **Always Lead.™**

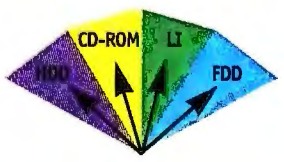
**NEW DESIGN**

New tooling to deliver high-end features in a durable, sleeker notebook.

MMX™ intel inside pentium® PROCESSOR

**ULTIMATE PERFORMANCE**

Experience accelerated multimedia applications with MMX™ technology, 32-bit PCI architecture and 32MB of memory, standard.




**CUSTOMIZED CONFIGURATION**

With the SelectBay,™ configure your system to meet your needs. Swap out your 10X* CD-ROM with a floppy disk drive, optional second 2GB hard drive or optional second Lithium Ion battery.

**EXPANDABILITY**

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- 12.1" dia. active-matrix TFT color display
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- 166MHz Pentium® processor with MMX™ technology, 256KB L2 cache
- PCI system-bus architecture
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- SelectBay™ supports CD-ROM, floppy disk drive, optional second hard drive or optional second Lithium Ion battery
- Modular 10X* CD-ROM
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- Universal Serial Bus (USB) port
- MPEG playback through either software or optional ZV Card
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- Lithium Ion battery
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- Windows® 95
- 3-year limited warranty
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**Circle 228 on reader service card**

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Introducing Acer's

# mobile client server

**solution — the new way to truly realize enterprise productivity.**

By extending the enterprise into virtual offices, and with an increasingly mobile workforce, it becomes vital to communicate and access critical company information. Anytime. Anywhere.

Acer's Mobile Client Server solutions provide connectivity, security, mobility, accessibility, and manageability. And help you increase productivity and gain a competitive advantage.

As one of the world's largest personal computer and component manufacturers, Acer has state-of the-art notebooks, desktops, and servers, like the new AcerAltos™ 300 server series featuring the Intel® Pentium® processor. Plus, the channel relationships to optimize your solution and the resources to provide single-call service and support.

Acer's Mobile Client Server. The new enterprise solution that's infinitely expandable. And ultimately the most productive.

Acer®

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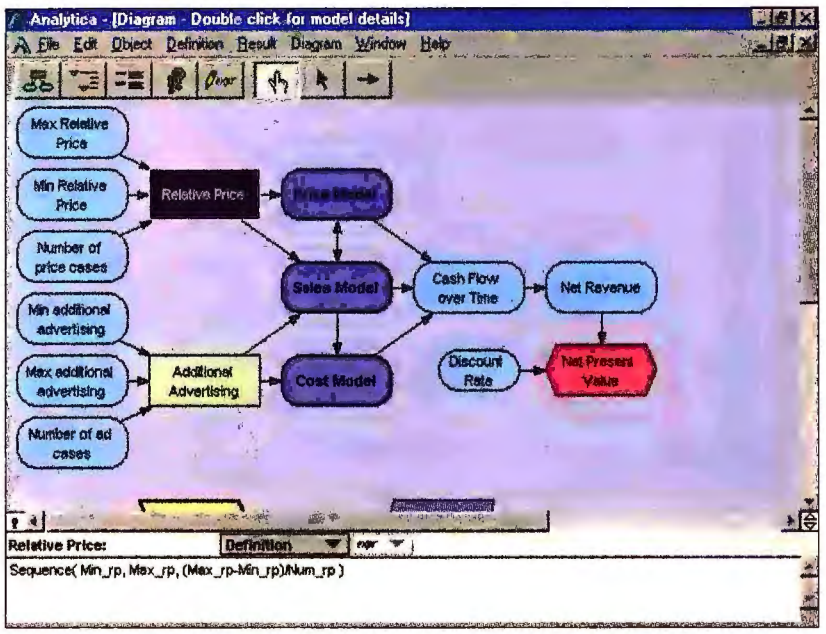
*All Acer servers, at every level, have manageability built-in.*

# Analytica Starts Where Spreadsheets Stop

VISUAL MODELING

IF YOU DO what-if business modeling using a traditional spreadsheet, you have one big problem: Life is uncertain. You can't easily represent all the variables that change as you display predicted results. **Analytica,** a new visual modeling tool from Decisioneering, is costly at a list price of $795 but solves the problem.

Here's an example: While you can set up a budget model to predict future cash flow, it will contain variables you can't pin down to a single number, such as the interest rate on your money market fund, next month's sales, or the price of raw materials. The typical solution is to assign these variables a best-guess value, or create a table that shows how alternative values for one or two variables will affect the bottom line. But as the number of uncertain variables increases, the situation becomes unmanageable.




**BETTER MODELING: Analytica lets you explore what-if questions without relying too heavily on estimates.**

Analytica allows you to substitute a chance variable in place of a best guess, so you can specify the inflation rate—say, 3.5 percent plus or minus 0.5 percent—with a normal (or other) distribution. Now Analytica runs the model: It recalculates 100 or so times, randomly varying the chance variables each time. Then it displays a graph that shows the relative likelihood of the results. It's a dynamic picture of possible risks and rewards.

In my test of a shipping copy, Analytica was fairly easy to use after a couple of hours with the tutorial. You use a graphical editor to "draw" variables and define relationships. The graphic output is clear, either in the form of probability distributions or a traditional sensitivity analysis.

*—Richard Scoville*

**Analytica**

**PRO:** Better than spreadsheets for what-if modeling.

**CON:** Expensive, takes a couple hours to climb the learning curve.

**VALUE:** Good choice for sophisticated analyses.

**Decisioneering**

800/289-2550

www.decisioneering.com

List price: $795

READER SERVICE NO. 730

QUICK TAKES

## Big Monitor, Small Footprint

YOU'D LIKE a 17-inch display, but your cramped desktop can barely handle your 15-inch monitor? Hyundai's DeluxScan HL787Os delivers the viewing area of a typical 17-inch CRT but shears a full 3 inches off the depth of a standard 17-incher, so it has the footprint of a 14-inch monitor. New short-neck tube technology keeps the 1280 by 1024, .27mm dot pitch image crisp around the corners. The DeluxScan's on-screen controls work well, and the $649 street price is competitive. Hyundai; 800/568-0060; www.hea.com.

READER SERVICE NO. 731

*—Yardena Arar*

# UnInstaller 4.5 Cleans House Reliably

UTILITY

HARD DRIVE CLEANUP utility **UnInstaller 4.5,** a former MicroHelp program now owned by CyberMedia, does its job. Incorporating just slight differences from version 4.0, it's bundled with Dr Solomon's FindVirus software and a trial version of CyberMedia's Oil Change, an Internet tool that locates software updates and patches.

At a street price of $40, UnInstaller is a good value—but if you own UnInstaller 4.0, the $19.95 upgrade may not be worthwhile, since versions 4.0 and 4.5 are so similar. Based on my tests of a shipping copy, I'd say the program continues to lead its category.

If your system is like mine, it's cluttered with duplicate files, programs you could delete, and many downloaded Internet goodies. They all seem to burrow into your hard disk. You need a guided way to clean house. UnInstaller 4.5 helps remove Windows applications and delete duplicate and junk files. It tags critical Windows and system files so you avoid accidents, and stores deletions in a backup file.

On the negative side, it took UnInstaller 4.5 more than an hour to grind through the initial scan of my 6.4GB hard disk. Tech support advised me to defragment the drive, which reduced subsequent UnInstaller 4.5 scans from 15 minutes to 6 minutes. So be sure to defragment first.

*—Joe Gomolski* ▶

**UnInstaller 4.5**

**PRO:** Helps you clean and organize your hard disk.

**CON:** Even after tweaking, it's no speed demon.

**VALUE:** Worth the money.

**CyberMedia Inc.**

310/581-4700

www.cybermedia.com

Street price: $40

READER SERVICE NO. 732

# AWE 64

## SOUNDS OF THE Symphony

1. Maestro Tapping Baton.
2. Piano Keys Dancing.
3. Entrance Of An Oboe.
4. Crashing Cymbals.
5. Violin Vibrato.
6. "Bravo, Bravo!"
7. Deep, Rythmic Grooves of a Cello.
8. Clarinet Scaling Octaves.
9. Audience Shuffling In.
10. Appreciative Applause.
11. Chord Progressions On Grand Piano.
12. Soft Strokes Of Harp Strings.
13. Chiming Triangle.
14. "Shhhhhhhhh..."
15. A Cymbal Brushing Lightly.
16. Cascading Clarinet.
17. Flute Solo.
18. Crescendo.
19. Playful Flirtation Of A Piccolo.
20. Boom Of A Tuba.
21. Pager Beeping.
22. Loud Clapping.
23. Low Tones Of A Stand-Up Bass.
24. Violin And Viola En Duet.
25. Piano Sonata.
26. Wailing Saxophone.
27. Smooth Slide Of A Trombone.
28. Exclamation Of A Trumpet.
29. Rolling Thunder Of A Timpani.
30. Arpeggio On The Violin.
31. The Reed Section.
32. Pages Of Sheet Music Turning.
33. Piano Playing Minuet In G.
34. Drum Keeping Tempo.
35. Violin Staccato.
36. Tambourine Jingle.
37. Clicking Castanets.
38. Relentless Beating of Drums.
39. Regal Sound Of A French Horn.
40. Snare Drum Rattling.
41. Xylophone Resonating.
42. The Low Pitch Of A Bassoon.
43. Cello Staccato.
44. Pulsating Viola.
45. Viol D'Orchestre.
46. Flute Ensemble.
47. Fluttering Of A Flute.
48. Regimental Sound Of A Bugle.
49. Plucking Of A Violin.
50. "Encore! Encore!".
51. Orchestra Tuning Up.
52. Silence Between Passages.
53. Harmonic Wind From A Flute.
54. Oboe Solo.
55. Soft Snoring.
56. Decrescendo.
57. Beethoven's 5th.
58. Throats Clearing.
59. Chopsticks.
60. Sounds Of Intermission.
61. Brass Solo.
62. Rattling Of Maracas.
63. "Wake Up, Honey, It's Over."
64. The Final Movement.

Experience an evening at the symphony with the new Sound Blaster® AWE64 Gold™ and hear every crisp sound with perfect audio fidelity. The Sound Blaster AWE64 Gold is simply the best sounding Sound Blaster ever. And it's designed specifically to upgrade your PC's multimedia audio system. Play back up to 64 simultaneous voices, producing a richer, fuller sound than previously thought possible. With 20-bit digital output, audio quality is uncompromised. And of course, compatibility is assured because it's a genuine Sound Blaster. To listen to and learn more about the Sound Blaster AWE64 Gold contact us at:

**www.SoundBlaster.com/sound/AWE64Gold.**

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WWW.SOUNDBLASTER.COM

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**Circle 54 on reader service card**

# Off-Site Backup Without Leaving Your Office

STORAGE

FOR BACKING UP everyday work, a tape drive works well. But for critical files, off-site storage makes a lot of sense: In case of a natural disaster or fire in your home or office, you'll be glad to have the data in another location. You may also want dial-up storage services so that you can access files while you travel, for convenience or in case of emergency. New services that let you back up with a modem to a secure server are convenient and affordable—though not speedy enough to be practical for full hard drive backups. Two new services from Safeguard Interactive and Atrieva do a good job for backup and travel needs, respectively. I tested beta versions.

### Safeguard Interactive Backup

**PRO:** Good for backing up critical files.

**CON:** Doesn't include virus scanner.

**VALUE:** Overall, this is a smart choice.

**Safeguard Interactive**

412/415-5200

www.sgii.com

Street price: $100 per year for unlimited storage

READER SERVICE NO. 733

### Atrieva

**PRO:** All you need is a Web browser to access your files.

**CON:** Somewhat complex interface.

**VALUE:** Excellent safety net for travelers.

**Atrieva Corp.**

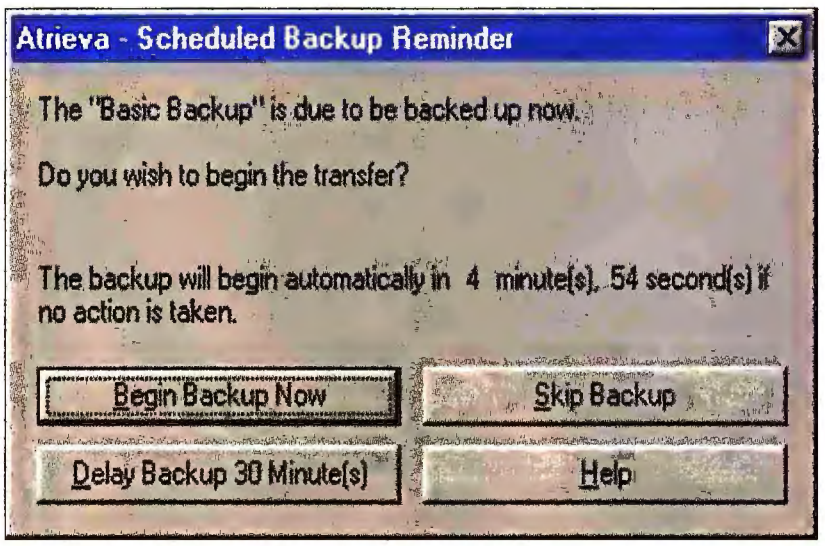
888/287-4382, 206/654-5300

www.atrieva.com

Street price: $12.95 per month for unlimited storage

READER SERVICE NO. 734

Street priced at $100 per year for unlimited storage (or $29.95 for a three-month tryout), **Safeguard Interactive Backup** is an affordable choice. I found the Backup software simple to use, though not highly customizable. You establish an Internet connection, load the software, and indicate whether you want to do a full or partial backup of your hard drive. Then you're ready to go. Your files are encrypted and compressed before transmission.




**ONLINE BACKUP: Atrieva does preset backups over the Net. For travel, use a Web browser to access your files.**

The primary aggravation: You're limited by the speed of your Internet connection. I was never able to do better than transferring 15MB per hour using my 28.8-kbps modem and a regular phone line. But depending on your situation, your critical set of files varies in size. For a small business, you would likely have considerably more than 15MB of critical files, and thus require a bigger time investment for the initial backup.

On the bright side, subsequent backups move more quickly. After the first backup, only those files that have changed get uploaded. Competing online storage services, such as Surefind, cost a bit more. Surefind charges $10 per month for up to 100MB of storage, then you pay extra fees on a sliding scale as you use more space.

On the downside, Safeguard Interactive Backup does not do a virus scan, so you must scan files yourself beforehand to ensure that your backup files are not corrupted.

If you're a frequent traveler, Atrieva's storage service gives you a unique benefit—secure access to your files from any PC with a Web browser. The **Atrieva** software is small enough that if needed, you can quickly download it from the company's Web page using any PC—perhaps one in a hotel business center or at a client site. (Of course, you'll want to keep the software stored on your notebook PC for regular use.)

Once you download the software and register, you're given an encryption key for your data. Atrieva virus-scans, compresses, and encrypts your files before sending them across the Net for storage.

Once you've set up, you just visit the Atrieva Web page and use your encryption key to access your files anytime. Because all you need is the encryption key and a PC with a Web browser, this service could be a lifesaver if your notebook is stolen or damaged while you're on the road.

You can also have the software do unattended backups at specified, recurring times. Unfortunately, Atrieva's detailed interface can sometimes be confusing.

But you can't beat this service as a safety valve. Atrieva charges a reasonable $12.95 per month for unlimited storage. If I had faster Internet access, services like this would be even more attractive.

*—Joe Gomolski* ▶

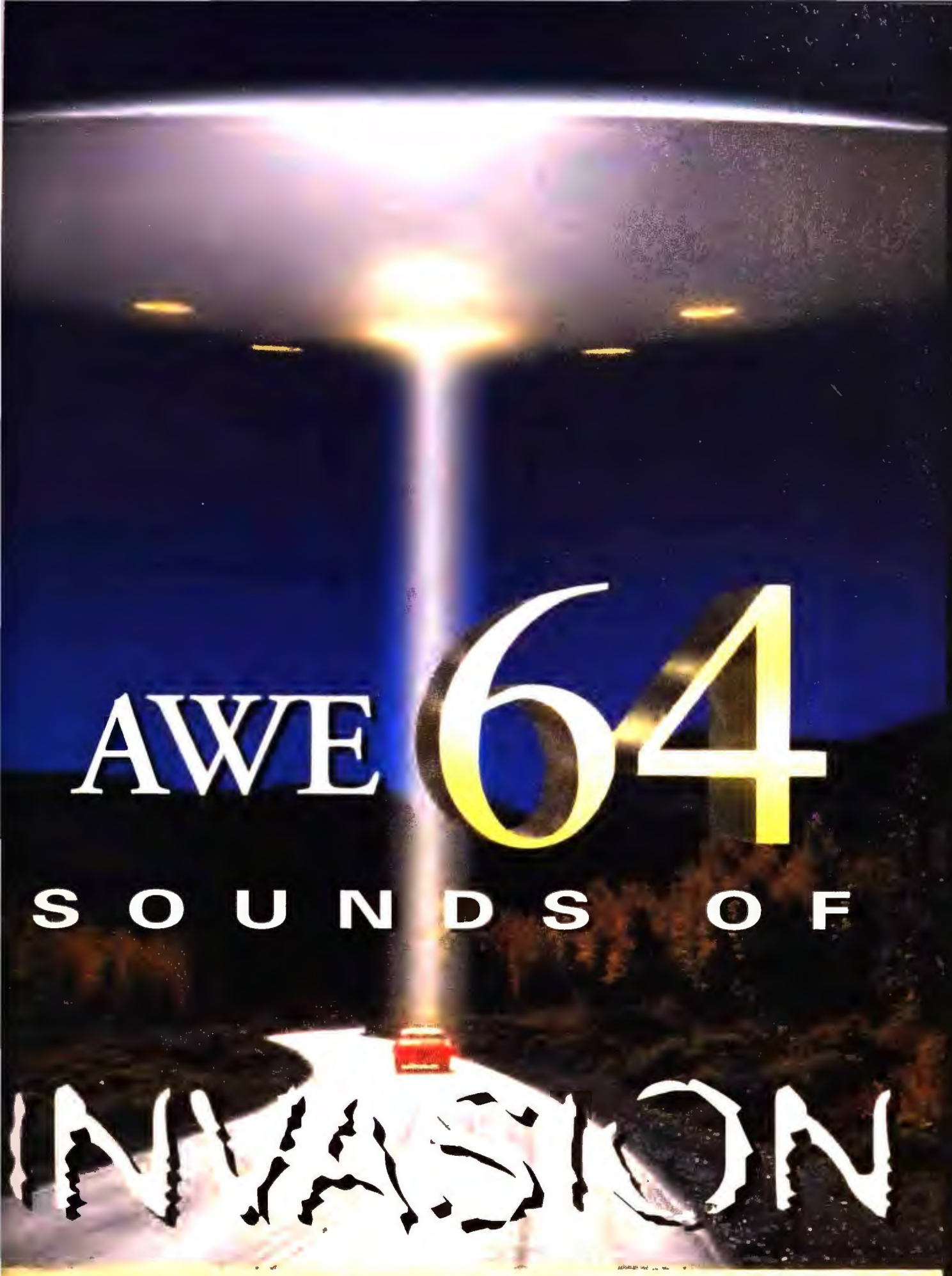
QUICK TAKES

### Secure Encryption

SIMPLE DESKTOP encryption software is cheap and plentiful, but if you'd like something sturdier for transmitting sensitive data across the Internet or a corporate intranet, Securicor 3net's Secure iQ may fit the bill. Moderately priced at $139 (volume discounts are available), this package has several powerful encryption options, large keys (1024 bits or greater), data integrity protection, and digital signatures. It runs within popular Windows 95 and NT applications, or you can drag and drop files into the application window. An e-mail extension folds Secure iQ into Microsoft Exchange, Windows Messaging, or Outlook. Securicor 3net Inc.; 609/234-3334; www.3net-inc.com.

READER SERVICE NO. 735

*—Yardena Arar*




1. "We Come In Peace."
2. Blasting Ray Guns.
3. People Screaming.
4. "You Must Believe Me!"
5. Exploding Buildings.
6. Whirring Space Ships.
7. Brains Being Sucked.
8. Bones Crunching.
9. Aliens Phoning Home.
10. Metallic Scraping.
11. Cars Crashing.
12. Kidneys Bursting.
13. Insertion of Probes.
14. Heads Exploding.
15. "Run for Cover!"
16. "Warning."
17. Aliens Melting.
18. Pods Hatching.
19. Destroying the Monster.
20. Buildings Imploding.
21. Spaceships Docking.
22. Boiling Flesh.
23. "Mayday, Mayday!"
24. Exploding Spaceship.
25. People Running.
26. "I saw a UFO!"
27. Planes Taking Off.
28. "We're at DefCon 1."
29. Aliens Communicating.
30. Children Crying.
31. Slurp.
32. Clink of Autopsy Instruments.
33. Laser Swords Crashing.
34. "Hyperspace!"
35. Flesh Being Torn Off Bones.
36. "They're Coming."
37. Wailing Sirens.
38. "You Must Die."
39. "Beam Me Up."
40. Zap!!!
41. Air Locks Closing.
42. "Oh, My God!"
43. Lasers Charging Up.
44. "We Need More Power!"
45. Ray Guns Blasting.
46. Calling the Mothership.
47. Horns Blaring.
48. "We Won!"
49. "Lock on Target!"
50. Crystals Charging.
51. Area 51 Guard: "No Admittance."
52. Zap-Zap!
53. Warning Alarms.
54. Air Locks Opening.
55. "Set to Stun!"
56. "Red Alert!"
57. Shields Up.
58. Warp Speed.
59. "Blast 'em!"
60. Eyeballs Squishing.
61. Spaceships Cloaking.
62. Radar Ping.
63. "Fire at Will!"

# Sound Blaster® AWE64 Value

The latest Sound Blaster technology is ready to invade your multimedia PC. At an out of this world price, **$99.99** (estimated street price), Sound Blaster AWE64 Value is your logical upgrade to high-fidelity audio. Hear every eerie sound with frightening clarity with up to 64 simultaneous voices of Advanced WavEffects™ & WaveGuide Synthesis. 512K onboard RAM for SoundFont® samples and high performance, lets you add your own alien sounds. Also included, the hottest Internet software. To learn more about the Sound Blaster AWE64 Value, contact us at:

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CREATIVE®

WWW.SOUNDBLASTER.COM

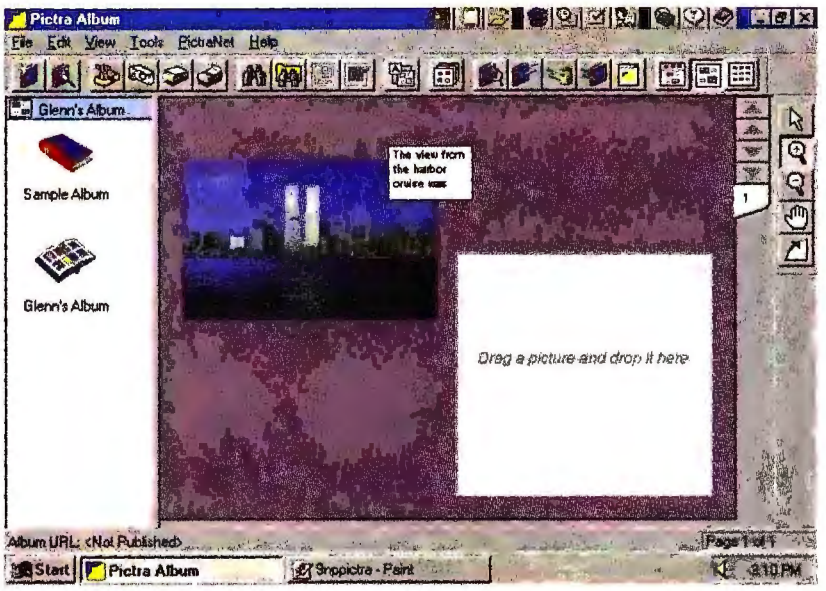
**Circle 59 on reader service card**

# Put Your Photo Album on the Web

IMAGING

DO YOU SPEND hours mailing family photos all over the country? **Pictra Album,** a software package for managing digital images and posting them online, certainly beats that old routine. To share your Kodak moments, all you have to do is e-mail a URL to your wired family members.

Street priced at $50, the software includes a subscription to the PictraNet hosting service, letting you post 10MB of images to the company's Web site for a year. (This amount holds approximately 200 images; you can cycle new pictures in and old ones out.) After the first year you'll have to pay an annual subscription fee; the company estimates it will be $50.




**ONLINE ALBUM: Pictra Album makes it easy to drag and drop photos into an online album. Friends can view it with a URL and password.**

**Pictra Album**

**PRO:** Well designed; easy to work online.

**CON:** Viewing pages can be slow over some Internet connections.

**VALUE:** Good, no-fuss way to post images online.

**PictraNet**
408/542-3800
www.pictra.com
Street price: $50

READER SERVICE NO. 736

Pictra Album's intuitive interface makes arranging a digital photo album easy. You import any image from your scanner, digital camera, or the Internet into Pictra's on-screen staging area, aptly named the Shoebox. The program supports image file formats such as BMP and JPEG.

Right-click the Edit Photo icon to launch your image editing program. (I like to draw Groucho glasses on my aunts' pictures, but you can do whatever you like.)

When you're done with the images, choose from a dozen or so album page templates, each with spots for 1, 2, 4, 8, 12, or 24 images and captions. When you drag and drop photos from the Shoebox into the album frames, Pictra Album sizes the image to fit. The quality of your pictures depends in part on the quality of the scan and the monitor that's used for viewing.

When you're done, clicking a button points your default browser to PictraNet's Web site. A simple walk-through lets you post your album on PictraNet's servers.

Naturally, you may want to keep family photos private. An album can be for your eyes only, password-protected, or available to all. PictraNet supplies you with the URL. Send the address and password to friends and family, then gather round the digital hearth. One warning: Viewing a page with several pictures over a regular phone line can be slow going.

*—Glenn McDonald*

# Portable CD-ROM Drive Has Power and Glory

CD-ROM DRIVE

I WANT TO add multimedia options to my notebook PC without adding a lot of weight. Until now, it's been impossible. Many notebooks handle either a floppy drive or a CD-ROM drive. Portable external CD-ROM drives allow simultaneous use of both drives, but require their own weighty power supplies. Now a better idea has come along: EXP Computer's **CD Traveler 820,** a 12-ounce 8X CD-ROM drive that uses a Type I PC Card connector to draw power from the notebook. If not in use, the PC Card snaps snugly underneath the Traveler drive.

Alternatively, the drive can get its juice from six AA batteries or an included small AC adapter. When the drive is using batteries, a power-off mode extends battery life by stopping a CD-ROM from spinning if it isn't accessed in 40 seconds.

The CD Traveler 820 also plays audio CDs and includes a headphone jack and a volume control. The audio works with either a notebook's sound card or most PC Card–based sound cards.

A shipping version of the CD Traveler 820 ran without a hitch on my NEC Versa 6030X notebook. Installation was automatic via Windows 95 Plug and Play. The drive handled video playback without a sputter, and audio quality was faultless. Battery life will vary depending on your notebook, power settings, and work, but on my notebook it was about 25 percent shorter when I used the PC Card connection and worked steadily with the CD-ROM drive.

Still, the CD Traveler is truly convenient on the road.

*—Michael S. Lasky* ▶

**CD Traveler 820**

**PRO:** Lightweight CD-ROM drive has no power cables or brick.

**CON:** Shortens a notebook PC's battery life.

**VALUE:** Good choice for travel.

**EXP Computer**
800/397-6922
www.expnet.com
Street price: $349

READER SERVICE NO. 737

# AWE 64

## SOUNDS OF

# A Traffic Jam

## Beat the Rush!

1. Engines Pinging.
2. Horns Honking.
3. "Are We There Yet?"
4. "Where'd You Get Your License?!"
5. "I Need to Get to the Store Before They're Out of Sound Blaster AWE64's!"
6. Bumpers Crunching.
7. Sirens Wailing.
8. "Get Out of My Way!"
9. Cop: "License Please."
10. Muffler Dragging Behind Car.
11. Cars Crashing.
12. Engines Overheating.
13. Sunroof Opening.
14. Gasket Blowing.
15. Car Burning at Side of Road.
16. Tire Hissing.
17. Vroom Vroom.
18. Horn of a Semi Truck.
19. Car Phone Ringing.
20. "It's Your Fault!"
21. Brakes Screeching.
22. "What Do You Mean You Don't Have Insurance?!"
23. Music Blasting.
24. Horns Blaring.
25. Kids Screaming in Their Car Seats.
26. Engines Revving.
27. Traffic Helicopter Overhead.
28. Tire Iron Hitting Pavement
29. Clunk of Transmission.
30. Blaring Radios.
31. Turn Signals Blinking.
32. Car Stalling.
33. Slurping Soda.
34. Changing Radio Stations.
35. Car Doors Opening.
36. Rolling Down Windows.
37. Shifting Gears.
38. Drumming on Steering Wheel.
39. Munching Potato Chips.
40. "I Wish I Had Some Coffee."
41. "Not AGAIN!"
42. Air Bags Popping.
43. Backfire.
44. "Why Didn't I Work at Home Today?"
45. Singing With the Radio.
46. @#$(!)%#!
47. Changing CDs.
48. "Hi Honey, I'm Going to Be Late."
49. Ambulance Siren.
50. Car Running Out of Gas.
51. Engine Choking.
52. People Arguing.
53. Glove Box Slamming Shut.
54. Door Locking & Unlocking.
55. Seats Moving.
56. "Are We There Yet?"
57. Cars Speeding By in Other Direction.
58. Rustling of Newspaper.
59. "I Told You We Should Have Taken the Other Freeway!"
60. Air Conditioner Blowing.
61. Pagers Beeping.
62. "There's a seven Car Pile Up..."
63. "Are We There Yet?"
64. "It's Finally Moving!"

**Sound Blaster® AWE64 Gold**
**$199.99**
Estimated Street Price

**Sound Blaster AWE64 Value**
**$99.99**
Estimated Street Price

Upgrade to the hottest sound cards that will drive your PC audio into a new realm! Introducing the best sounding Sound Blasters ever, bringing high-fidelity to your multimedia PC at an incredible value. To learn more about the Sound Blaster AWE64's, contact us: **www.soundblaster.com/sound/AWE.**

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**Circle 69 on reader service card**

# 100 REASONS WHY

| Word Processor Features | Corel® WordPerfect® 8 | Microsoft® Word 97 |
|---|---|---|
| ***Support for Intel MMX™ Technology*** | ✔ | no |
| ***Libraries*** | | |
| Clipart | 10,000+ | 3,000+ |
| Photos | 250 | 140+ |
| ***Interface*** | | |
| Shadow Cursor | ✔ | no |
| Tile documents vertically | ✔ | no |
| Reveal Codes | ✔ | no |
| Save workspace | ✔ | no |
| Search for any codes | ✔ | no |
| Application bar | ✔ | no |
| Context-sensitive property bars | 42 | 13 |
| ***Internet**** | | |
| Automatic natural language hyperlinks | ✔ | no |
| Corel Barista™ (for Java™ publishing) | ✔ | no |
| Java applets | ✔ | no |
| ***Formatting Tools*** | | |
| QuickFonts/font preview | ✔ | no |
| Spell check drop cap words | ✔ | no |
| Guidelines | ✔ | no |
| Font preview from drop-down list | ✔ | no |
| Styles can include text and graphics | ✔ | no |
| User-defined borders and fills | ✔ | no |
| Image rotation | ✔ | no |
| Parallel columns | ✔ | no |
| Captions on any side of image | ✔ | above and below |
| Make It Fit™ to expand documents | ✔ | no |
| Customizable Make It Fit options across multiple pages | 6 | none |
| Undo levels | 300 | 100 |
| Multiple character drop caps | 50 | 1 |
| ***Tables*** | | |
| Row and column indicators | ✔ | no |
| Automatic data fill (QuickFill) | ✔ | no |
| Format painter tables | ✔ | no |
| Automatic calculation | ✔ | no |
| Formulas function across tables | ✔ | no |
| Number of formulas | 98 | 18 |
| ***Long Documents*** | | |
| Create new lists | ✔ | no |
| Expand/contract subdocuments individually | ✔ | no |
| Predefined document summary fields | 51 | 27 |
| ***Proofing Tools*** | | |
| Combined Spell Checker/Thesaurus/Grammar | ✔ | no |
| Prompt-As-You-Go | ✔ | no |
| Document dictionaries and editable main dictionary | ✔ | no |
| Automatic sentence rewrite (PerfectSense™) | ✔ | no |
| ***SGML*** | | |
| Import/export | ✔ | no |
| SGML editing and validation | ✔ | no |
| Document creation tools based on DTD | ✔ | no |
| ***Transitioning*** | | |
| Backward compatibility | ✔ | no |
| Convert Corel® WordPerfect® for DOS macros | ✔ | no |
| Use existing Corel WordPerfect for Windows® macros | ✔ | no |
| Corel WordPerfect for DOS keyboards | ✔ | no |
| Convert Corel WordPerfect 6.x files | ✔ | import only |

**Available now! To buy Corel WordPerfect Suite 8, contact your local reseller.**

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*Internet connection required.

†CorelCENTRAL 8 is not included in the current release of Corel WordPerfect Suite 8. Customers will receive a voucher to obtain this application upon its release (summer 1997). Shipping and handling charges will apply.

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# COREL® WORDPERFECT® SUITE 8 BEATS Microsoft® Office 97

| Spreadsheet Features | Corel® Quattro® Pro 8 | Microsoft® Excel 97 |
|---|---|---|
| WYSIWYG editable view | ✔ | no |
| Cell reference checking | ✔ | no |
| QuickCell™ | ✔ | no |
| Copy, cut, paste discontinuous ranges | ✔ | no |
| QuickCharacter™ insert | ✔ | no |
| Consolidation, budget and scenario experts | ✔ | no |
| Sort reuse list | ✔ | no |
| QuickType™ formulas | ✔ | no |
| Edit headers/footers onscreen | ✔ | no |
| WordPerfect (including tables) and Quicken | ✔ | no |
| Quattro® (WKQ/WQ2)/Quattro Pro Notebooks (WB2, WB3) imports | ✔ | no |
| Formula Composer™ | ✔ | function wizard |
| Fit-As-You-Go (no '*****') | ✔ | limited |
| Core @functions | 504 | 400 |

| Presentation Features | Corel® Presentations™ 8 | Microsoft® PowerPoint® 97 |
|---|---|---|
| Support for Intel MMX™ technology | ✔ | no |
| Publish to Java (Corel Barista) | ✔ | no |
| QuickKeys keystroke actions (such as go to another slide, launch an application, play a sound, or even link to a URL) | ✔ | no |
| Add multiple slides simultaneously | ✔ | no |
| Import outlines into organization charts | ✔ | no |
| Customizable Background Gallery | ✔ | no |
| Slide navigation tabs | ✔ | no |
| Chart styles | ✔ | no |
| Range Highlighter used in datasheet | ✔ | no |
| Sort pie slices | ✔ | no |
| Separate drawing mode | ✔ | no |
| QuickWarp objects | ✔ | no |
| Blend objects together | ✔ | no |
| Place/Resize/Rotate chart | ✔ | no (must separate into objects) |
| Gradient fill (text and objects) | ✔ | objects only |
| Quick 3D any image | ✔ | drawing objects only |
| Slide transitions | 120 | 41 |
| Data chart functions (equations) | 16 | 7 |

| Communication Features | CorelCENTRAL™ 8† | Microsoft® Outlook 97 |
|---|---|---|
| Create a planner containing a calendar and multiple card files | ✔ | no |
| Create an all-day, multiday calendar | ✔ | no |
| Add freeform notes to calendar | ✔ | no |
| Add custom fields to address book | ✔ | no |
| Schedule group events over the Internet | ✔ | no |
| Assign To Do items over the Internet | ✔ | no |
| Follow e-mail threads | ✔ | no |
| Compose content-rich HTML messages for assigned To Do items | ✔ | no |
| Type personal To Do items directly in list | ✔ | no |
| Use the Internet for long distance calls | ✔ | no |
| Edit address book entries in view mode | ✔ | no |
| Access Internet newsgroups and corporate discussion groups using mailbox interface | ✔ | no |
| Conduct and save a "live" chat session | ✔ | no |
| Click on hyperlinks to go to linked information | ✔ | no |
| Organize cards into groups | ✔ | no |
| Participate in collaborative Internet browsing | ✔ | no |
| Sort address book on any field | ✔ | no |
| Surf the Internet using an integrated browser | ✔ | no |
| Create simple, flexible card files | ✔ | no |
| Link cards to documents or applications | ✔ | no |
| Have information "pushed" to you for instant access | ✔ | no |

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*PC Computing*, July 1997

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# Mitsubishi's Svelte Camera

**DIGITAL CAMERA**

MITSUBISHI BILLS its sleek, skinny **DJ-1000** as "the simple digital camera." At $200 it's also inexpensive, but its simplicity of design and use may actually limit its value for some users.

Compared to most digital cameras, the DJ-1000 looks like a Jenny Craig graduate. It's aerodynamically designed, weighs 2.8 ounces, and measures 4.4 inches across by 2.5 inches high by less than an inch thick. Images are captured on standard CompactFlash memory cards; a 15-shot 2MB card comes with the unit, and an optional 15MB card can save 112 images.

**TAKE IT WITH YOU: Mitsubishi's DJ-1000 isn't sophisticated, but it weighs just 2.8 ounces.**

A series of close-ups and landscape shots taken from 2 feet and up in bright and shadowy light all came out fairly well. The DJ-1000 is a basic one-button PHD (in photo store parlance, that's "Push here, dummy") camera; its shutter speeds vary automatically from 1/60 to 1/15,000 second. Image resolution as viewed with the included (and necessary, because images are captured in a proprietary format) software is adjustable to either a grainy 320 by 240 pixels or a sharper 504 by 378 pixels.

There is a price to pay for the DJ-1000's simplicity of use, however. You need a notebook with PC Card slots, a PC Card desktop reader, or a CompactFlash reader to see how your pictures turn out. (The camera package does include a CompactFlash-to–PC Card adapter.) The remaining-picture indicator is fairly crude—a light that gradually turns from green to red—so you never know exactly how many shots are left. The camera has no on-board system for deleting photos from the memory card, so unless you invest in lots of CompactFlash cards, you'll need to keep that notebook computer handy when you're in the field.

Still, it was nice to carry this featherweight camera in my shirt pocket, and the DJ-1000's moderne design earned praise from everyone who saw it—which is great for the bearer's ego.

*—Michael S. Lasky* ▶

**Mitsubishi DJ-1000 Digital Camera**

**PRO:** Sleek design, easy to use.

**CON:** No on-board viewing or memory card erasure; crude remaining-picture indicator.

**VALUE:** Practical for those with a notebook.

**Mitsubishi Electronics America**
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# EarthLink's One-Stop Web Site Kit

**WEB AUTHORING**

STARTING A WEB site is a daunting task for many small businesses. You must choose Web-authoring software, develop content, and select a Web site hosting service.

EarthLink Network's **Website Inc.** is a one-stop alternative that gets you going for $189.

The centerpiece of the software bundle is Adobe PageMill 2.0, a Web-authoring tool well suited for neophytes. Other tools handle animations, uploading files to the server, and checking links.

**WEBSITE INC. makes registering your new site easy.**

The Internet component includes an unlimited $19.95-per-month, dial-up EarthLink Network account (the first month and setup are free), plus Netscape Navigator 3.0 and some plug-ins. The 10MB Web site hosting service includes 1500MB per month of free traffic—which covers plenty of hits for most standard Web pages. However, you get only 15 free days of Web site hosting services. After that, EarthLink charges $119 a month to maintain a 10MB Web site—more than some regional ISPs charge.

Still, Website Inc. does an admirable job overall.

*—Richard Jantz*

**For more information about a product, contact the manufacturer or circle the number on the reader service card.** ■

**Website Inc.**

**PRO:** Complete Web site creation and hosting service package.

**CON:** Monthly charges fairly high.

**VALUE:** Worth it for SOHO market.

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www.earthlink.net

Street price: $189

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# Road Trip Journal: **Day 14.**

"Sales calls in Summit. **Three cancellations.** Cheese soup at Paul Bunyan Cafe. **Missed flight.** Only success today: **my e-mail** downloaded. Without that, I'd really have **an ax to grind...**"

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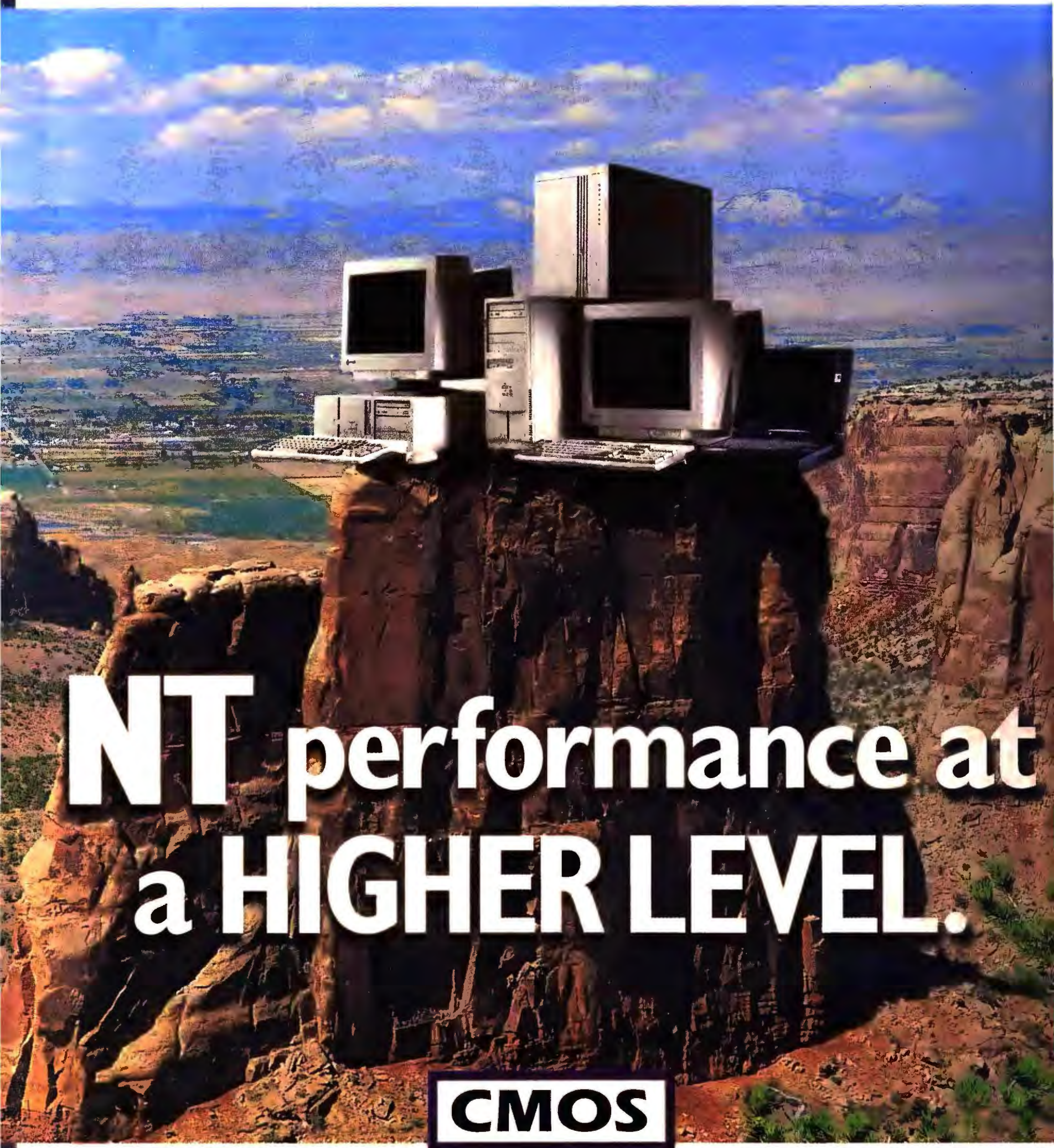
**Circle 97 on reader service card**

# Fault-tolerant Windows NT constan



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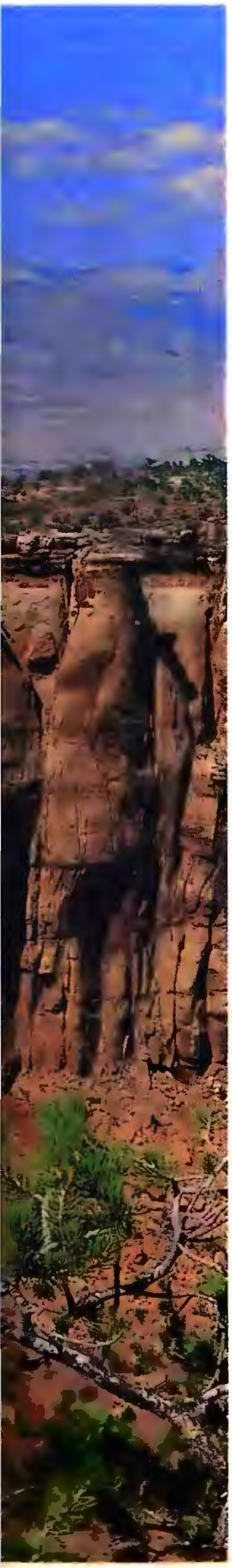

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Three-Year Limited Warranty

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### Utility US5123

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SUITE TIPS

# INSIDE office

The latest tips and techniques for Microsoft Office 97 and 95—

Mix and Match Office 95 and 97 **142**

Slimming Down Your Office 97 **143**

Word, Excel, and Access **144**

Office 97 Meets the Net **146**

Improving Your Outlook **150**

Working Together **154**

Get the Help You Want **158**

Tips for Corel WordPerfect Suite **144**

Tips for Lotus SmartSuite 97 **152**


# 97

**BY GEORGE CAMPBELL & HARRY McCRACKEN**

## plus the keys to Corel WordPerfect Suite and Lotus SmartSuite.

ILLUSTRATIONS BY EDWIN FOTHERINGHAM

# It's

**not your office, but you've probably spent a lot of time in it. It's not the Post Office, but you can use it to communicate with friends and coworkers. And it's definitely not the Oval Office—but if you're so inclined, you can use it (legally) to keep a database of campaign contributors. It's Microsoft Office 97, and while it can't guarantee you an election victory, it can do a lot to help you work smoothly.**

**In many ways, the new version is better than the last (see "Microsoft Office: What's New for '97," February). But it also has its share of headaches, including incompatible file formats and hefty hard disk requirements. That's why we've compiled a slew of tips to ease your pain. Still using an older Office? Don't worry; we've included tips that also apply to Office 95. And if you use Lotus SmartSuite or Corel's WordPerfect Suite, we've got some tips for you, too. Now, won't you step inside our office?**

## MiX AND MaTCH OFFICE 95 AND 97

**ALMOST EVERY workplace will have a mix of Office 95 and Office 97 systems, at least for a while. But Office 97 formats aren't compatible with Office 95's. Here's how to make both Offices work together.**

■ **Living in Older Versions** If you constantly share files, you want to make sure they're saved in a format that Office 95 can handle. You can set the old format as the default, or you can select a dual file format that's readable by either version. Keep in mind, though, that you could lose certain features when you save in the old format (see "What Doesn't Translate in Word" and "What Doesn't Translate in Excel and PowerPoint").

**Word:** Select *Tools•Options•Save,* then choose *Word 6.0/95 (*.doc)* in the 'Save Word files as:' list. (Word 97 actually saves Word 95 files in Rich Text Format, with a .doc extension; see "Add a Converter to Older Versions.")

**Excel:** Select *Tools•Options•Transition* and choose *Microsoft Excel 97 & 5.0/95 Workbook* in the 'Save Excel files as:' list. Office 95 users won't be able to see or use the new features, but the files can be opened and edited by users of either version.

**PowerPoint:** Select *Tools•Options•Save* and choose *Microsoft PowerPoint 95 & 97* in the 'Save PowerPoint files as:' list. As with Excel, this file format can be opened with either version of PowerPoint.

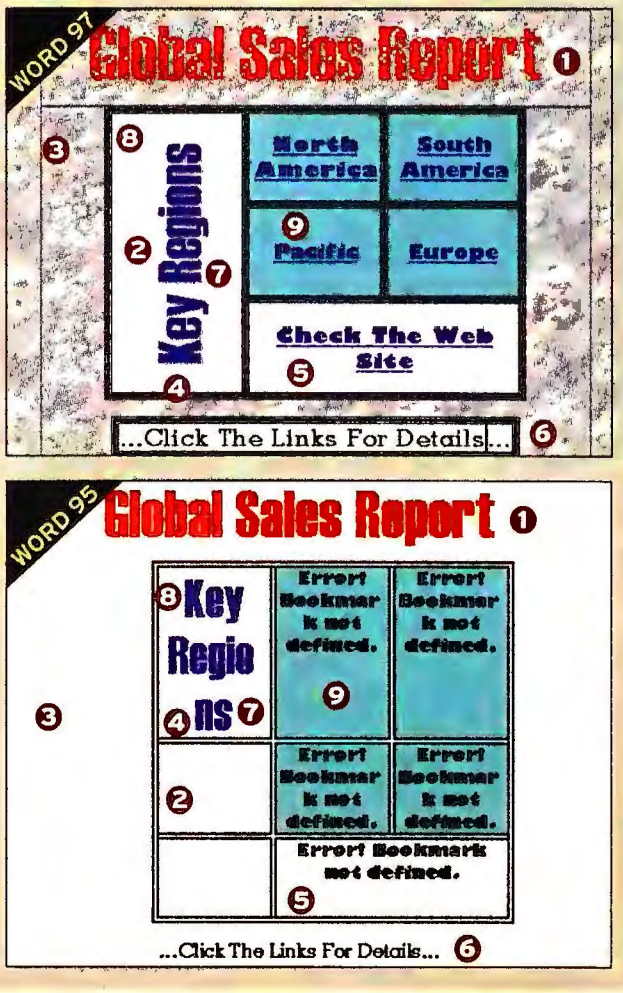
**Access:** Files created in Access 97 cannot be saved in the previous version's format.

■ **What Doesn't Translate in Excel and PowerPoint** Before you save any **Excel 97** and **PowerPoint 97** files in their old Office 95 formats, go to Microsoft's Web site to acquaint yourself with some of the features that you'll be losing. That way you won't be disappointed if your files don't turn out the way that you wanted them. For information about Excel, point your Web browser to www.microsoft.com/office/office97/documents/097share/share4.htm. For information about PowerPoint's features, point your browser to www.microsoft.com/office/office97/documents/097share/share5.htm.

■ **Add a Converter to Older Versions** When you tell **Word 97** to save in Word

## WHAT DOESN'T TRANSLATE IN WORD

**WHEN YOU SAVE Word 97 files in the previous version's format, things get lost in the translation. Here is the same file saved in Word 97 (top) and Word 95 (bottom).**




1. Special text formatting, such as Sparkle Text and other new effects, is lost.
2. Vertically merged table cells are converted to separate cells.
3. Page background and borders are lost.
4. Text rotation in cells is lost.
5. Hyperlinks are lost; Word 95 reports an error.
6. Text shading and borders are lost.
7. Text shadows are lost.
8. Fancy table borders are converted to simpler styles.
9. Vertical centering for table text is lost.

**Other features that don't translate from Word 97 to Word 95:** ■ embedded fonts ■ password protection ■ Visual Basic macros in documents ■ customized menu and toolbar settings within a document

6.0/95 format, it actually saves in Rich Text Format, losing some Word 97 *and* Word 95 features. Microsoft has a converter that lets Word 95 users open and edit Word 97 files. Keep in mind, though, that Word 95 users won't be able to save files in Word 97 format, and some Word 97 features will be lost when converting to Word 95. You can find the converter on Microsoft's Web site at www.microsoft.com/officefreestuff/word/dlpages/wrd6ex32.htm. Converters for other Office 97 apps should be available soon.

■ **Just Looking** Not everyone has a copy of Office, and not everyone with Office 95 needs to edit Office 97 documents. But everyone can open and print **Word 97** documents by installing a Word viewer for Windows 95. You can find the Word 97 viewer on the Office CD-ROM in the Valupack/Wordview directory. The file name is Wd95vw71.exe.Viewers for the other applications should be available by the time you read this. To obtain a free copy of the viewer, head over to www.microsoft.com/word/internet/viewer/.

■ **Convert Your WordBasic Macros** Office 97 finally brings Visual Basic to all of its applications, including **Word 97.** But many users of Word 95 have already created useful WordBasic macros. To convert these macros to Visual Basic, select *File•Open* in Word 97 and open the Word 95 .dot template file that contains the WordBasic macros you want to convert. Select *Enable Macros* in the Warning box. After Word converts the macros, select *File•Save As* and save your Visual Basic macros file with a new name.

# SLiMMing DoWN YOUR OFFICE 97

**IF SPACE ON your hard disk is as tight as a ten-year-old tuxedo, Office 97's hard disk requirements of up to 200MB can be daunting. There are several ways you can preserve space, all of which also work for cutting back on Office 95's bloated state.**

OFFICE 95 ■ **Don't Gain the Weight in the First Place** Frighteningly enough, **Office 97** takes up more space than Office 95 in every area, and Office 95's Compact installation option is no longer available. Slim down Office 97 by choosing a Custom rather than Typical installation. Start by unchecking the box next to any application that you don't need. Next, check the box next to each application that you want to install, then click *Change Option*. In the next dialog box, click each text box shaded in gray and then click *Change Option* again to see a list of optional features. When you find a feature you can live without, deselect it. At each level, click *OK* to save your changes and return to the previous level. See "Ideas for Cutting Down" for a list of areas where you can trim the fat.

OFFICE 95 ■ **Extreme Measures** If you've gotten rid of all the features you can possibly live without and still can't reduce **Office 97** to a manageable size, there's a last resort: Choose the *Run from CD-ROM* installation in the Setup Wizard. This option installs Office's shared components for the suite on your hard disk, but the programs themselves run from the Microsoft Office disc when you have it in your CD-ROM drive. You'll need just 60MB of disk space, but applications will start more slowly.

## IDEAS FOR CUTTING DOWN

**CAN'T FIGURE OUT what you can leave out of your Office 97 installation? The table below lists some options.**

| APPLICATION | Feature | Potential savings |
|---|---|---|
| Word | Wizards and Templates | 4.5MB |
| | Proofing Tools | 8MB |
| PowerPoint | Content Templates | 1.8MB |
| | Design Templates | 1MB |
| Access | Wizards | 6.7MB |
| Outlook | Holidays and Forms | 0.9MB |
| Web Page Authoring (HTML) | entire application | 9.7MB |
| Microsoft Bookshelf Basics | entire application | 0.3MB |
| Data Access | Database Drivers | 10MB |
| | Data Access Objects for Visual Basic | 3.8MB |
| Office Tools | Office Assistant | 1MB |
| | Popular Clip art | 3MB |
| | Clip Gallery | 2.4MB |
| Converters and Filters | Text Converters | 6.1MB |
| | Graphics Filters | 2.5MB |
| Total disk space saved | | 61.7MB |

OFFICE 95 ■ **Slim Down Your Documents** After installing Office on your hard disk, you can relieve your tortured hard drive by controlling document size with these slimming tips:

When you use the Insert•Picture•From File command in **Word** or **PowerPoint** to add a graphics file, click the *Link to file* check box and clear the *Save with document* check box. This dramatically reduces document file size. Note: Don't use this process with documents you'll send to others, or the graphic will not appear.

Sometimes **Word** documents balloon while you aren't looking. To put them on an even stricter diet, select *Tools•Options•Save* and unmark these check boxes: *Allow fast saves; Always create backup copy; Embed TrueType fonts.*

SUITE TIPS

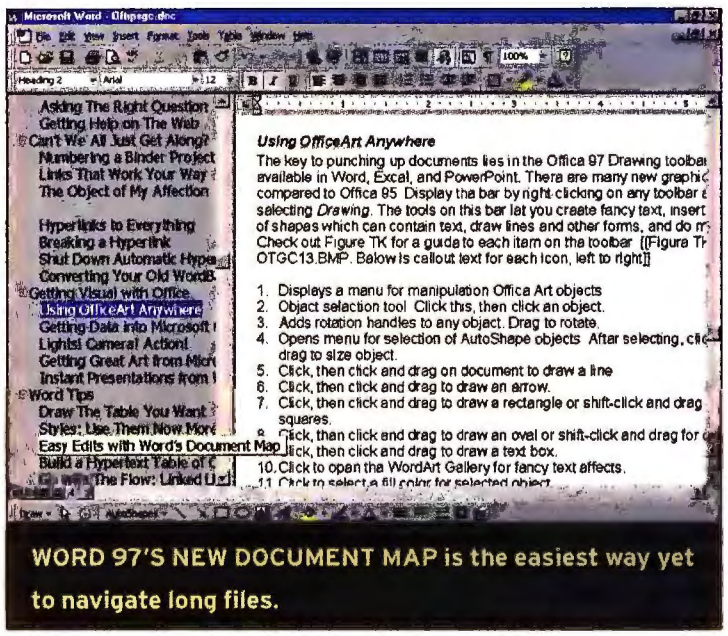
# WoRD, eXCeL, AND ACCeSS

**SURE, OFFICE 97 has cool new Web features and a brand-new information manager, but the old standbys—Word, Excel, and Access—have also been improved. Here are some of our favorite ways to reap the benefits.**

■ **Map Things Out** Want an easy way to navigate long documents? You can use **Word 97**'s new document map feature—provided you use heading styles. To apply styles to headings, highlight the text you want as your heading and choose a style from the *Style* drop-down list that's to the left of the Font menu. When you've applied all your heading styles, select *View•Document Map* or click the *Document Map* icon. An outline of your document appears to the left of the main editing window. Click any outline item to jump to that item in the document.

■ **Build a Linked Table of Contents** Word has long been able to generate tables of contents, but **Word 97** now automatically creates a TOC that links you to all parts of your document (again, you must use heading styles for this to work). When you generate a TOC using the Insert•Index and Tables command, the page numbers in the resulting table are linked to the corresponding headings. You can click on the page number in your TOC and jump directly to that part of the document. If you save the file in HTML format, these links become a part of the HTML file, too.

■ **Jump Back to the TOC** Now that you've used **Word**'s TOC to jump to a section on page 72 of your document, how do you get back? Just click the *Back* arrow on the Web toolbar. To activate the Web toolbar, right-click in any part of the toolbar area and select *Web*.



WORD 97'S NEW DOCUMENT MAP is the easiest way yet to navigate long files.

■ **Go With the Flow: Link Your Text Boxes** Do you use Word to create your office newsletter? Good news: **Word 97** now lets you create linked text boxes so that text can flow automatically from one box to another. Word 95 had frames in which you could type text, but the text couldn't flow from one frame to the next.

To create linked text boxes, select *Insert•Text Box* and draw a text box. (A Text Box toolbar will appear on screen.) Repeat the procedure to make a second box. Click on the first text box, then click the chain icon on the Text Box toolbar. Now click the second text box—your cursor should look like a bucket—to establish the link. You can repeat the procedure to link a third or fourth text box.

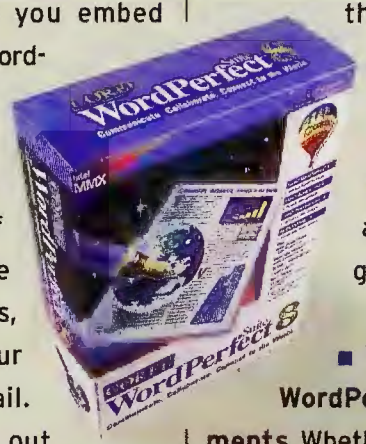
# TIPS FOR CoReL WORDPeRFeCT SuiTe

**COREL WORDPERFECT SUITE is a bargain at $395. Version 8 includes revisions of WordPerfect, Quattro Pro, and Presentations, as well as the new CorelCentral—a contact manager and scheduler. Here are tips for the latest WordPerfect Suite, plus a few for version 7.**

■ **Type WordPerfect Text Where You Want** For years, users of all word processors, including WordPerfect 7, have had to repeatedly press **<Enter>** and **<Tab>** to create text halfway down and in the middle of a blank page. In **WordPerfect 8**, that's no longer necessary. In any document, move the pointer to a blank location where you want to type. Notice the shadow cursor that follows the pointer. When the shadow cursor is at the position where you want to insert text, just click. WordPerfect 8 will insert the proper number of hard returns and tabs automatically, letting you type wherever you want on the page.

■ **Control Document Size in WordPerfect** If you embed graphics in your WordPerfect documents, file sizes might go through the roof. And if you send those files to colleagues, you may get your share of hate mail. To keep graphics out of your documents and on your local hard disk, do this:

Select *Insert•Graphics•From File* (in **version 8**) or *Graphics•Image* (in **version 7**). In the Insert Image dialog box, click the *Image on disk* check box. Now you can send the text to coworkers, but they won't be able to see the graphics.




■ **Work Smart on WordPerfect Web Documents** Whether you're designing a Web page in **WordPerfect 7** or **8**, some formatting won't translate to HTML—and you might not know it until you save the document in Web format. To avoid wasting time, select *File•Internet Publisher*, then click *Format as Web Document* before beginning work. That way, you'll only be able to use document formatting features that translate to HTML format.

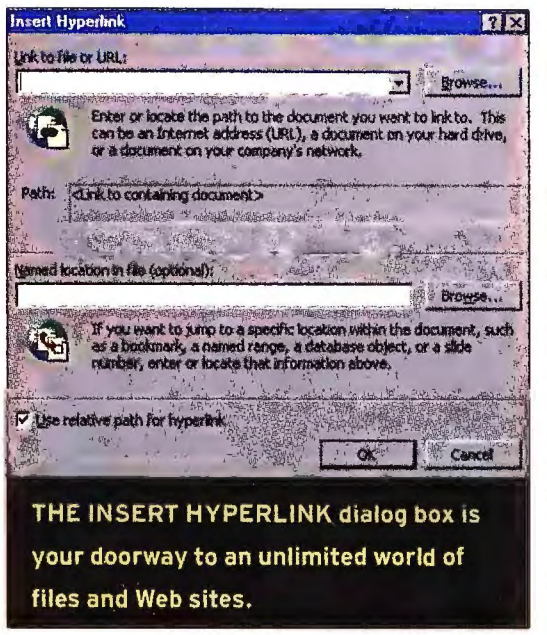
■ **Stop Wandering Around in Quattro Pro** Do you ever find yourself scrolling through a large Quattro Pro spreadsheet to check on the contents of one vital cell—say, one that adds up a far-flung selection of cells located elsewhere? Use **Quattro Pro 8**'s new QuickCell feature to keep that cell's contents on screen at all times. Click the desired cell, then move the pointer toward one of the cell's

■ **Liven Up Your Word Documents** With **Word 97,** there are three new ways to kick your documents up a notch.

**Borders:** Now you have several more options for creating eye-catching borders, including colorful graphics such as stars, pencils, and a slew of other designs. Select *Format•Borders and Shading,* then click the *Page Border* tab. You'll find the graphics in the Art pulldown menu. These ornate borders will print with your document.

**Backgrounds:** Unlike Word 95, Word 97 lets you put a background on your page (on screen, anyway). It can be a color, a pattern, or a graphic. Select *Format•Background,* and then choose a color. Or select *Format•Background•Fill Effects* to choose from a wide range of other options. These backgrounds don't print, but are retained when you save the document in HTML format.

**Fancy fonts:** You now have more special text formatting effects when you select *Format•Font.* Under the Font tab you can choose Emboss, Outline, Shadow, and other font enhancements. These new attributes appear both on paper and on the screen. The Animation tab allows you to add moving borders and other animated highlights to your text. Used sparingly, these can add spice to your document. Of course, animations don't print on paper, but they do show up on screen and when saved in HTML format.



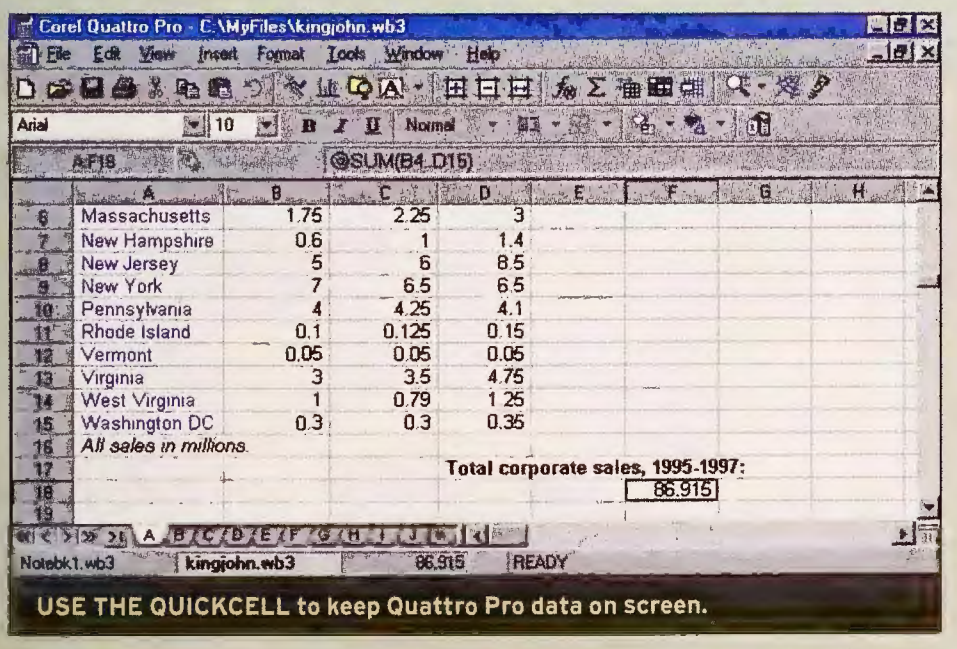
THE INSERT HYPERLINK dialog box is your doorway to an unlimited world of files and Web sites.

■ **Hyperlinks to Everything** In addition to creating hyperlinks to Web pages, **Word 97** and **Excel 97** can create hyperlinks to almost anything else, including bookmarks in a document, sound and graphics files, and even program files. Just type the text that you want to use as the hyperlink, and then highlight it. Now select *Insert•Hyperlink* and click the *Browse* button in the top half of the resulting dialog box to search for files or Internet addresses. (Click the globe in the resulting Link to File dialog box to search the Web.) Click *OK* to insert the resulting link at the cursor location. Note: Don't insert hyperlinks to files if you'll be sending your document to remote users. The link will fail because the file won't be available.

If you want to create a hyperlink to a bookmark, leave the top half of the Insert Hyperlink dialog box blank and then click the lower *Browse* button to select an existing bookmark.

■ **Excel's Shrinking Dialog Boxes** It's a little like hide-and-seek: When an **Excel 97** dialog box asks you to specify a cell or range, it often conceals the worksheet area that you want to specify. To temporarily nudge these dialog boxes out of the way, click the red arrow that appears directly to the right of fields that require a cell or range. The dialog box will temporarily shrink, revealing the worksheet behind it. Highlight the desired cell or range, and then click the red arrow again to proceed. For a sample of how this works, select *Tools•Goal Seek* and experiment with the 'Set Cell:' field. ▶

edges until it turns into a four-way arrow. Hold the left mouse button and drag the cell onto the QuickCell—the gray rectangle that appears at the bottom of the screen, roughly in the center. The QuickCell will then show the current contents of that cell until you drag the contents of a different cell onto it.



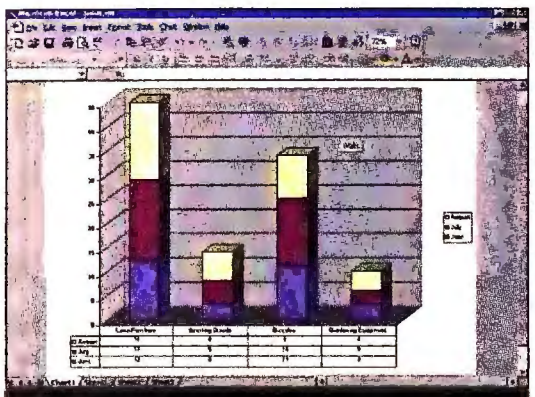
USE THE QUICKCELL to keep Quattro Pro data on screen.

■ **Auto-load a Favorite Quattro Pro Spreadsheet** If you've got a workhorse spreadsheet you open just about every time you use Quattro Pro, you can ask the program to automatically load that file whenever you launch Quattro Pro. In **version 8,** select *Tools•Settings,* click the *File Options* tab, then click the file folder icon to the right of the Autoload File field. Navigate to select the desired spreadsheet and click *Open,* then click *OK.* The file will load automatically from then on. In **version 7,** select *Edit•Preferences,* click the *File Options* tab, and type the path and file name in the Autoload File field.

■ **Spare Us the Product Pitch** By default, Web pages created in **Presentations 7** devote a fair chunk of screen real estate to an ad for the application itself—complete with a picture of the software box, a link to Corel's Web site, and copyright information. (This is not a problem in version 8.) If you want your Web page to promote *your* message rather than Corel's, you can delete this ad. When saving your presentation in HTML format, choose *File•Publish To•HTML* as usual, and select from among the four page styles. In the next dialog box, click *More Options,* then choose *None* in the Footer Information section. (You can also select *Show Custom Information,* which gives you some options for inserting a custom footer message that will replace Corel's ad.) Click *OK,* then continue as usual to save the show in ad-free HTML form.

■ **Turn Down the Volume** Have you ever wanted to quickly adjust the volume of an audio clip within a **Presentations 8** slide show while it's in progress? Press **<Minus>** on your keyboard to reduce the volume, or **<Plus>** to pump it up.

■ **Put Your Excel Data on the Table** Adding a bar graph to, say, a regional sales chart adds visual flair to your **Excel 97** worksheet. But sometimes it's useful to put the numbers that make up the chart right where you can see them at a glance. To do so, begin by creating a chart in the



ADD A DATA TABLE to an Excel chart to show the numbers behind the graphics.

standard way: Highlight a range of data, select *Insert•Chart,* and follow the Chart Wizard to select the chart type and formatting. When you get to the wizard's third step, click on the *Data Table* tab and select *Show Data Table,* then proceed with the wizard as usual. When Excel formats the chart, it will include a small spreadsheet-style table that displays the numbers the chart is based upon.

■ **Get Excel Ready for the Millennium** As the new century approaches, you may need to enter 21st-century dates in **Excel 97** worksheets. The program assumes that any date you enter in abbreviated form as 1/1/00 through 12/31/29 is in the next century. That's great, but with Excel's standard cell formatting you can't tell if 2/22/35 is February 22, 1935, or February 22, 2035. To avoid confusion, highlight ranges of cells that contain dates, select *Format•Cells,* click the *Number* tab, and click *Date* in the Category box. In the Type box, scroll down to *March 4, 1997* and double-click it. The cells you formatted will then show the entire year, not just the last two digits.

OFFICE 95 You can use this method in **Excel 95,** too (the formatting choice is *March 4, 1995* instead of March 4, 1997). However, while Excel 97 assumes that any abbreviated date up to 12/31/29 is in the next century, Excel 95 assumes this only for dates up until 12/31/19. It assumes that you want abbreviated dates from 1/1/20 onward to be in this century.

■ **Go Right to the Query** Want instant access to a table, form, query, or report without launching an entire **Access 97** database and rummaging through menus? Create a Shortcut by dragging the item in question out of Access's Database window right onto the Windows desktop. From then on, you can double-click that Shortcut to launch Access, load the database in question, and go straight to the item you need. If the Shortcut's name is cryptic, rename it to something that's easy to understand.

OFFICE 95 You can follow the same steps to create Shortcuts to tables, forms, queries, and reports in **Access 95.**

■ **Instant Filtering in Access** Looking for a fast way to filter your **Access 97** database? In any table, query, or form, right-click the field you want to filter on. When the pop-up menu appears, type your criteria into the Filter For box and press **<Enter>**; Access will immediately filter the data based on the criteria you entered. As with standard Access filtering, you can type a specific word or number or use logical operators (AND, NOT) and wild cards to find just the records you want.

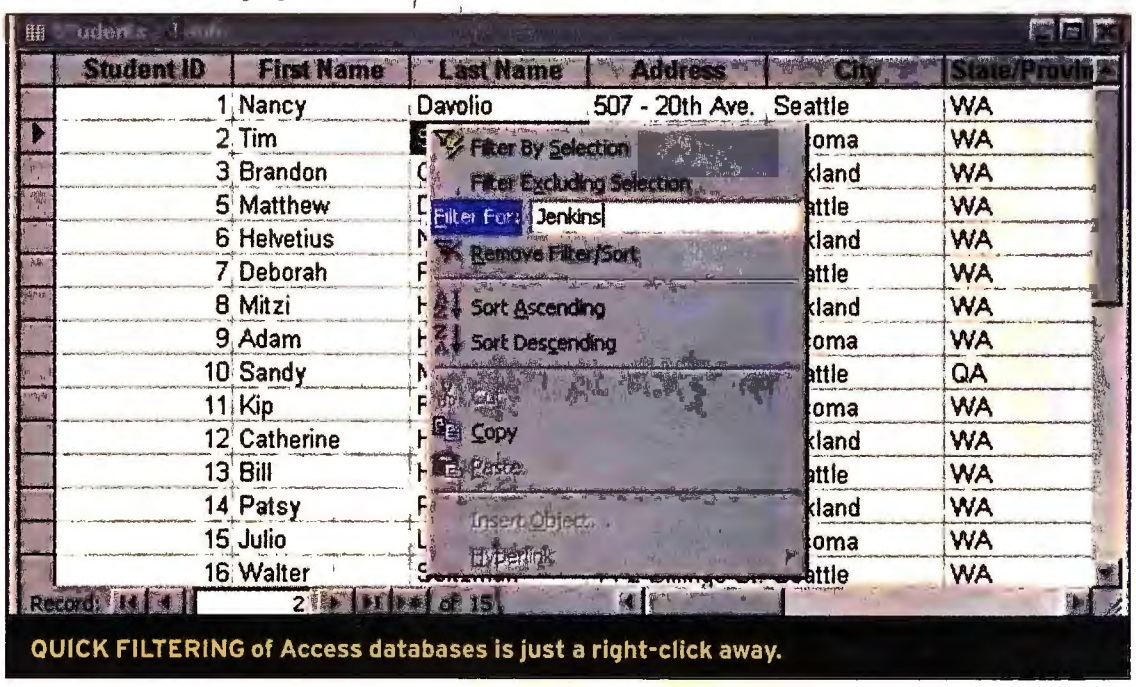
OFFICE 95 **Access 95's** database filtering does not provide the simplicity of Access 97's approach. To filter a table, query, or report, highlight the field you want to filter, choose *Records•Filter,* and select one of the three filtering options.

# OFFICE 97 MeeTS THE NeT

**EVERYWHERE you look in Office 97, you'll see Web features. There are ways to link to the Web, tools for publishing on the Web, add-ons for building your own Web page—you name it. Get started with a few of these Internet-savvy tips.**

■ **Where Are the Web Tools, Anyway?** Despite the hullabaloo over **Office 97's** Web-authoring features, they're not part of the default installation. To add them to your existing Office 97 setup, insert the Microsoft Office CD-ROM, and then double-click *Add/Remove Programs* in the Windows 95 Control Panel. Find Office 97 in the list and double-click it. In the utility that appears, click *Add/Remove,* select *Web Page Authoring (HTML)* in the list of Office 97 components, and then click *Continue* to proceed with the installation.

OFFICE 95 Office 95 supports Web features through a series of add-ons called **Internet Assistants** (no relation to Office 97's Assistant help feature). Separate Internet Assistants for Word, Excel, PowerPoint, Access, and Schedule+ are available at www.microsoft.com/products/. There, select the Internet Assistants you want from the Products pulldown menu and click *Go.* Then follow the instructions to download and install them. ▶




QUICK FILTERING of Access databases is just a right-click away.

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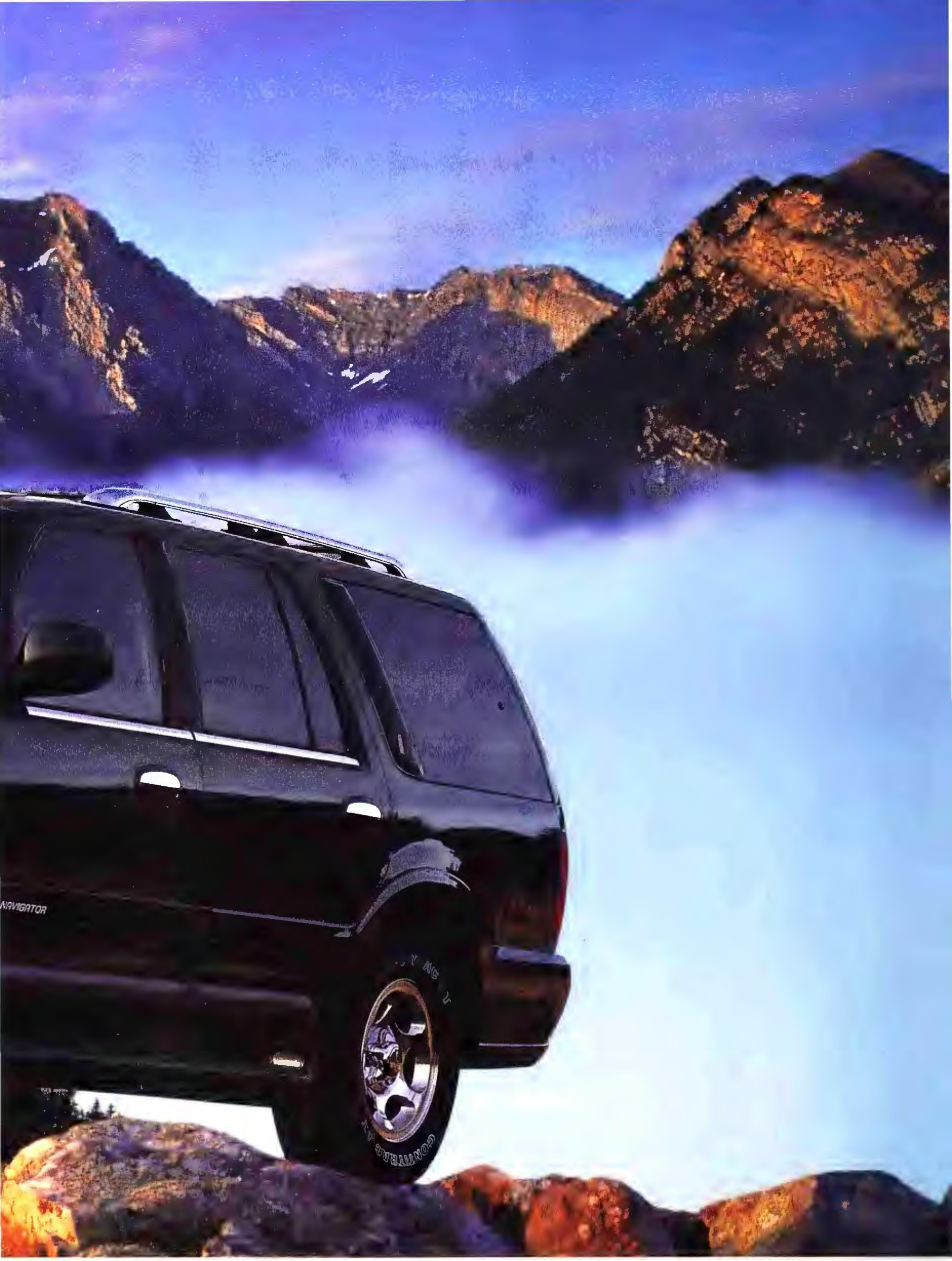


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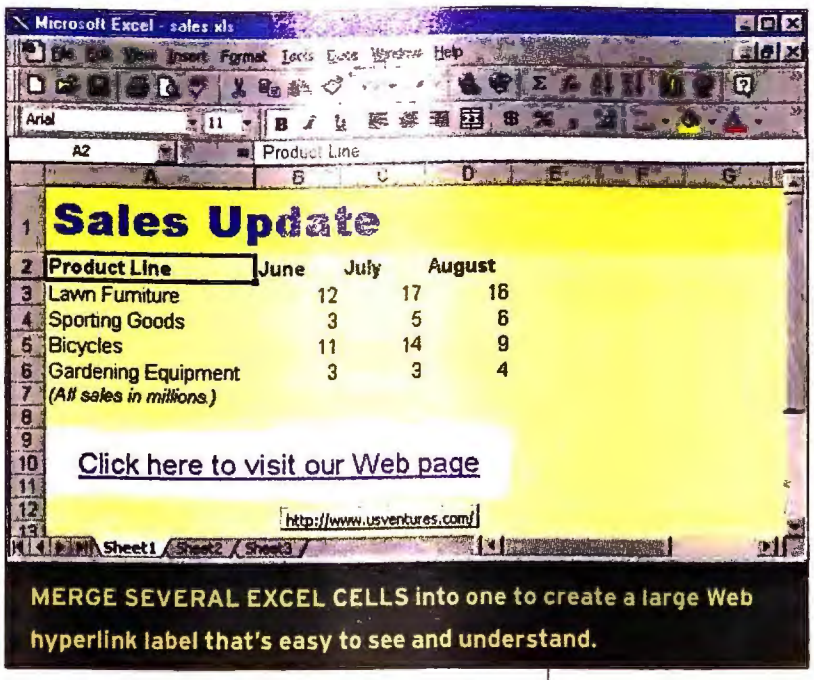


MERGE SEVERAL EXCEL CELLS into one to create a large Web hyperlink label that's easy to see and understand.

■ **Clearly Label Your Word Hyperlinks** When you type in a Web address (such as www.pcworld.com), **Word 97** cleverly turns it into a hyperlink to that Web page, unless you've disabled this feature in Tools•AutoCorrect. But you can easily change the hyperlink's label to something a little more decipherable (like 'PC World Online's Home Page'). Move the pointer just to the left of the hyperlink, so the pointer looks like an I-beam rather than a tiny hand. Then hold down the left mouse button and drag the pointer to highlight the hyperlink, and type in the plain-English label you want. The hyperlink will still jump to the URL you originally specified.

OFFICE 95 Word 95's **Internet Assistant** will not automatically establish a Web link when you type a URL, but you can still create a clearly labeled hyperlink to a Web page. To create the link, choose *Insert•HyperLink*. A dialog box appears that allows you to enter the label and Web address for your desired link.

■ **Jumbo-Size Excel Hyperlinks** Any **Excel 97** worksheet cell can contain a hyperlink to any destination on the Web. Problem is, cells are usually too small to accommodate a hyperlink label that's easy to see and understand, such as 'Click Here to Jump to Company X's Online Catalog'. Use the new Merge Cells feature to create an oversize hyperlink cell that stands out. Begin by highlighting a contiguous block of cells that's as large as the hyperlink label you want, then select *Format•Cells*. In the resulting dialog box, click the *Alignment* tab, select *Center* in both the Horizontal and Vertical drop-down menus, select *Merge Cells*, and then click *OK*. Your worksheet will now contain an oversize cell with plenty of room for a plain-English hyperlink label. Select *Format•Hyperlink* to link it to the Web.

WORD OFFERS some snazzy bullets for use in Web pages.

■ **Bullets Over the Web** When you save in HTML format a document that contains any of **Word 97**'s custom bullets, they get converted to simple black dots. Fortunately, Word 97 also provides some nice-looking bullets that are designed specifically for use in Web pages. Enter Word 97's HTML mode by using *File•Save as HTML*. Highlight the bullets that you want to change, or position the cursor where you want to insert a new one, then choose *Formats•Bullets and Numbering*. Instead of Word's standard bullets, you'll get 19 Web-compatible ones to choose from. Click one, then click *OK* to insert it into your document.

■ **Use Draw 97 Instead of OfficeArt** When you save an **Office 97** document in HTML for use on the Web, any graphics created with the nifty new OfficeArt tools vanish. The good news is that Microsoft's Web site offers Draw 97, a free downloadable applet that provides the same tools as OfficeArt, but in HTML-compatible form. Point your Web browser to www.microsoft.com/officefreestuff/word/ to get Draw 97. Once you've installed the program, instead of using OfficeArt in Word, Excel, PowerPoint, or Access, select *Insert•Object*, choose *Microsoft Draw 97 Drawing* in the Object Type list, and click *OK*. The Draw 97 tools will then appear on your screen. Now you can try your hand at adding cool works of art to your personal or business Web pages.

## ImPROVing YOUR OuTLooK

**OUTLOOK IS OFFICE 97's answer to Schedule+, the personal information manager that came with Office 95. It's definitely more powerful than Schedule+, but it can also be a challenge to use. Here are some ways you can improve your Outlook.**

■ **Belly Up to the Outlook Bar** The fastest way to use **Outlook**'s many features is to use the Outlook Bar, which sits on the left-hand side of the screen and gives you quick access to the program's tools. To make the Outlook Bar even handier, you can place folders of commonly used non-Outlook files into any one of its views. Right-click on the bar's background area and choose *Add to Outlook Bar* in the pop-up menu. In the dialog box that appears, click the *Look in* drop-down menu and then choose *File System*. You'll get a window that will allow you to navigate your disks and choose any folder by ▶

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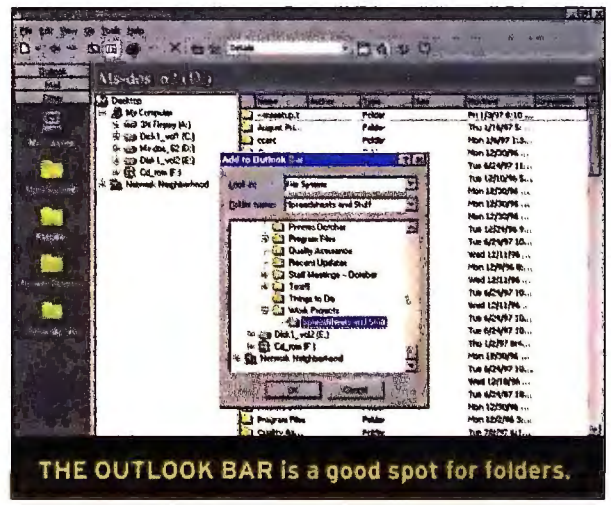
clicking on it. When you've selected the desired folder, click *OK*. From then on, the folder will appear in the Outlook Bar; click it to see the folder's contents.

■ **Favorite Apps at Your Fingertips** If you spend the majority of your workday in your PIM, it would be nice to put your favorite programs on the **Outlook** Bar so you can launch them quickly. You can come close by putting a Favorite Programs folder there that contains Shortcuts to essential programs. To do so, create a folder on your hard drive named Favorite Programs, then drag the icons for your chosen programs into the folder to create Windows Shortcuts. (You can do this in Outlook, with My Computer, or with the Windows Explorer.) Then follow the instructions in "Belly Up to the Outlook Bar" to add the Favorite Programs folder to the Outlook Bar.

■ **Address Changes** If you're moving to **Outlook** from another PIM, you don't want to have to type your address book and other info all over again. But the only converters automatically installed with Outlook are for Microsoft products such as Schedule+. To add Lotus Organizer import filters, launch the Windows 95 Control Panel and double-click *Add/Remove Programs*, then select *Microsoft* ▶



THE OUTLOOK BAR is a good spot for folders.

# TIPS FOR LOTUS SMARTSUITE 97

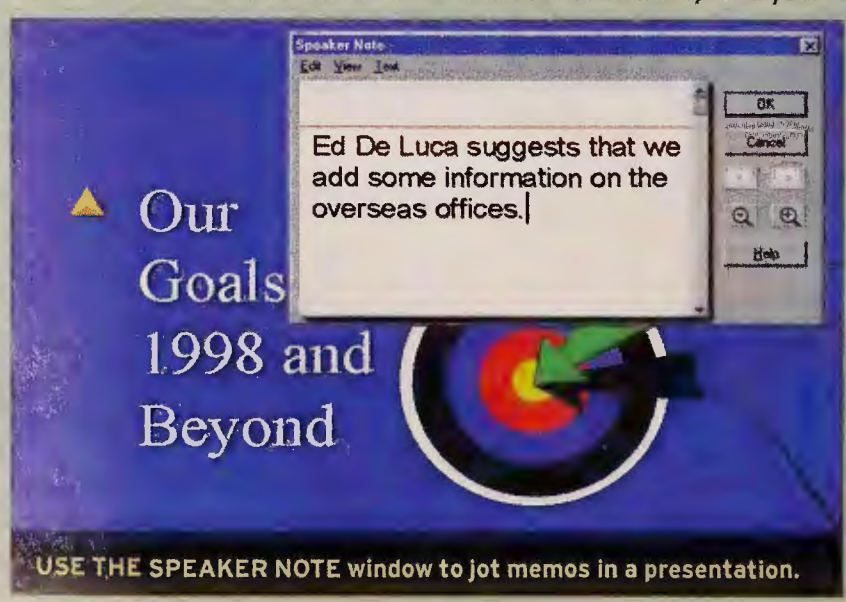
**APPEARANCES TO THE CONTRARY, Office 97 isn't the only suite in town. Lotus SmartSuite 97, which includes 1-2-3, Organizer, Freelance Graphics, and Word Pro, has a few new tricks of its own. Here are some tips to help you get the most out of it.**

■ **How to Hide 1-2-3** If you're giving a presentation, you might not want your clients to see all your data. But **Lotus 1-2-3 release 97** does away with release 5's old Hidden format, which let you conceal a cell's contents. If you miss that format, use this alternative method to make worksheet data disappear: Highlight the desired cell or range, and then press **<Alt><Enter>** to bring up the InfoBox. Click the *InfoBox* tab, which has a picture of a key, and select *Hide Cell Contents*. The cell or range you selected will appear to be empty, but the contents are still there.

■ **Split Documents for Easy Editing** When you edit a document, you often need to move text around or work in two different parts of the same document. But if both locations aren't visible, you can't use **Word Pro**'s handy drag-and-drop text editing. You can solve this problem by selecting *View•Split Top-Bottom*. This divides the screen into two windows, each showing different portions of the current document. Repeat this command to split the document into more parts if necessary. You can drag and drop any selected material between windows.

■ **Freelance Notes on the Fly** When you're giving a **Freelance Graphics 97** slide-show presentation, it's sometimes useful to be able to jot down notes—a comment from the audience or a reminder to yourself. You can do so right within the show by right-clicking the current slide and choosing *Speaker Notes*. Type your note in the memo window that appears, click *OK*, and then continue with the show. Once you're done with the presentation, save it to retain the notes you entered. To refer to these notes later when in editing mode, choose *Page•Open Speaker Note*.

■ **Foolproofing Organizer** Unlike most personal information managers, **Organizer 97** doesn't automatically load your personal data when you launch the application, nor does it save changes to your calendar and address book as you make them. This makes it all too easy to enter items in the wrong file, or to lose items that you've entered. To eliminate that risk, select *File•User Setup•Organizer Preferences*, click the *Default File* tab, select *Automatically Open* and click the *Browse* button, highlight your Organizer file, and click *Open*. Then click the *Save* tab, select *After Each Change*, and click *OK*. Organizer will now open your data file automatically and save changes on the fly.




USE THE SPEAKER NOTE window to jot memos in a presentation.

■ **Downsize Drawers** You know, **SmartSuite 97**'s handy SmartCenter would be even handier if you could squeeze more drawers on screen at one time. You can, but the technique for doing so isn't very obvious. The drawers have to be open before you can adjust their size. Click on any drawer to open it, and then place your cursor over the right edge of the drawer until the cursor turns into a double-headed arrow. You can then click the left mouse button and drag the drawer to resize it. Repeat these steps as necessary to resize other drawers.

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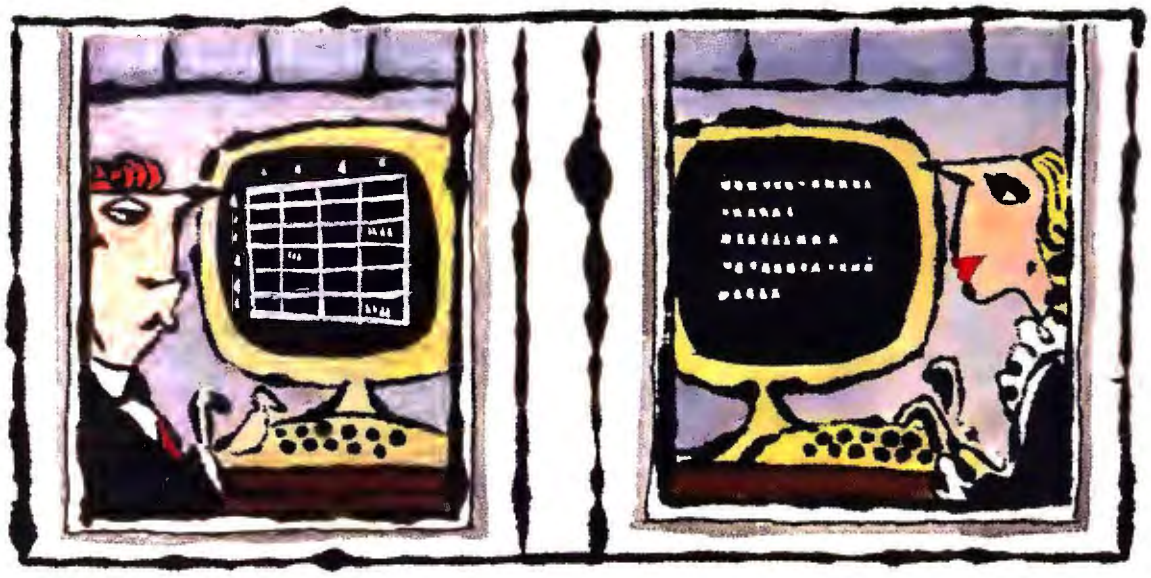
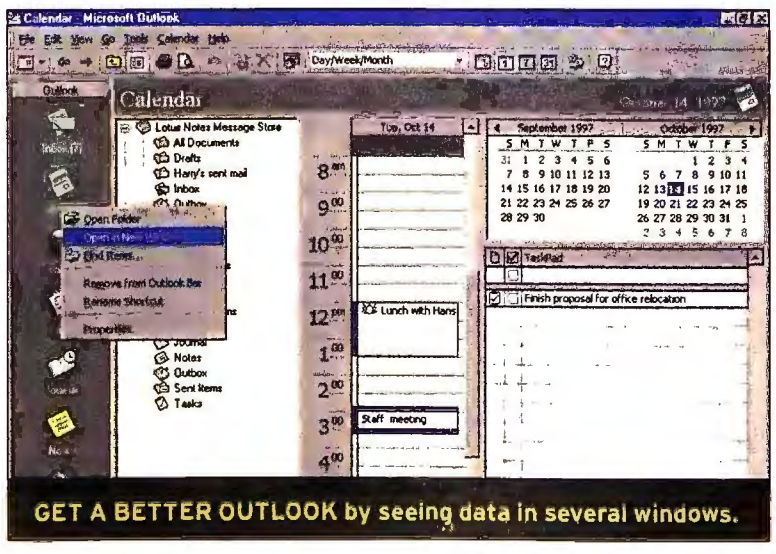


*Office 97*, click *Add/Remove*, insert your Office 97 CD-ROM when prompted, and click *OK*. In the utility that appears, choose *Add/Remove*, click *Microsoft Outlook*, and choose *Change Option*. Check *Lotus Organizer Converters* and click *OK*, then click *Continue* to proceed with the installation. Converters for Act, Ecco, and Sidekick are also on the Office 97 CD-ROM: Use Windows' Explorer to navigate to Valupack/Convert/Outlook and run the program called *Outcvt.exe* to install them.

OFFICE 95 **Schedule+** has converters for Organizer, Ecco, Act, and other PIMs, too. They're available on Microsoft's Web site. Point your browser to www.microsoft.com/scheduleplus/freestuff/impconv/default.htm and follow the instructions.

■ **Right-Size Your Notes** Want to enter directions to your client's office in your contact database? **Outlook** lets you add free-form notes to any record. Unfortunately, it doesn't automatically expand to handle longer text, and there are no scroll bars. Consequently, it's tough to tell the extra information is there. Drag the handle in the Note's lower right-hand corner until all the text is visible. This resizing is permanent, so when you open the Note later, you'll see all its contents at a glance.

■ **Open More Windows in Outlook** Sometimes you want to check information on a contact while you're in the middle of creating an appointment. But when you click on the Inbox, Calendar, or any other item in the Outlook Bar, the item you selected replaces whatever was there before. To open multiple windows at once, right-click the item in the Outlook Bar that you want to open, then choose *Open in New Window* in the pop-up menu that appears.



GET A BETTER OUTLOOK by seeing data in several windows.

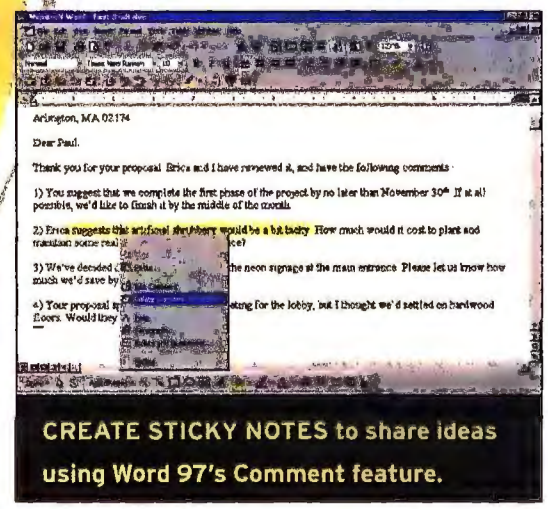
# WoRKing ToGeTHeR

**SHARING INFORMATION is one of the most important things you do. Office 97 continues to add features that make it easier for a workgroup to collaborate on projects. Keep these tips in mind, and you'll be working better with others.**

■ **Leave Sticky Notes in Documents** With **Word 97**'s Comment feature, you and your coworkers can discuss a document in sticky note–like messages. Creating a comment is simple: Just select the text you want to comment on, select *Insert•Comment*, type away in the window that appears, then click *Close*.

OFFICE 95 **Word 95**'s Annotations feature is more cumbersome than Word 97's Comment feature. To insert your notes, select *Insert•Annotation* and type your remarks. To see the annotations in a document, you have to select *View•Annotations*. In brackets you'll see the initials of the person who made the annotation.

■ **Get Back** When you send a **Word 97** document to your coworkers via e-mail, the file might be returned to you edited, marked up, and annotated within an inch of its life. And although Word 97's Revisions feature helps you keep track of who made which change, it's often important to have an unaltered copy of the original document on hand, especially if something important gets deleted by mistake. Whenever you're creating a new file that will be shared, select *File•Versions*, and then highlight *Automatically save a version on close* and click *Close*. From then on, Word stores multiple versions of the document within the file; to return to the original one (or any earlier version), just select


CREATE STICKY NOTES to share ideas using Word 97's Comment feature.

*File•Versions*, locate the desired version, and then double-click it.

■ **Revise Excel's Revision Tracking** Using **Excel 97**'s new revision-tracking feature, you can display pop-up notes that log all changes by any user. By default, however, these notes display *all* changes—including the ones you made yourself. If you find that distracting, choose *Tools•Track Changes•Highlight Changes*, select *Who*, then choose *Everyone but Me* in the drop-down box to the right. From then on, the pop-up notes will alert you to changes made by coworkers, but won't display your own edits.

■ **Pack Up Your Fonts** The artful use of snazzy fonts can make your **Word 97** and **PowerPoint 97** documents look terrific, but when you share those documents with coworkers who don't have the same fonts on their computers, formatting ▶

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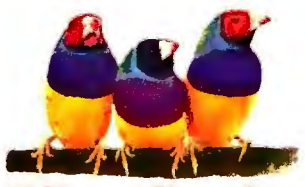


ViewSonic®

Circle 246 on reader service card

can go awry. You can tell Word and PowerPoint to embed the fonts you used in the document so that they travel along with the file. In both applications, select *File•Save As.* In PowerPoint, just select *Embed TrueType* before you enter a file name and save it as usual; in Word, click *Tools•Options,* select *Embed TrueType Fonts,* then click *OK* and continue as normal.

■ **Shuttle Complete Contact Info** Do you want to share a record from your **Outlook** contact database with a coworker via e-mail? Unfortunately, the Contacts•Forward command sends only the note field. Instead of using that command, select the desired record and press **<Ctrl>-c**. That copies everything that's displayed to the Clipboard. Now choose *File•New•Mail Message,* click in the message area, and press **<Ctrl>-v** to paste the entire contact record into the message. You can then address and send the message as usual.

## GeT THE HeLP YOU WaNT

**WHAT ARE ALL these cute cartoons and why do they keep bugging me? Office 97's new Office Assistants (not to be confused with Office 95's Internet Assistants) offer features such as automatic formatting and plain-English help searches to make Office 97 easier to use. But they can also get in the way. Here's how to get the most help with the least aggravation.**

■ **Customize Your Office Assistants** Not everyone wants the Office Assistants to behave the way that Microsoft planned. Fortunately, there's a lot you can do to tame the little beasts. Start by dragging the Office Assistant window's border to make it smaller. You can customize the way the Assistants work by right-clicking the Office Assistant window and selecting *Options,* then choosing the helpful features you want.

■ **Nuke the Assistants Altogether** The Assistants will always pop up in certain instances, like when you select Help•Microsoft Word Help. To eradicate them, exit all your **Office** programs, then click the Windows *Start* button. Choose *Find,* and select *Files or Folders.* Make sure that 'Look In:' points to the disk that you've got Office 97 stored on, then type ***.act** in the Named field and click *Find Now.* A list of one or more files with the .act extension appears; delete them all, and the Assistant feature will disappear permanently. If you think you might want the Assistant back later, don't delete the files; change the extension to something else, such as **.ac1**. The Assistant will disappear, but you'll be able to restore it by changing the file extension back to .act.

■ **Turn Off Automation** Most of the Office 97 applications try to anticipate what you want as you type. For instance, Word capitalizes the first words in sentences if you forget to do so. Depending on your temperament, this is either a productivity boon or a serious annoyance. If you don't want such an extreme level of automation, select *Tools•AutoCorrect* in **Word, Excel, Access,** or **PowerPoint.** You'll get a dialog box that lets you choose which changes you wish to happen automatically. You can deselect all the options to get a fully manual mode.

OFFICE 95 Turning off the while-you-type automation in the Microsoft Office 95 applications works the same way: Choose *Tools•AutoCorrect* to get a box that enables you to turn off some or all of the features.

OFFICE 95 ■ **Ask the Right Questions** The Office Assistants understand English—up to a point. How you phrase questions determines the quality of the response. You can use these same suggestions to pose questions to Office 95's Answer Wizards.

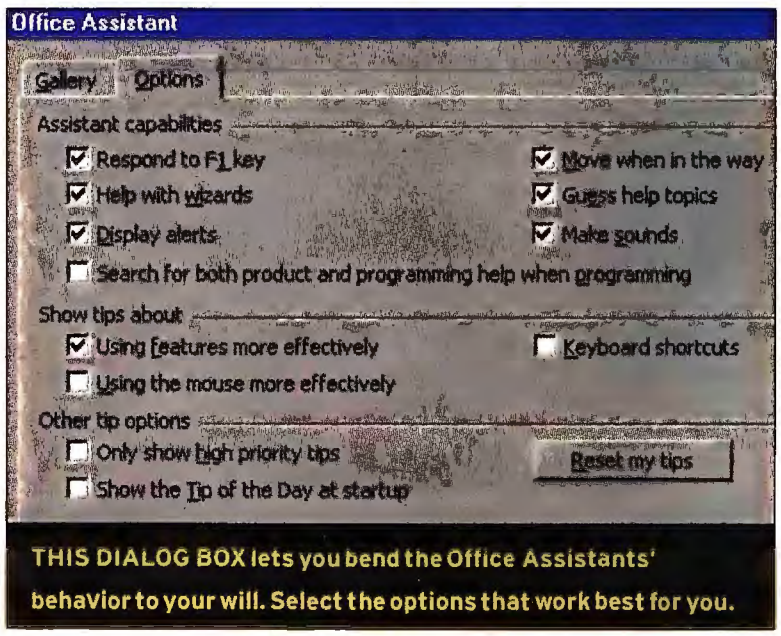
**Use the names of actual program features.** Asking 'How do I draw a box around something?' doesn't work as well as 'How do I create a border?'

**Ask one thing at a time.** The simpler the query, the better the response. If the word 'and' is in your question, you might not get the best answer.

**Be specific.** Depending on what exactly you want to accomplish, ask 'How do I print a graphic on an envelope?' if it's the graphic you're interested in, rather than 'How do I print an envelope?'

**Avoid extraneous words and punctuation.** Asking 'Graphic on envelope' gets the same result as 'How do I print a graphic on an envelope?'

■ **Get Help on the Web** If you're connected to the Internet, you aren't limited to the built-in help in **Office 97.** Select *Help•Microsoft on the Web* in any application, and pick a menu item to launch your browser and connect to Microsoft support. On that Web site you'll find free update files, FAQ files, product news, and even a place to ask those tough questions. It's worth checking in every month or so just to see what's new. Office 95 doesn't connect directly to Web support.




THIS DIALOG BOX lets you bend the Office Assistants' behavior to your will. Select the options that work best for you.

online *For additional tips and a list of helpful resources, see PC World Online at www.pcworld.com/sep97/office. George Campbell is a contributing editor and Harry McCracken a senior associate editor for* PC World. ■

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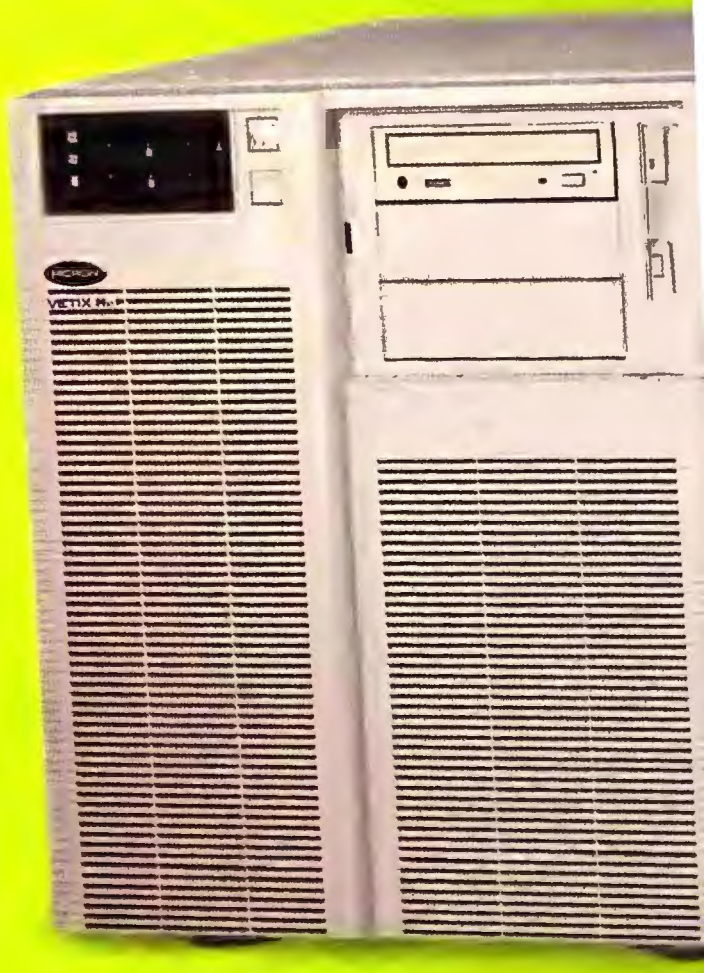

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512KB internal L2 secondary cache, DMI support
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### STANDARD FEATURES

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256KB integrated L2 cache
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress Pro 100 controller
Integrated SVGA graphics
12X SCSI-2 CD-ROM drive
3.5" floppy drive
9 drive bays: 6 internal 3.5," 3 external 5.25"
Microsoft Mouse, 104-key keyboard
Integrated hardware instrumentation
Dedicated server technical support, 7x24
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accelerator, 2MB EDO RAM
Integrated wavetable sound
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Microsoft Intellimouse, 104-key keyboard
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133MHz Intel Pentium processor
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Li-Ion battery
121" TFT SVGA, 800x600 display

### STANDARD FEATURES

Intel 430MX PCI chip set
256KB L2 pipeline burst cache
PCI bus with 128-bit graphics accelerator
MPEG compatible
Zoomed video-ready
Touchpad pointing device
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† On-site service for the Vetix server is provided by Digital Equipment Corporation and is optional.

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128MB ECC EDO RAM
Three 4GB Ultra-Wide SCSI-3 hard drives (12GB total)

### STANDARD FEATURES

256KB integrated L2 cache
Dual Pentium Pro ZIF sockets
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress Pro 100 controller
Integrated SVGA graphics
12X variable speed SCSI CD-ROM drive
3.5" floppy drive
5 internal, hot-swappable, hard drive array bays (upgradable to 10)
3 external 5.25" media bays
1 (one) 330 watt power supply standard
(upgradable to 3 for added redundancy)
Microsoft Mouse, 104-key keyboard
Microsoft Windows NT Server 4.0 (10-user license)
Intel LANDesk® Server Manager 2.52
Integrated hardware instrumentation
Dedicated server technical support, 7x24
5-year/3-year Micron Power limited warranty
1-year next-business-day on-site service†
NOS Support (3 incident resolutions/
1st year), 7x24

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Dual Intel 200MHz Pentium® Pro processors
256MB ECC EDO RAM
Five 4GB Ultra-Wide SCSI-3 hard drives (20GB total)

### STANDARD FEATURES

512KB integrated L2 cache
Mylex dual channel Ultra-Wide SCSI-3 RAID caching controller
w/4MB ECC RAM
Dual Pentium Pro ZIF sockets
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress™ Pro 100 controller
Integrated SVGA graphics
12x variable speed SCSI CD-ROM drive, 3.5" floppy drive
5 internal, hot-swappable hard drive array bays (upgradable to 10)
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32MB EDO RAM (80MB max)
2.1 GB removable hard drive
12.1" active matrix color display, 800x600

### STANDARD FEATURES

Intel 430MX Mobile PCI chip set
256KB L2 pipeline burst cache
PCI graphics accelerator, 2MB VRAM
8X modular CD-ROM drive
Pick-a-Point dual pointing devices
Sound Blaster 16-bit stereo sound
Built-in stereo speakers and microphone
Motorola Montana 33.6 fax/modem
CardBus- and zoomed video-ready
2 infrared ports, 1 front, 1 rear
S-video and NTSC-video capability
Built-in game port
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48MB EDO RAM
3GB removable hard drive
13.3" TFT XGA display

### STANDARD FEATURES

Intel 430TX Mobile PCI chip set
512KB L2 pipeline burst cache
PCI bus with 128-bit graphics accelerator, 2MB DRAM
20X modular CD-ROM drive with AutoPlay™
Pick-a-Point™ dual pointing devices
16-bit stereo sound
(supports surround sound and wavetable)
Built-in stereo speakers and microphone
Motorola Integrated 33.6 fax/modem w/full telephony duplex phone
CardBus-and zoomed video-ready
2 infrared ports, 1 front, 1 rear
S-video and NTSC-video capability, built-in game port
Management Pak, Executive Travel Pak
2 modular expansion bays (hard drive, CD-ROM drive,
3.5" floppy drive, lithium-ion battery)
Custom nylon carrying case
Microsoft Windows 95 and MS® Plus! CD
Microsoft Office 97 SBE CDs
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**$5,399**
Bus. lease $170/mo.

## MICRON™ MILLENNIA® XRU WITH FUSION 3D™

Intel 266MHz Pentium® II processor (features MMX™ technology)
64MB EDO RAM
6.4GB EIDE hard drive
19" Hitachi SuperScan CM751, .26dp (18" display)

### STANDARD FEATURES

512KB internal L2 cache, 2MB BIOS
Diamond Stealth Pro DX, 3D video, MPEG, 4MB EDO RAM
Monster 3D graphics card with 4MB memory
3.5" floppy drive, 100MB Iomega Zip drive
DVD-ROM drive,* DVD software, E4 Cool DVD PCI decoder card:
6 channel AC-3 to 2 channel out capability, SPDIF output (digital audio out)
US Robotics Sportster 56K x2 internal data/fax modem**
Awe 64 PCI sound card
Cambridge SoundWorks/MicroWorks-
2 speaker satellite with subwoofer stereo system
Tool-free minitower or desktop
Microsoft® Intellimouse, 104-key keyboard
Microsoft Windows® 95 and MS® Plus! CD
Microsoft Office 97 SBE CDs
Universal Serial Bus connections
Fusion 3D game pak:
Mech Worrior 2: Mercenaries 3Dfx version
AH-64D Longbow, U.S. Navy Fighters '97
Command & Conquer, Popular 3Dfx
Racing Sim
MS Sidewinder Pro joystick
5-yr/3-yr Micron Power℠ limited warranty

**$3,999**
Bus. lease $136/mo.

## MICRON MILLENNIA MME WITH FUSION 3D

Intel 233MHz Pentium processor with MMX
48MB SDRAM
4GB EIDE hard drive
17" Micron 700FGx, .26dp (16.0" display)

### STANDARD FEATURES

512KB pipeline burst cache, flash BIOS
Diamond Stealth Pro DX, 3D video, MPEG, 4MB EDO RAM
Monster 3D graphics card with 4MB memory
3.5" floppy drive
100MB Iomega Zip drive
24X EIDE variable speed CD-ROM drive
32 voice wavetable stereo sound
Advent 370's - speaker/subwoofer system
US Robotics Sportster 56K x2 internal data/fax modem**
Tool-free minitower or desktop
Microsoft Intellimouse, 104-key keyboard
Microsoft Windows 95 and MS Plus! CD
Microsoft Office 97 SBE CDs
Universal Serial Bus connections
Fusion 3D game pak:
Mech Worrior 2: Mercenaries 3Dfx version AH-64D Longbow, U.S. Navy Fighters '97 Command & Conquer, Popular 3Dfx Racing Sim
MS Sidewinder Pro joystick
5-year/3-year Micron Power limited warranty

**$2,799**
Bus. lease $95/mo.

## MICRON MILLENNIA XRU

Intel 266MHz Pentium II processor (features MMX)
64MB EDO RAM
6.4GB EIDE hard drive
17" Micron 700FGx, .26dp (16.0" display)

### STANDARD FEATURES

512KB internal L2 cache, 2MB BIOS
3.5" floppy drive
100MB Iomega Zip drive
24X EIDE variable speed CD-ROM drive
32 voice wavetable stereo sound with speakers
US Robotics Sportster 56K x2 internal data/fax modem**
PCI 64-bit 3D video, MPEG, 4MB EDO RAM
Tool-free minitower or desktop
Microsoft Intellimouse, 104-key keyboard
Microsoft Windows 95 and MS Plus! CD
Microsoft Office 97 SBE CDs
Multimedia Xcitement Pak
(comprised of MMX technology-based software)
Universal Serial Bus connections
5-year/3-year Micron Power
limited warranty

**$2,999**
Bus. lease $102/mo.

## MICRON MILLENNIA MME P200

Intel 200MHz Pentium processor with MMX
48MB SDRAM
4GB Ultra ATA hard drive
17" Micron 700FGx, .26dp (16.0" display)

### STANDARD FEATURES

512KB pipeline burst cache, flash BIOS
3.5" floppy drive
100MB Iomega Zip drive
24X EIDE variable speed CD-ROM drive
32 voice wavetable stereo sound with speakers
US Robotics Sportster 56K x2 internal data/fax modem**
PCI 64-bit 3D video, MPEG, 4MB EDO DRAM
Tool-free minitower or desktop
Microsoft Intellimouse, 104-key keyboard
Microsoft Windows 95 and MS Plus! CD
Microsoft Office 97 SBE CDs
Multimedia Xcitement Pak
(comprised of MMX technology-based software)
Universal Serial Bus connections
5-year/3-year Micron Power
limited warranty

**$2,299**
Bus. lease $78/mo.

## MICRON MILLENNIA LXE P166

Intel 166MHz Pentium processor with MMX
16MB EDO RAM
2.1GB EIDE hard drive
15" Micron 500FGx, .28dp (13.7" display)

### STANDARD FEATURES

512KB pipeline burst cache, flash BIOS
3.5" floppy drive
16X EIDE variable speed CD-ROM drive
16-bit stereo sound and speakers
PCI 64-bit 3D video, MPEG, 4MB EDO RAM
Tool-free minitower or desktop
Microsoft Mouse, 104-key keyboard
Microsoft Windows 95 and MS Plus! CD
Microsoft Works CD
Universal Serial Bus connections
5-year/3-year Micron Power limited warranty

**$1,499**
Bus. lease $56/mo.

## MICRON POWERDIGM™ XLI

Dual Intel 200MHz Pentium Pro processors
64MB ECC EDO RAM
4GB Ultra-Wide SCSI-3 hard drive
19" Hitachi SuperScan CM751 (18" display) .26dp color monitor
Number Nine Imagine 128 series II video card, 4MB VRAM

### STANDARD FEATURES

256KB internal L2 cache, flash BIOS
3.5" floppy drive
Plextor 12/20 Plex variable speed SCSI CD-ROM drive
Memory upgradable to 512MB ECC EDO RAM
Supports multiple Ultra-Wide SCSI-3 hard drives
PCI 32-bit Ultra Wide SCSI-3 controller
Iomega Jaz SCSI drive with 1GB removable cartridge
32 voice wavetable stereo sound with speakers
3Com 3C905 Fast EtherLinkXL 10/100 PCI TPO network adapter
Tool-free minitower
Microsoft Intellimouse, 104-key keyboard
Microsoft Windows NT® Workstation
5-year/3 year Micron Power
limited warranty

**$4,899**
Bus. lease $167/mo.

*The CD-ROM drive will be removed upon the purchase of the DVD upgrade.
**Maximum transmission speed of up to 56Kbps when downloading data and 33.6Kbps when uploading. However, actual performance is dependent upon numerous factors and transfer rates may be less than the maximum potentials.

# Appealing options.

## MULTIMEDIA OPTIONS

| | |
|---|---|
| 32 voice wavetable stereo sound card | $59[1] |
| 32 voice wavetable stereo sound card with 2MB RAM | $99[1] |
| Advent AV270 Powered Partners stereo speakers | $79 |
| Advent AV370 Powered Partners stereo speakers with subwoofer | $199 |
| Microsoft® SideWinder 3D Pro joystick | $59 |
| Microsoft SideWinder gamepad | $39 |

## STORAGE/MEDIA OPTIONS

| | |
|---|---|
| Adaptec 2940U Ultra SCSI Fast-20 controller (upgrade from system with standard Ultra SCSI Fast-20 controller) | $100 |
| Plextor 12/20 Plex 3MB/sec SCSI internal CD-ROM drive (upgrade from system with standard EIDE CD-ROM drive) | $100[2] |
| Iomega Jaz SCSI drive with 1GB removable cartridge | $299[2] |
| Iomega ZIP IDE drive with 100MB removable cartridge | $99 |
| Iomega 6-pack of 100MB Zip cartridges | $99 |
| Iomega Ditto 2000 (1/2GB) Travan tape backup drive with tape | $149 |
| Iomega Ditto 3200 (1.6/3.2GB) Travan tape backup drive with tape | $199 |
| Sony 4/8GB SCSI DDS-2 tape backup drive with tape and software | $899[2] |
| Cheyenne ARCserve with InocuLAN (for servers) | $499 |
| Mylex dual channel Ultra-Wide SCSI-3 RAID caching controller with 4MB ECC RAM | $899 |

## COMMUNICATION OPTIONS

| | |
|---|---|
| 33.6 internal data/fax modem | $99 |
| 33.6 internal data/fax modem, speakerphone, voice mail | $119[3] |
| 33.6 external data/fax modem | $299 |
| 56Kbps technology modem** | $99 |

## NETWORKING OPTIONS

| | |
|---|---|
| 3Com 3C509B Etherlink III ISA combo network adapter | $79 |
| 3Com 3C900 EtherLinkXL PCI combo network adapter | $99 |
| 3Com 3C905 Fast EtherLinkXL 10/100 PCI TPO network adapter | $99 |
| 3Com OfficeConnect Hub 8/TPC | $149 |
| 3Com OfficeConnect Switch 140 | $969 |

## SOFTWARE OPTIONS

| | |
|---|---|
| EdVenture Pak: Sheila Rae the Brave, Putt-Putt Saves the Zoo, Reader Rabbit's Reading Development Library 1, Freddie Fish and the Case of the Missing Kelp Seeds, and the Thinkin' Things Collections 2* | $69 |
| Quicken Financial Pak: Quicken Deluxe, Quicken Financial Planner, Quicken Parents' Guide to Money, Quicken Family Lawyer* | $69 |
| CorelDRAW 7 (full retail version) | $299 |
| Corel WebMaster Suite (full retail version) | $99 |
| Novell Intranetware 4.11, 5-user license, (for Vetix LXI-N only) | $699 |

## HP PRINTERS

| | |
|---|---|
| HP DeskJet 692c printer | $319 |
| HP DeskJet 870Cxi printer | $419 |
| HP LaserJet 6Lxi printer | $429 |
| HP LaserJet 6P printer | $799 |

## DISPLAY/VIDEO OPTIONS

| | |
|---|---|
| 17" Hitachi SuperScan CM630 (15.9" display) .26dp color monitor | $150[4] |
| 21" Hitachi SuperScan CM801 (20.0" display) .26dp color monitor | $650[4] |
| Number Nine Imagine 128 series II video card, 4MB VRAM | $299[5] |
| Number Nine Imagine 128 series II video card, 8MB VRAM | $549[5] |

## TRANSPORT OPTIONS

| | |
|---|---|
| MicronDock™ multimedia port replicator: ethernet 10BT LAN adapter, SCSI-2 port, S-video and NTSC-video output, built-in stereo speakers, infrared port, headphone, microphone, line-in jacks, parallel, serial, VGA and 2 PS/2 ports (with warm dock and built-in game port - available on XPE models only) | $299 |
| Micron™ Executive™ desktop package: matching black 17"monitor (16.0" display), mouse, mousepad and keyboard (can be used with or without MicronDock) | $699 |
| Motorola Montana 33.6 fax/modem supports regular telephone connections, cellular phones and two-way paging devices | $259 |

## SCANNER OPTIONS

| | |
|---|---|
| HP Scanjet 5s sheetfed scanner | $269 |
| HP Scanjet 5p flatbed scanner | $399 |
| HP Scanjet 4c flatbed scanner | $799 |

## DESKTOP EXTENDED SERVICE OPTIONS

| | |
|---|---|
| Optional 1st year on-site service[6] coverage included | |
| 2nd year on-site service[7] coverage | $79 |
| 2nd and 3rd year on-site service[7] coverage | $99 |

Other service options may be available, ask your system consultant

## SERVER EXTENDED SERVICE OPTIONS

| | |
|---|---|
| 2nd and 3rd year next-business-day[8] on-site service coverage[7] | $99 |
| 4-Hour response[9] on-site service coverage[7] (8am-5pm, M-F), 3 years total | $798 |
| 4-Hour response[9] on-site service coverage[7] (24-hours, 7 days per week), 3 years total | $998 |

Other service options may be available, ask your system consultant

## NOTEBOOK EXTENDED SERVICE OPTIONS (VLx only)

| | |
|---|---|
| 2nd and 3rd year parts and labor[8]; 3-business-day turnaround for 3 years | $269 |
| 2nd and 3rd year parts and labor[8]; 7-business-day turnaround for 3 years | $209 |

## OTHER OPTIONS

| | |
|---|---|
| APC Per7T surge suppressor | $39 |
| APC Pro7T surge suppressor | $59 |
| APC Smart-UPS 700 with PowerChute plus software | $389 |
| APC Smart-UPS 1000 with PowerChute plus software | $529 |
| Microsoft Natural Keyboard (upgrade from standard keyboard) | $49 |

[1] Upgrade from systems with standard 16-bit stereo sound card
[2] Requires SCSI host adapter
[3] Requires sound card
[4] Upgrade from system with standard Micron 17" 700FGx (16" display) color monitor
[5] Upgrade from systems with standard 64-bit 4MB video card
[6] 1st year on-site service is available in the United States and in limited areas in Canada from third-party service provider per customer's agreement with provider
[7] 2nd year and 2nd and 3rd year offerings are available in the United States only. Extended services, if purchase after system shipment may have a higher cost.
[8] Services will be scheduled, whenever possible, for the next business day after parts are received by the customer.
[9] Available in certain locations, ask your system consultant for details.

Some options and accessories available with system purchase only

*Available only on desktop and notebook systems with Microsoft Windows 95.
**Maximum transmission speed of up to 56Kbps when downloading data and 33.6Kbps when uploading. However, actual performance is dependent upon numerous factors and observed transfer rates may be less than the maximum potentials.

**MICRON POWER℠ WARRANTY**

- 5-year limited warranty on microprocessor and main memory
- 3-year limited parts-only system warranty (1-year for TransPort VLx)
- 1-, 2- or 3-year optional on-site service agreement for Micron desktop and server systems
- 30 days of free Micron-supplied software support for Micron desktop systems; 3 optional network operating system incident resolutions included for Micron server systems
- 30-day money back policy
- 24-hour technical support

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# Bigger is Better

**Fifteen inches is too dinky. Twenty-one inches is too pricey. We rated nearly two dozen 17-inch monitors to find a display that's just right.**

BY JOHN GODDARD

WELL, IT'S FINALLY happened. My monitor now looks like my desk—cluttered. On a typical workday, I have my word processor, calendar, contact list, e-mail program, and Internet browser all running at once. And every time I want to compare rows in a couple of worksheets, I have to do so much scrolling, I feel as if I'm peeping through a keyhole. I could use a 21-inch monitor, but it might crush my ▶

desk. Besides, I can't afford the $1500 or more it would cost.

Small wonder 17-inch monitors are becoming so common, even on budget desktop systems. Sure, everybody would like bigger screens, but for most of us, 17-inchers offer the best compromise between size and price. The average cost of the 23 models we tested was about $740—almost $400 higher than the average 15-inch monitor on last month's Top 10. But you also get 30 percent more viewing area—enough to switch from 800 by 600 resolution to 1024 by 768 without having to use a magnifying glass to read the fine print. The higher resolution will also put almost 66 percent more on your screen, widening your view on worksheets from a keyhole into a window.

From the models we reviewed this month, we mined two real gems: the $698 Iiyama VisionMaster Pro 17 and the $749 Mitsubishi Diamond Pro 87TXM. Both of these moderately priced Best Buys produced bright, sharp images in our lab tests, and they were easy to set up and use. The Iiyama's price and features make it suitable for nearly any business or professional application, and it has an edge over the Mitsubishi in displaying graphics. But for the extra $51, Mitsubishi gives you more intuitive controls and software to help you adjust and calibrate color and image settings.

## Best Buys

IIYAMA'S VisionMaster Pro 17 (right) nabs a number one Best Buy with terrific image quality, professional features, and a midrange $698 price. Our second Best Buy, the $749 Mitsubishi Diamond Pro 87TXM (left), costs more, but it displays text and graphics almost as well, has more advanced controls, and includes color- and image-adjustment software.

Along with our two Best Buys, Dell's UltraScan 1000HS, Compaq's V70, Hansol Multitech's 17PX, IBM's P70, Princeton Graphics Systems' EO75, Samsung's SyncMaster 700b, Sony's CPD-220VS, and ViewSonic's PT775 earned spots on our Top 10. The 13 monitors that didn't—from ADI, CTX, EIZO-Nanao, Gateway 2000, GoldStar, Hitachi, KDS, MAG InnoVision, NEC Technologies, Nokia, Philips, Sylvania, and TeleVideo—cost too much or didn't have good enough image quality. For reviews, see PC World Online (www.pcworld.com/sep97/monitors).

We also looked at the next generation of monitors: flat-panel LCDs that take up little space and have perfect focus. For more, see "Flat-Panel LCDs: Space-Age Displays." While you're there, read our analysis of the Panasonic PanaFlat PF70, a conventional CRT with a completely flat screen. This late arrival looked very good next to the LCDs—at about one-third the price.

## Monitor Typecasting

WHEN WE DID OUR FIRST 17-inch Top 10 Monitors review a couple of years ago, we had only two models on the chart priced under $700. Now we have five (see Top 10 Monitors in this issue). Monitor vendors generally split their 17-inch offerings into two classes, "professional" and "value." The former generally cost $700 and up and are for power users who spend all day working with detailed text and graphics. The latter cost less, and they're used for common business and home applications. Professional displays come packed with advanced screen controls, such as color convergence and focus, so you can fine-tune the image to the type of work you are doing. Based on our tests, the professional models from IBM and ViewSonic produce sharper, more accurate images overall than do the value models from Dell, Compaq, Hansol, and Princeton Graphics. But some models blur the difference. Our number one Best Buy from Iiyama, for example, costs less than $700 but has the image quality of a professional model—as does the $699 Samsung at number four. And even the value models on our chart have good enough pictures and screen controls to satisfy most users.

Multimedia monitors add speakers and (usually) a microphone to a value or professional-class monitor. Multimedia displays cost from about $600 to $1100, and they target gamers and people with limited desk space. Only one of the multimedia monitors we tested this month made our chart: The $899 Sony CPD-220VS delivers high-quality text and graphics and very good sound.

Universal Serial Bus ports are an intriguing feature now starting to show up on monitors. The Sony multimedia model is the only Top 10 monitor that comes with USB. Vendors have been touting these ports for years, saying that USB will let you daisy-chain peripherals, such as your keyboard, mouse, printer, scanner, and more. At press time, the first USB devices were being announced and given sneak previews; see *Top of the News*, in this issue. Unfortunately, Microsoft didn't build USB support into Windows 95: Look for it to show up in the next version, code-named Memphis (but likely to be called Windows 98).

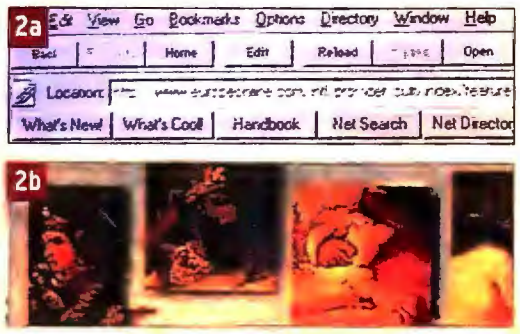
PHOTOGRAPH: GIAMPIERO BENVENUTI. PHOTOCOMPOSITION: JEFF BERLIN

# *Picking the Right Top 10 Monitor for the Job*

IF YOU WORK WITH photos or documents that combine text and graphics, you can't go wrong with the Iiyama VisionMaster Pro 17, our number one Best Buy. The Iiyama does a nice job with a combination of images and text (1b), and it gave us a crisp URL (1a), unlike the CTX Executive Series EX700 (2a and 2b), which didn't make the chart.

**Best Web Page: Iiyama**

**Needs Work: CTX EX700**




| TEXT | | SCANNED PHOTOS | | WEB PAGE | |
|---|---|---|---|---|---|
| Monitor | Text quality | Monitor | Graphics quality | Monitor | Text and graphics quality |
| IBM P70 | very good | Iiyama VisionMaster Pro 17* | excellent | Iiyama VisionMaster Pro 17* | very good |
| Iiyama VisionMaster Pro 17* | very good | ViewSonic PT775 | excellent | ViewSonic PT775 | very good |
| Mitsubishi Diamond Pro 87TXM* | very good | Mitsubishi Diamond Pro 87TXM* | very good | Mitsubishi Diamond Pro 87TXM* | very good |
| Dell UltraScan 1000HS | very good | Sony CPD-220VS | very good | IBM P70 | very good |
| ViewSonic PT775 | very good | IBM P70 | very good | Sony CPD-220VS | very good |
| Samsung SyncMaster 700b | very good | Samsung SyncMaster 700b | very good | Samsung SyncMaster 700b | very good |
| Sony CPD-220VS | very good | Princeton Graphics Systems E075 | very good | Princeton Graphics Systems E075 | good |
| Princeton Graphics Systems E075 | good | Compaq V70 | good | Dell UltraScan 1000HS | good |
| Hansol Multitech 17PX | good | Hansol Multitech 17PX | good | Hansol Multitech 17PX | good |
| Compaq V70 | good | Dell UltraScan 1000HS | good | Compaq V70 | good |

* Best Buy  Monitors are arranged in order of quality in each category, from best to worst (only Top 10 monitors shown).  See Top 10 chart (page 279) for methodology.

## Image Counts

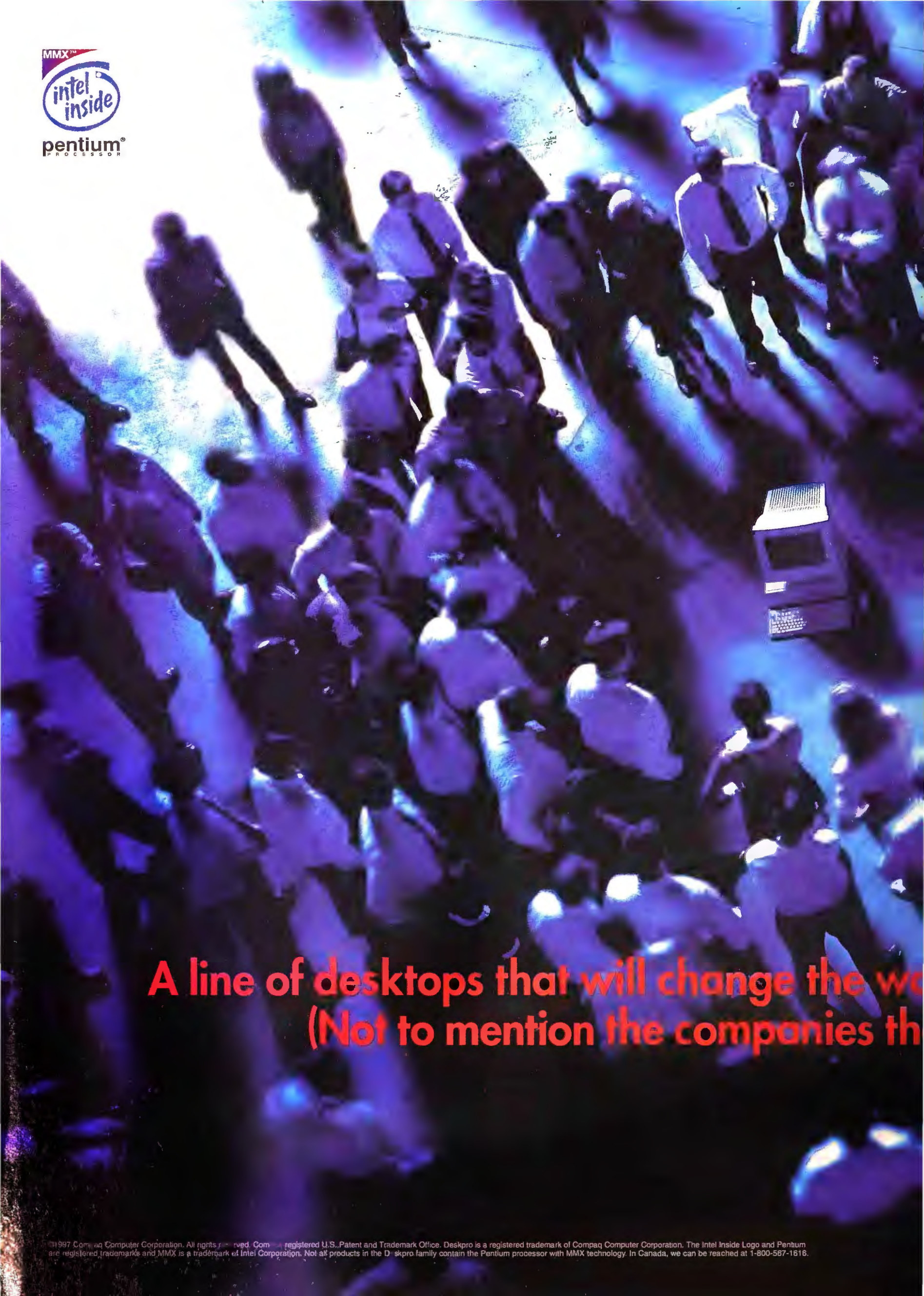
AFTER ALL IS SAID AND DONE, image quality counts most. This month we added more screens to our monitor tests, causing some products to change rankings. All the numerical ratings are lower. As before, we compiled the opinions of five experts and five office workers. We tested under controlled lighting, simulating an office environment. Our tests included a business letter, a spreadsheet, a Web page loaded with graphics and text, and a collection of scanned photos. This time we added a newsletter, an intricate line-art illustration, and a photomontage superimposed on a technical drawing. The newsletter shows how well a monitor focuses in different areas; the line art tests if the display can handle intricate lines without blurring or moiré patterns. The photo collage shows overall image crispness and the display of highlights, shadows, and 3-D effects.

Of the monitors we tested, fully a third could do no better than satisfactory in either text or graphics. Two, the CTX Executive Series EX700 and the TeleVideo SuperView 210, actually received poor ratings in both categories. All of the Top 10 monitors received good or better scores on text and graphics. For more on image quality, see the chart above.

## Before You Buy

HERE ARE THREE FINAL TIPS for getting the right monitor.

- Make sure your monitor will work well with your graphics card: To eliminate flicker, both must handle the resolution you use with a refresh rate of 75 Hz or faster. You'll also need enough graphics memory: If your card has 2MB, you can work at 1024 by 768 resolution in 65,536 colors. But if you need to display very high resolution graphics in true color, buy a professional-grade monitor and a graphics card with at least 4MB.
- Try before you buy: Good specs don't make a good monitor. If you're buying through the mail, check return policies.
- Check to see what your warranty covers. Most monitors have a three-year warranty, but some are limited to three years on parts, two years on labor, and just one year on the tube. ▶

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COMPAQ

ou look at desktops.
ake them.)

## 1 Iiyama VisionMaster Pro 17

**PRO:** Terrific image quality, large viewable area, easy to adjust

**CON:** Boxy, two very faint lines visible across screen

**VITAL STATS:** 15.9-inch viewable area, .25mm Diamondtron tube, up to 85-Hz refresh rate at 1024 by 768, three-year warranty, 12-hour weekday toll-free technical support

YOU DON'T HAVE TO PAY a fortune for professional quality. Iiyama's $698 VisionMaster Pro 17 gives you the same winning combination that's kept it on top of our charts since January: a great display at a good price. Whether you're browsing Web pages, sifting through market data, or designing a newsletter, this display is up to the task. Tiny digits in our worksheet test screen were sharp, and subtle highlights and shadows in our scanned photos were clearer than on other monitors. For instance, our image of a shady waterway shows a beam of sunlight touching a grassy bank; most displays turn the grass a fluorescent green, but the Iiyama's colors were true to life. As with all 17-inch stripe pitch monitors, two very faint horizontal lines (caused by wires used to secure an internal aperture grill) are visible against white backgrounds.

• **Mitsubishi's drop-down panel is easy to use.**

A full suite of 19 advanced on-screen controls, such as trapezoid, pincushion, and image tilt, are accessible through three simple buttons just beneath the screen. When you activate a menu item, up pops a gauge that indicates its adjustment level. One quibble: Iiyama could have made this feature even better by adding numbers next to the gauge so settings were easier to remember. *Iiyama, 800/394-4335, www.iiyama.com*

READER SERVICE NO. 601

## 2 Mitsubishi Diamond Pro 87TXM

**PRO:** Superb picture, intuitive menus, image-adjusting software

**CON:** Boxy, two very faint lines visible across screen

**VITAL STATS:** 15.7-inch viewable area, .25mm Diamondtron tube, up to 107-Hz refresh rate at 1024 by 768, TCO'95 low-emissions approved, three-year warranty, 12-hour weekday toll-free technical support

IMPROVED GRAPHICS SCORES in our revised tests help the $749 Mitsubishi Diamond Pro 87TXM earn a Best Buy. This monitor costs $51 more than the Best Buy Iiyama, but it provides equally good text and almost as good graphics; it also adds utilities for fine-tuning the image. Small details—such as beads of sweat on a sprinter's brow—jumped out, and even the small numerals on a large spreadsheet were sharply focused.

Mitsubishi designed the 87TXM for graphic artists and business professionals who need to display complex images or lots of information at once. It's one of the few monitors we've seen that bundles a utility with shapes, colors, and patterns that help you adjust and fine-tune the screen exactly to your needs. There's also a nicely designed drop-down panel for quick adjustments to the contrast and brightness. More-advanced controls, such as those that let you demagnetize the display and shape the image, are a snap to find and use. *Mitsubishi, 800/843-2515, www.mitsubishi-display.com*

READER SERVICE NO. 602

### 17-INCH MONITORS

| MONITORS | FEATURES | | | | | | |
|---|---|---|---|---|---|---|---|
| | Street price (6/20/97) | Tube manufacturer | Dot or stripe pitch (mm) | Viewable screen diagonal (inches) | Max. refresh rate at 800 by 600 (Hz) | Max. refresh rate at 1024 by 768 (Hz) | Width by depth by height (inches) |
| Iiyama VisionMaster Pro 17* | $698 | Mitsubishi | .25 stripe | 15.9 | 95 | 85 | 16 by 17.4 by 17 |
| Mitsubishi Diamond Pro 87TXM* | $749 | Mitsubishi | .25 stripe | 15.7 | 137 | 107 | 16.1 by 17.1 by 16.7 |
| ViewSonic PT775 | $849 | Mitsubishi | .25 stripe | 15.9 | 147 | 119 | 16.3 by 18 by 16.8 |
| Samsung SyncMaster 700b | $699 | Samsung | .28 dot | 15.7 | 110 | 85 | 16.7 by 17.6 by 16.7 |
| Princeton Graphics Systems E075 | $638 | Hitachi | .26 dot | 15.8 | 120 | 120 | 16.2 by 17.9 by 16.7 |
| IBM P70 | $849 | Sony | .25 stripe | 15.9 | 85 | 85 | 15.9 by 17.7 by 16.8 |
| Dell UltraScan 1000HS | $749 | Sony | .25 stripe | 15.9 | 135 | 105 | 15.9 by 17.7 by 16.8 |
| Compaq V70 | $659 | Hitachi | .28 dot | 15.6 | 102 | 85 | 16.6 by 17.3 by 17.3 |
| Hansol Multitech 17PX | $689 | Toshiba | .28 dot | 15.7 | 85 | 85 | 16.6 by 17.4 by 16.7 |
| Sony CPD-220VS [3] | $899 | Sony | .25 stripe | 16 | 85 | 85 | 18.9 by 16.8 by 19 |

* Best Buy See Top 10 chart, page 279. ● Yes ○ No

[1] Specialized connector used with some high-end graphics cards for complex graphics design and publishing.

[2] Automated support 5 p.m. to 9 a.m.

• Samsung SyncMaster 700b (left) • ViewSonic PT775 (right)

## 3 ViewSonic PT775

**PRO:** Outstanding image quality, impressive graphics, large viewable area

**CON:** Expensive, on-screen menus could be easier to navigate, boxy, two very faint lines visible across screen

**VITAL STATS:** 15.9-inch viewable area, .25mm Diamondtron tube, up to 119-Hz refresh rate at 1024 by 768, TCO'92 low-emissions approval, three-year warranty, 11-hour weekday toll-free technical support

THE $849 VIEWSONIC PT775 is a professional-class monitor that displays graphics a little better than the Mitsubishi Diamond Pro 87TXM and has a few more screen controls. But it costs $100 more. The ViewSonic didn't do as well as the Mitsubishi with text: We spotted slightly fuzzy type in the corners of our newsletter. Nevertheless, the text display was still very good; even the tiny 8-point reverse type was legible. Flesh tones looked real on the photo of Olympic sprinters, and we noticed subtle details in the fabric of each uniform. If you can live with its higher price and controls that aren't as easy to use as our Best Buys', the ViewSonic is well worth considering—especially if you work with photographs and other graphics. *ViewSonic, 800/888-8583, www.viewsonic.com*

READER SERVICE NO.603

## 4 Samsung SyncMaster 700b

**PRO:** Very crisp text and graphics quality, elegant design

**CON:** Cryptic on-screen menu icons

**VITAL STATS:** 15.7-inch viewable area, .28mm dot pitch tube, up to 85-Hz refresh rate at 1024 by 768, three-year warranty, 24-hour toll-free technical support.

SAMSUNG'S $699 SYNCMASTER 700B—which replaces the older 17GLi—debuts as the number four monitor this month. Designated with a *b* for *business*, this new monitor is targeted at small-office and home-office users who need a crisp all-purpose display for everything from balancing the books to preparing presentations. In our tests the new SyncMaster lived up to its billing, rendering our spreadsheet, newsletter, and sample Web page with equal sharpness and clarity. Although it could not match the Iliyama and ViewSonic at displaying scanned photos, the Samsung still did a very good job.

The SyncMaster is unusual in providing truly eye-catching styling, with intersecting angles and patterns that present an attractive appearance when viewed from any angle. The look and feel of most on-screen controls is intuitive—adjusting contrast and brightness requires just one button click each. However, the advanced controls' DOS-age icons aren't always clear. *Samsung, 800/933-4110, www.sosimple.com*

READER SERVICE NO. 604

| ON-SCREEN CONTROLS | | | | | | COMPLIANCE | | | | | SUPPORT | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Screen position and size | Pincushion/ barrel | Trapezoid/ keystone | Focus/ convergence | Image tilt/ manual degauss | Color temperature/RGB control | Universal Serial Bus ports | Plug and Play | MPR-II low emission | TCO shielding | BNC port [1] | Warranty (years) | Toll-free tech support (hours) | Weekend support |
| ● | ●/● | ●/○ | ○/● | ●/● | ●/● | ○ | ● | ● | ○ | ● | 3 | 12 | ○ |
| ● | ●/● | ●/● | ○/● | ●/● | ●/● | ○ | ● | ● | ● | ● | 3 | 12 | ○ |
| ● | ●/● | ●/● | ○/● | ●/● | ●/● | ○ | ● | ● | ● | ● | 3 | 11 | ○ |
| ● | ●/● | ●/● | ○/○ | ●/● | ●/● | ○ | ● | ● | ○ | ○ | 3 | 24 | ● |
| ● | ●/● | ●/○ | ○/○ | ●/● | ●/● | ○ | ● | ● | ● | ● | 3 | 24 [2] | ● |
| ● | ●/● | ●/● | ○/● | ●/○ | ●/● | ○ | ● | ● | ● | ○ | 3 | 24 | ● |
| ● | ●/● | ●/● | ○/● | ●/● | ●/● | ○ | ● | ● | ● | ○ | 1 | 24 | ● |
| ● | ●/● | ●/● | ○/○ | ●/● | ○/○ | ○ | ● | ● | ○ | ○ | 3 | 24 | ● |
| ● | ●/● | ●/○ | ○/○ | ●/● | ●/● | ○ | ● | ● | ● | ● | 3 | 8 | ○ |
| ● | ●/● | ○/○ | ○/○ | ●/● | ●/● | ● | ● | ● | ○ | ● | 1 | 24 | ● |

[1] Multimedia monitor with speakers, subwoofer in base, and microphone.

PHOTOGRAPH: GIAMPIERO BENVENUTI, PHOTOCOMPOSITION: JEFF BERLIN

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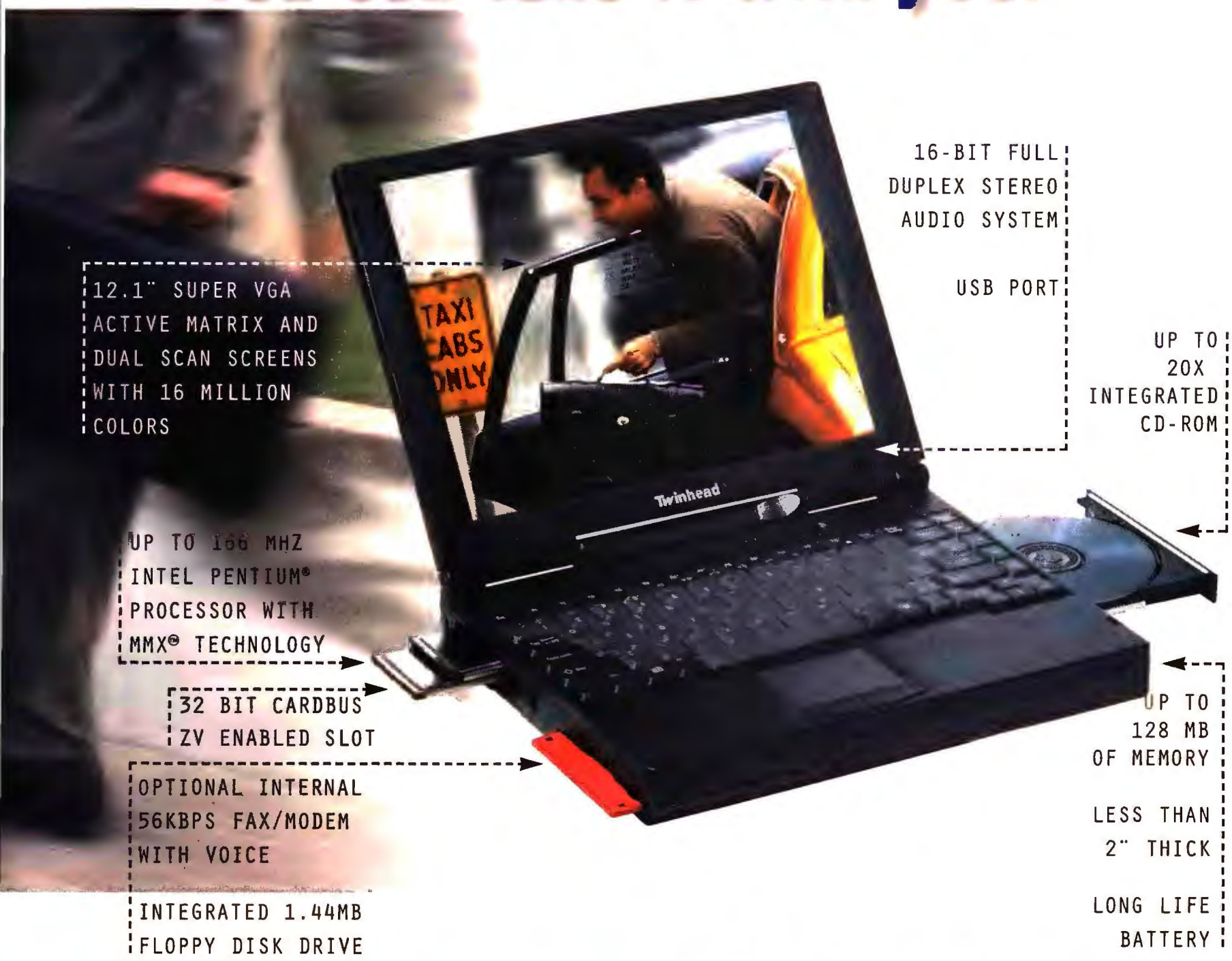


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**Circle 240 on reader service card**

## 5 Princeton Graphics Systems E075

**PRO:** Lowest price on chart, very crisp graphics

**CON:** Sharp but slightly ghosted type, some menu items hard to find

**VITAL STATS:** 15.8-inch viewable area, .26mm dot pitch tube, up to 120-Hz refresh rate at 1024 by 768, TCO'92 low-emissions approved, three-year warranty, 24-hour toll-free technical support (automated after 5 p.m.)

THIS $638 VALUE-CLASS display is a good choice for people who work with graphics and need to buy a bigger screen on a tight budget. It almost matched our top monitors for graphics. Text quality was fairly good, but we noticed very faint ghosts beside the letters. Adjusting the screen wasn't as easy as it should be. There's too much button pressing getting to on-screen menu items. However, the E075 now has TCO'92 approval, and it supports the highest refresh rates of any monitor on the chart at 1024 by 768 resolution—although most users won't be able to detect the differences in refresh rates above 85 Hz. *Princeton Graphics Systems, 800/747-6249, www.prgr.com*

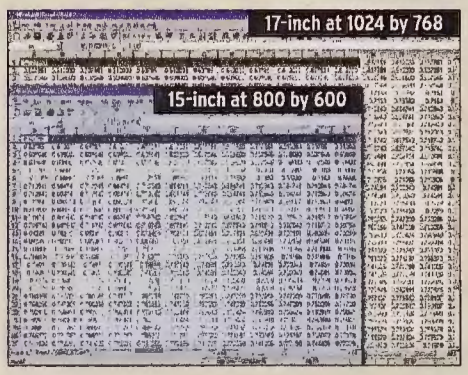
READER SERVICE NO. 605

# Portrait of an Ideal 17-Inch Monitor

WE DESIGNED OUR ULTIMATE monitor with all of the specs, features, and options we typically look for. Actually, our ideal monitor would have all of these features plus a thin, flat-panel display. But for practical purposes, price dictates a standard tube.

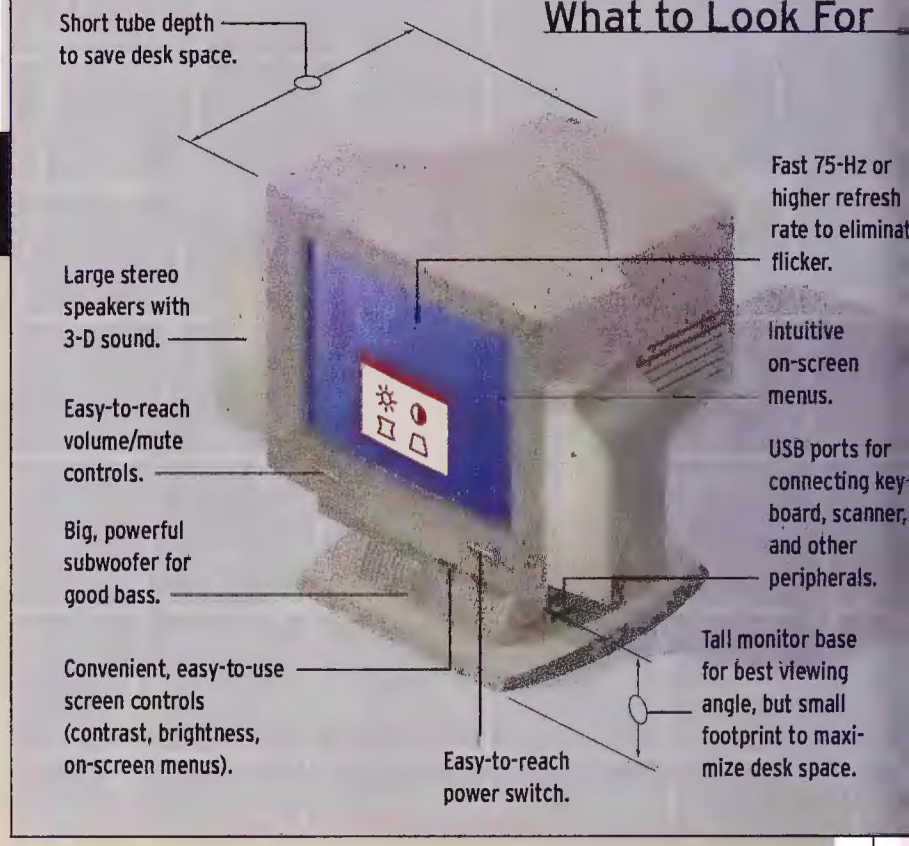
**Multimedia features.** Rule one: Don't buy a multimedia monitor that has cheap speakers. On our Top 10 chart, only the Sony delivers good boom-box-quality sound, thanks to its subwoofer.

**Fast refresh rate.** Any refresh rate over 75 Hz (75 times per second) is generally considered fast enough to eliminate the perception of screen flicker. Ultrahigh refresh rates above 85 Hz are usually overkill for most users; only the most sensitive will perceive differences in higher rates.




**Resolution.** The more pixels displayed on the screen, the higher the resolution. High resolutions let you see more at once: For example, a 17-inch monitor with a 1024-by-768-pixel resolution shows you 64 percent more on screen than a 15-inch monitor with 800 by 600 (see figure above).

## What to Look For



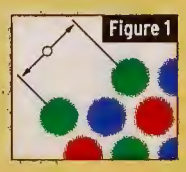

**Dot or stripe pitch.** Dot pitch measures the diagonal distance between two phosphor dots of the same color—red, blue, or green—that glow to produce an image. Look for a maximum pitch of .28mm; for most uses, the smaller, the better. For gaming, a larger dot pitch will produce brighter images. A stripe pitch monitor (Trinitron or Diamondtron) will give a similar brightness with better definition, as the stripe pitch is never greater than .26mm.

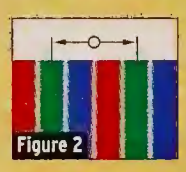
**Intuitive controls.** The best controls require the least effort to use: Common adjustments such as contrast and brightness should be accessible from simple buttons and/or dials on the front panel. You shouldn't need to click a button more than two or three times to change settings. Less frequently used controls are best left to on-screen menus. These should be easy to navigate, with plain-English labels and a minimum of layers.

**TCO'92 and TCO'95.** Any monitor with the TCO'92 or TCO'95 label meets Sweden's monitor guidelines (the world's toughest) for limiting low-frequency electric and magnetic fields, and static electricity. The TCO'95 standard also guarantees that the monitor contains no harmful substances in any of its components.

## Choosing the Right Type of Monitor Tube

**Shadow mask.** The most common design (**FIGURE 1**). These tubes shoot electrons through tiny holes in a mask and light up triangular arrangements of round red, blue, and green phosphor dots. The diagonal distance from the center of one phosphor dot to the closest dot of the same color is called the dot pitch. Best choice for CAD and apps that require very accurate lines.

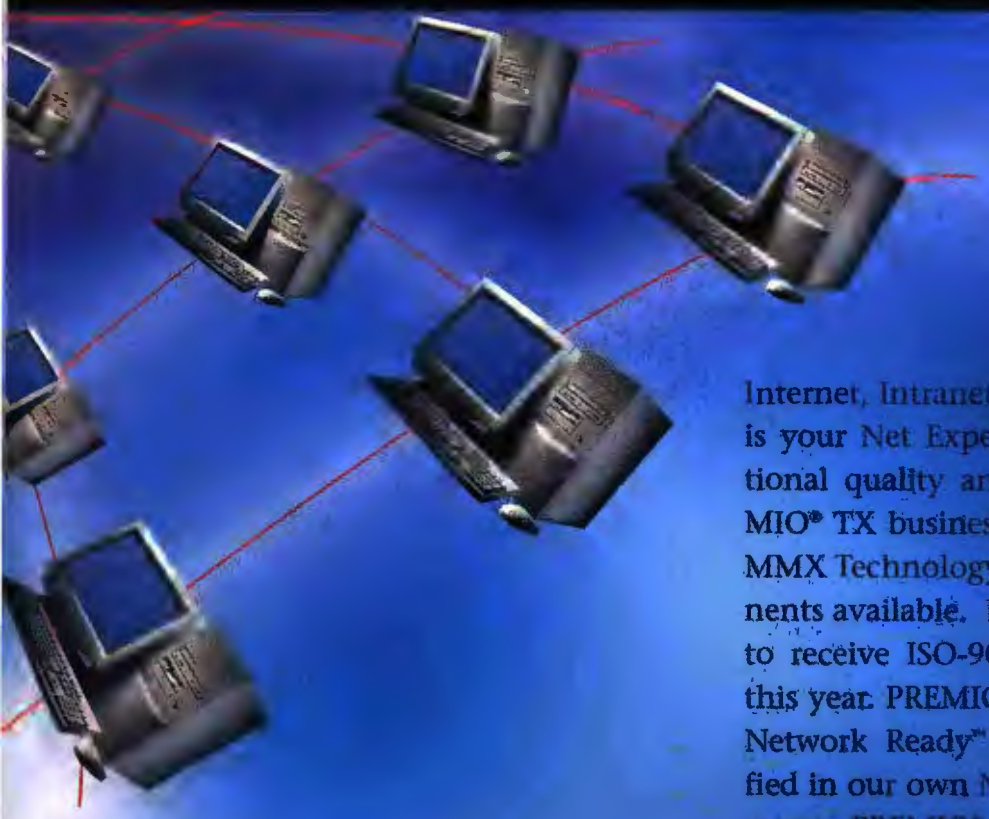



**Stripe mask.** Also called aperture grille, used in Sony's Trinitron and Mitsubishi's Diamondtron tubes (**FIGURE 2**). Instead of dots, the screen is covered with vertical groupings of red, blue, and green phosphor stripes. The stripe pitch is the horizontal distance between like colors. Brighter than shadow mask tubes, these tubes are generally better for photos. Both types are about equally good for text.

NEC makes a third type of tube, called CromaClear, which the company says combines dot and stripe pitch technologies.

INFOGRAPHIC: K. DANIEL CLARK



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## 6 IBM P70

**PRO:** Sharp image, easy controls, large viewable area

**CON:** Expensive, boxy, two very faint lines across screen

**VITAL STATS:** 15.9-inch viewable area, .25mm Trinitron tube, up to 85-Hz refresh rate at 1024 by 768, TCO'92 low-emissions approved, three-year warranty, 24-hour toll-free technical support

IBM'S P70 PROFESSIONAL-CLASS monitor is a good choice if you routinely analyze large tracts of text and financial figures. It earned top text scores, slightly surpassing even our Best Buys. Graphics were also very good, with a fine, accurately colored display of the scanned photos and a crisp, colorful rendition of the graphically rich Web page. However, IBM's relatively steep $849 price keeps the P70 from climbing higher.

The P70 is easy to use. Buttons are clearly labeled, so adjusting basic settings such as contrast or brightness requires just two button clicks—simply touch a button, and up pops a thermometer-like bar that indicates your current adjustment level. IBM also gives you a color-convergence control, which compensates for the electron gun drifting off target as the monitor ages. *IBM, 800/426-7255, www.pc.ibm.com*

## 7 Dell UltraScan 1000HS

**PRO:** Good price, spreadsheets look very sharp, large viewable area

**CON:** Brief one-year warranty when purchased separate from a system, two very faint lines visible across screen

**VITAL STATS:** 15.9-inch viewable area, .25mm Trinitron tube, up to 105-Hz refresh rate at 1024 by 768, TCO'92 compliant, one-year warranty, 24-hour toll-free technical support

DELL'S $749 ULTRASCAN 1000HS is best at text-dense tasks such as number crunching and word processing. Its scores weren't bad, but the Dell received the lowest score in our photo image test of any Top 10 monitor. While our judges did give the UltraScan 1000HS good color accuracy scores, they also penalized it for uneven brightness.

Adjusting the screen isn't difficult; a door at the base of the front panel hides the monitor's nine buttons until you need them. Changing brightness and contrast takes one button push each. Adjusting advanced screen controls, such as trapezoid and color convergence, is almost as easy. And if you manage a fleet of office PCs, you'll find the unique control lock feature useful. Once you set the controls, the Dell lets you lock others out so they won't mess up the display. We wish Dell's warranty were longer: It covers the monitor for one year, unless you buy it with a system. In that case it's covered by the system's three-year warranty. *Dell, 800/289-3355, www.dell.com*

READER SERVICE NO. 606

## 8 Compaq V70

**PRO:** Good graphics, easy to adjust, $40 price drop

**CON:** Adjusting screen brightness shrinks the viewable area

**VITAL STATS:** 15.6-inch viewable area, .28mm dot pitch tube, up to 85-Hz refresh rate at 1024 by 768, three-year warranty, 24-hour toll-free technical support

ALTHOUGH COMPAQ'S $659 V70 is marketed as a professional-class monitor, it has the price, specs, and image quality of a value-class display. The V70 scored best displaying scanned photos—one of our judges wrote "accurate color" and "beautiful detail" along the margin of the score sheet. On the other hand, the V70's text scores were the lowest of ▶

• DELL UltraScan 1000HS (top) • IBM P70 (lower left) • Princeton Graphics Systems E075 (lower right)

## Eye-Saving Tips

HERE ARE FIVE easy ways to alleviate eyestrain while computing:

1 Eliminate screen glare by tilting and pivoting the monitor so that it reflects the least possible amount of ambient light.

2 Don't sit too close to your monitor: 18 inches is the minimum.

3 Use the zoom tool in your word processor and spreadsheet programs to enlarge text—or choose a larger default font for better legibility.

4 Make a habit of consciously blinking often in order to cleanse and moisten your eyes. Take an occasional glance at a family photo, or stand up and gaze off into the distance. Your eyes will thank you.

5 Did you know that if Windows 95 doesn't recognize your monitor when you install it, it may set your graphics card to a low 60-Hz refresh rate? To check the current setting, right-click on your desktop and select *Properties•Settings•Change Display* Type. Are your graphics card and monitor identified? If not, it means Windows 95 doesn't recognize them. Select *Change*, click *Show all devices*, and locate your graphics card and monitor. If your monitor and/or your graphics card are not listed, you'll have to install their drivers from a disk or try downloading the latest drivers from the vendor's or Microsoft's Web site.

PHOTOGRAPH: GIAMPIERO BENVENUTI, PHOTOCOMPOSITION: JEFF BERLIN

# Project Scheduling Made Easy.

New Version 5.0

## *Trade Show Schedule*

Page 1 of 1

| Shows/Tasks | Start Date | Finish Date | Duration (Days) | Task Leader | Cost per Day | Activity Cost |
|---|---|---|---|---|---|---|
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| Trade Show # 2... | 4/1 | 5/19 | 48.00 | | $846 | $40,589 |
| Trade Show # 3 | | | | | | |
| *Meetings* | 5/5 | | | | $200 | $200 |
| | 5/15 | | | | $200 | $200 |
| *Travel Arrangements* | 5/6 | 5/8 | 2.00 | Emily | $25 | $50 |
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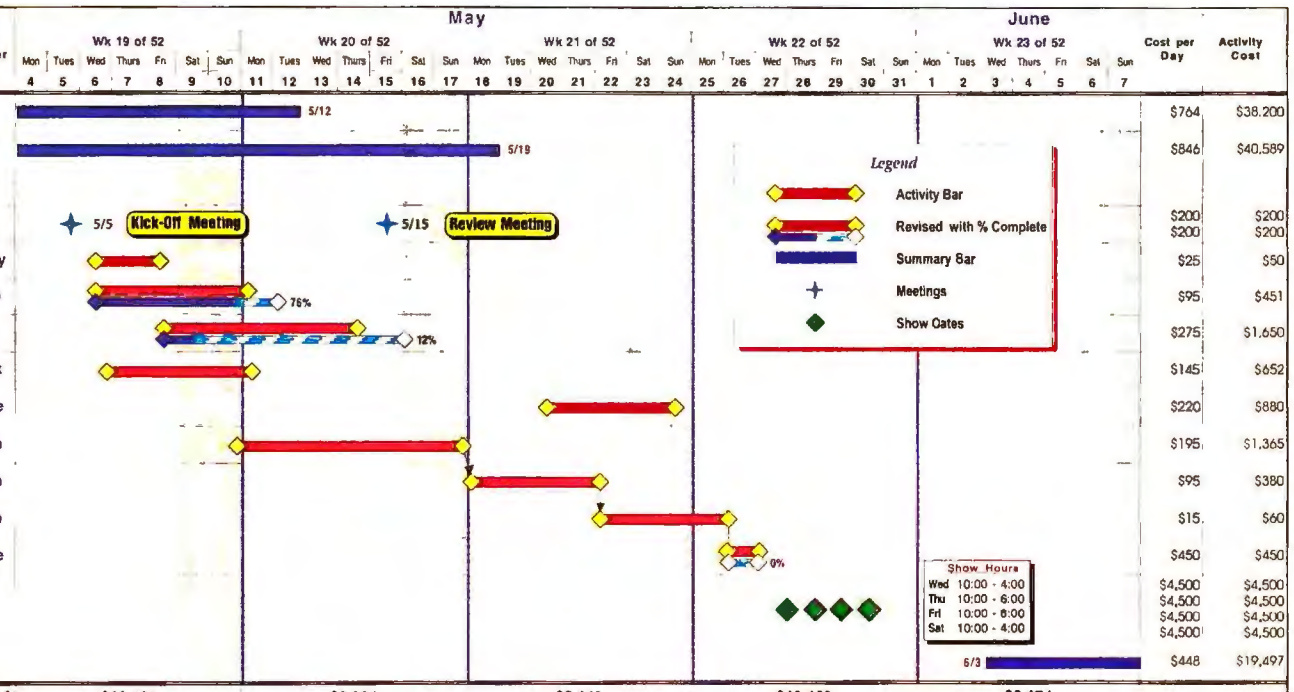
| *Marketing Materials...* | 5/8 | 5/14 | 6.00 | | $275 | $1,650 |
| *Press Release/Publicity* | 5/6 | 5/11 | 4.50 | Nick | $145 | $652 |
| *Presentation Rehearsals* | 5/20 | 5/24 | 4.00 | Kate | $220 | $880 |
| *Booth Modifications* | 5/10 | 5/17 | 7.00 | Sam | $195 | $1,365 |
| *Pack Materials* | 5/18 | 5/22 | 4.00 | Sam | $95 | $380 |
| *Ship Booth/Literature* | 5/22 | 5/26 | 4.00 | Sam | $15 | $60 |
| *Booth Set-up* | 5/26 | 5/27 | 1.00 | Kate | $450 | $450 |
| | 5/27 | | | | $4,500 | $4,500 |
| *Show Dates* | 5/28 | | | | $4,500 | $4,500 |
| | 5/29 | | | | $4,500 | $4,500 |
| | 5/30 | | | | $4,500 | $4,500 |
| Trade Show # 4... | 6/3 | 7/16 | 43.50 | | $448 | $19,497 |
| Projected Spending per Week | | | | | | |
| Cummulative Projected Spending per Week | | | | | | |




| | | | | | |
|---|---|---|---|---|---|
| $13,226 | $9,904 | $2,148 | $18,468 | $2,174 | |
| $72,608 | $82,512 | $84,660 | $103,128 | $105,301 | |

Tot: $122,624

Clarke Marketing
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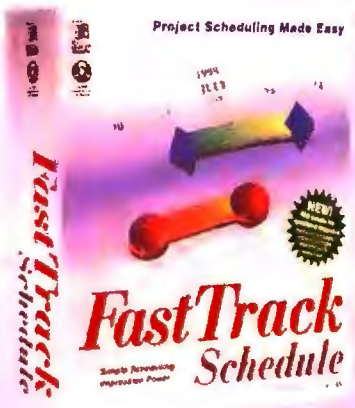


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Circle 14 on reader service card

the Top 10—ironic considering Compaq's reputation for corporate PC products. Our judges all noticed slightly blurred letters on the edges of our newsletter.

The on-screen controls work well: We particularly liked the plain-English menus and the pop-up gauges that show changes both visually and numerically. Our biggest complaint involves an odd change that comes over the screen when adjusting brightness: The already small 15.6-inch viewable area shrinks a millimeter or two, depending on the level of brightness. *Compaq, 800/345-1518, www.compaq.com*

READER SERVICE NO. 607

### 9 Hansol Multitech 17PX

**PRO:** One of the most stylish monitors in the review

**CON:** Ordinary text and graphics, fairly small viewable area, some inconsistency in controls, short tech support hours

**VITAL STATS:** 15.7-inch viewable area, .28mm dot pitch tube, up to 85-Hz refresh rate at 1024 by 768, TCO'92 low-emissions approval, three-year warranty, 8-hour weekday toll-free technical support

THE $689 HANSOL MULTITECH 17PX is priced at the upper end of the value class. This handsome monitor has impressive specs and nice controls; but when you turn it on, the picture quality is...well, ordinary. Although the colors in our photo of mixed fruit were just right, the image looked flat and lacked ▶

## Flat-Panel LCDs: Space-Age Displays

HERE'S A BIT OF EARLY nineties PC fantasy: "Someday we'll have bright, beautiful displays that are slim and light enough to hang on an office wall." The fantasy is now becoming fact: Several vendors, including Compaq, IBM, Mitsubishi, NEC, Sceptre, and ViewSonic, are coming out with liquid crystal display flat panels, up to 15-inch diagonal, that could wind up on your desktop soon—if you can afford them. If our look at a preproduction 14-inch NEC MultiSync LCD400 is any indication, these displays are better than the best CRTs. And flat-panel LCDs don't flicker or emit electromagnetic waves.

**Panasonic's PF-70 (right) has a screen as flat as the NEC MultiSync LCD-400's (left), but the PF-70 takes up more desk space.**

But LCD monitors are still too expensive—they cost around $2500 for the most affordable (a 14-incher from ViewSonic) and about $200 more for the NEC we looked at. These prices are actually down dramatically from a couple of years ago, when a 12.1-inch LCD cost over $4000. Today, the biggest customers for LCD monitors are stockbrokers, whose offices cost so much per square foot that the space savings makes slimline LCDs worth the investment. Medical technicians also use them—to save space and to eliminate even the hint of radiation.

### Sharp, Corner to Corner

TO SEE HOW A FLAT LCD monitor stacks up against a traditional cathode ray tube model, we compared the preproduction 14-inch NEC MultiSync LCD400 flat-panel display with the three best 17-inch monitors in this review, Iiyama's VisionMaster Pro 17, Mitsubishi's Diamond Pro 87TXM, and ViewSonic's PT775. In text quality tests, the $2699 NEC MultiSync earned near-perfect marks. Tiny 8-point type in a worksheet was rendered with such precision from one corner of the screen to another, all three of the high-end stripe pitch displays actually looked a little out of focus by comparison.

Graphics were also razor sharp on the NEC, although the brilliant active-matrix screen hid some subtle highlights that were clearly visible on the CRT monitors. Still, colors looked better overall on the NEC than on the traditional monitors. And though viewing angles are still not as wide as on a CRT, the NEC had a wider viewing angle than an earlier generation of flat-panel displays we tested last March.

So when will flat-panel display prices come down to earth? Analysts at Stanford Resources in San Jose, California, predict that it will take five years until competition and higher production bring prices down from the stratosphere to somewhere around double what you'd pay for a CRT with a comparable-size display. Monitor vendors like NEC and ViewSonic are more optimistic, shortening the time to two to three years. Compaq, Mitsubishi, and Sceptre have announced 15-inch LCDs you'll see before the year is out—Sceptre's is a multimedia model.

### An $839 Flat-Screen CRT

WANT THE LOWER image distortion of a flat panel but can't afford an LCD? Check out Panasonic's new PanaFlat PF70 17-inch CRT monitor. Although this monitor is as big and heavy as any 17-inch CRT, it uses technology licensed from Zenith to implement a completely flat screen. LG Electronics, the only other current licensee, will also have a GoldStar flat-screen model out this year. The new PanaFlat shipped too late for review, but we were impressed by our look at a production model received before press time. We expect this $839 monitor to rank well against the other professional models in future reviews. On the model we used, the focus was as crisp in the corners as at the center of the tube, and graphics displayed with fine color and detail. At first we had the impression of a concave display; after a few days, the sensation went away. And the flat face of the monitor reflects much less ambient light back at the viewer.

PHOTOGRAPH: GIAMPIERO BENVENUTI, PHOTOCOMPOSITION: JEFF BERLIN

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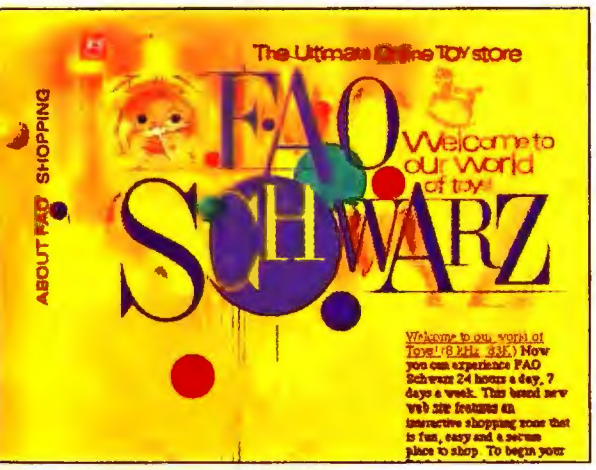


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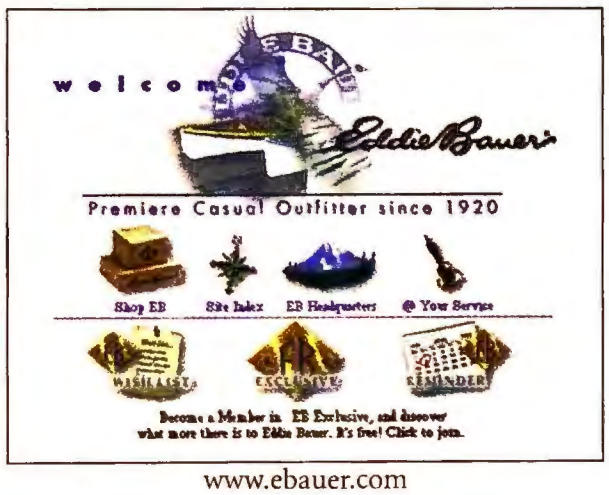


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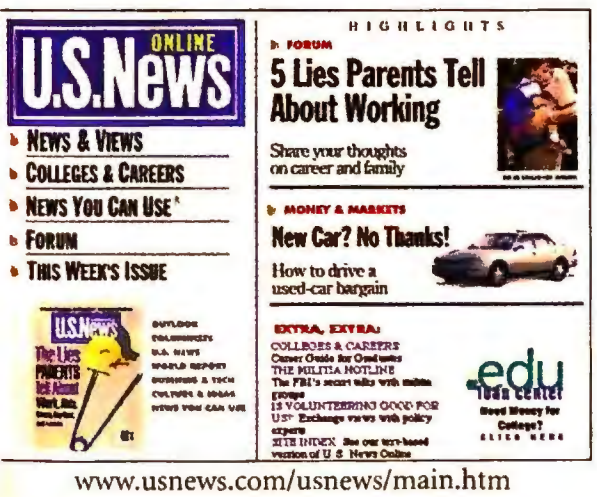


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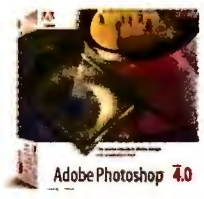


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To get your $50 (US) cash back, just complete and return the form below.

Then, you'll also be registered for the free upgrade. After the ITU-T standard for 56K modems is approved, we'll upgrade your U.S. Robotics x2 Technology 56K modem, free of charge. Since every x2 modem is equipped with Flash ROM, we expect the upgrade to be as simple as a software download from the Internet. If it's not, we'll replace your modem with one that does meet the new standard - free of charge. Register your modem, and after the 56K standard is approved by the ITU-T, we will notify you how and when to get your free upgrade. Approval is expected some time in early 1998.

And again, if you're not satisfied with your U.S. Robotics x2 Technology 56K modem, simply return it within 30 days of purchase, along with dated receipt, to the store or mail order reseller where you bought it for a full refund.

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|---|---|---|---|
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The ability to connect now in all 50 states and Canada. $50 (US) cash back. A free upgrade to standard. A 30-day money-back guarantee. It simply couldn't be any easier. For more information, visit our Web site at **http://x2.usr.com/connectnow**, or call **1-800-525-USR1** to find an ISP near you that offers live x2 service.

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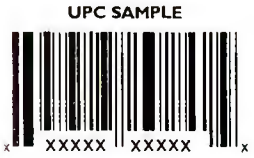
**Phone** _____ **E-mail Address** _____

**Retailer / Mail Order Reseller where modem purchased** _____

$50 (US) cash rebate offer valid with purchase of Sportster 56K Faxmodem models 1784, 1785, 1786, 1787 and 1789; and Courier 56K Faxmodem models 1867, 1868 and 1869 only, purchased between July 1 and October 4, 1997. Offer not valid with Megahertz PC Card modems. Request must include copy of dated modem sales receipt, actual UPC bar code and serial number from the modem package. Not responsible for lost, late or misdirected mail. Request must be postmarked by November 15, 1997. Valid in U.S. and Canada only. **Not valid with any other offer.** Please allow 6 to 8 weeks for receipt of check.

**UPC SAMPLE**




**SERIAL NUMBER SAMPLE**

**The following UPC codes are the only acceptable codes for this offer. No other UPC codes are valid. Tape UPC bar code over this box.**

| | | | |
|---|---|---|---|
| 7-38168-00611-3 | 7-38168-00612-0 | 7-38168-00613-7 | 7-38168-00614-4 |
| 7-38168-00615-1 | 7-38168-00616-8 | 7-38168-00630-4 | 7-38168-00629-8 |
| 7-38168-00682-3 | 7-36168-00686-1 | 7-36168-00669-4 | 7-36168-00670-0 |
| 7-36168-00687-8 | | | |

**Tape serial number & bar code over this box.**

**avid de Felice**, Wisconsin ess secretary, was one of any new PC owners who und that bundled soft- are doesn't always work.

# What a Pain!

## The First Six Months of Owning a PC

We followed 25 new PC buyers, from their purchase problems through their tech support travails. What we found: It pays to do your homework.

BY ROBERTA FURGER

BUYING A NEW COMPUTER is serious business for Janyth Tolson—even when the PC she's buying is for home. A geologist by profession, Tolson doubles as resident techie in her office at the Alabama State Oil and Gas Board. She manages a complex database and oversees hardware and software purchases. So when it came time to buy herself a new PC, she approached the decision ▶

with the caution of someone contemplating parenthood. Tolson knew she was buying more than a simple piece of consumer electronics. She was embarking on a relationship that was likely to cost her a lot of money, test her patience, and keep her up nights. But she was ready.

Tolson was determined to make the transition to state-of-the-art computing as trouble-free as possible. She researched her options for nearly a year before deciding on a Dell Dimension XPS Pro200N. She checked and doubled-checked her order, then waited for her new PC to arrive—hoping for the best but prepared for the worst.

Tolson's worst fears never materialized. The computer arrived a day earlier than promised, was a breeze to set up, and has been humming along ever since.

Has Tolson discovered the secret to trouble-free computing or was her experience just a lucky break?

## REAL-WORLD EXPERIENCES

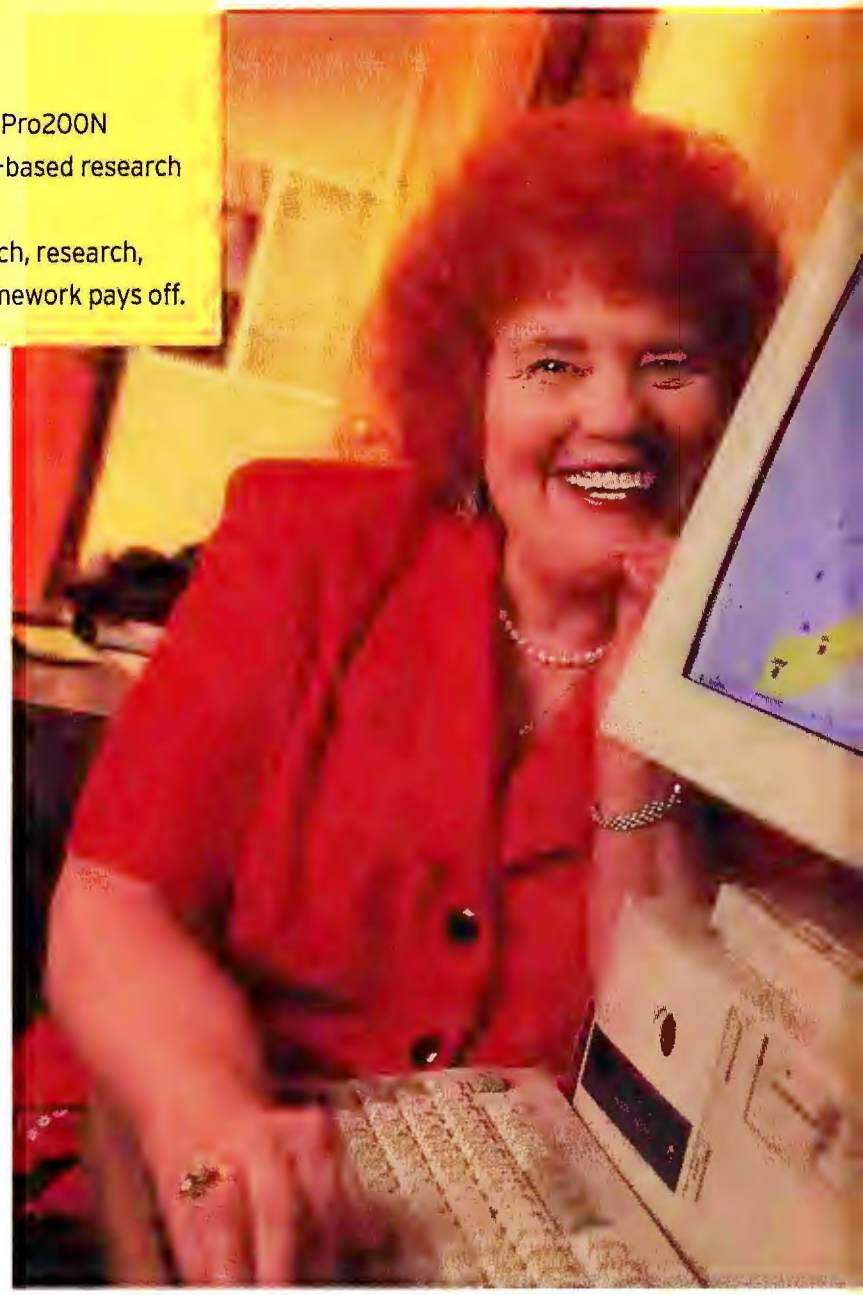
EACH MONTH, the pages of this magazine are filled with reviews of new PCs, peripherals, and software. For this story, we wanted to find out from buyers if their new computers live up to expectations. How do they feel about their PCs after living with them for a while? Are the owners still happy with their purchases once the first glow has worn off?

In order to get the real skinny on life with a computer, we interviewed over 100 would-be PC buyers—men and women who, like Tolson, were planning to buy new machines. We then narrowed our list down to 25 consumers, representing a broad cross-section of home and business users throughout the country. We interviewed them periodically over the course of the first six months with their new PCs to see how things were going.

From the accounts of this group, we've chronicled the distinct phases of PC ownership: the sometimes-rocky first days when new owners discover whether their new PC has all its parts and is as perfect as they'd hoped; the anguish of hardware failures and software conflicts; the challenge of wrangling with technical support departments; and the sobering realization that today's state-of-the-art PC can soon seem like yesterday's technology.

## Knowledge is Power

**Name:** Janyth Tolson
**Occupation:** Geologist
**PC:** Dell Dimension XPS Pro200N
**Uses:** Home PC for Web-based research and after-hours work
**Lesson learned:** Research, research, research; doing your homework pays off.



Our conclusions? Although buying and using a computer have never been easier, life with a new PC is typically anything *but* trouble-free. Twenty-three of the consumers we spoke with encountered at least one hardware or software problem during the first six months of ownership. Incompatibilities—often with bundled software—plus hardware failures, missing drivers, and incorrectly configured systems led to hours, weeks, and sometimes months of work before people were able to sort out the problems and get their systems working properly.

## FIRST IMPRESSIONS

AFTER MONTHS of research and budget tightening, you finally unpack your new PC, ready to enjoy the latest and greatest technology. You breeze through the setup process, thanks to the color-coded cables and step-by-step guide. But what happens after the plugs have all been connected and the packing boxes put away? What happens when you flip the switch and turn your new PC on for the first time? That's when the real test begins.

Keith Goldman, a management consultant in Oakland, California, received a rude shock when he got his computer home and examined his new toy. He bought an AST computer for his home office from Montgomery Ward last November after spotting a bargain in the store's Sunday circular. "According to the ad, it was exactly what I wanted and needed," says Goldman: "It had an 8-speed CD-ROM drive, a 28.8-kbps modem, 32 megabytes of RAM, and a 1.5-gigabyte hard drive." And it was only $1700—well below the $2000 he'd budgeted.

But when Goldman finished unpacking the boxes, he discovered that the PC he bought didn't match the one in the ad. The computer had a 6-speed CD-ROM drive, not 8-speed; it had 16MB of RAM, not 32MB; and it was a desktop PC, not the tower unit advertised. Back in the boxes went the PC. Back to the store went Goldman, demanding an explanation.

"It turned out they'd actually printed the wrong computer name in the ad. It should have been a Packard Bell, and not an AST," explains Goldman, still amazed that his salesperson hadn't known enough about the merchandise to spot the problem. Angry and frustrated, Goldman insisted on getting a PC comparable to the model advertised—and at a similar price. His salesperson offered him a Compaq Presario 1525 for $2200 (including monitor), roughly $500 off the retail price.

Goldman isn't a novice: He's used computers for eight years and was upgrading to his third PC when he entered retail hell. But Goldman made one grave mistake when he went out to buy his new computer: He assumed the store personnel would know something about the equipment they were selling.

## NOT-SO-SUPERSTORES

RETAIL OUTLETS—particularly consumer electronics and department stores—have long marketed their products and services to consumers, for whom convenience is key. There's no custom configuring, no complicated choices. Just pick the model you like, pack the boxes in the car, and you're the proud owner of a new PC. The proposition sounds simple, but as Goldman's experience indicates, the reality of buying retail is much riskier.

Unfortunately, people's satisfaction with PC purchases had as much to do with the amount of research they did as with where they bought it. Nearly everyone we spoke with who shopped the retail stores was disappointed by how little the employees knew about the PCs they were selling. So if you know you are going to buy through retail, go to town on your research, know exactly what you want—right down to the make and model number.

Randall Whitaker, a mechanical engineer in Louisville, Colorado, bought his HP Pavilion 7285 from a CompUSA store last November. He did background research for nearly a year and a half before deciding on the PC that would best meet his needs. "I had to search high and low in the store to find somebody to help me," recalls Whitaker. When he found someone,"I knew a lot more about [the computer] than she did," he says. In the end, though, the salesperson's lack of expertise made no difference to Whitaker. He already knew what he wanted and was really shopping only for price.

## HOME-TOWN HEROES

LORI ROBIN WILSON, who runs a graphics business from her home in LaVerne, California, visited Computer City and Fry's Electronics (a West Coast chain). Like Whitaker, she was underwhelmed by the service she received. Unlike Whitaker, though, she decided to take her business to a small local PC assembler who could offer advice and build a computer to her exact specifications.

"They were very helpful," says Wilson of the staff at Ross Computer in Red Bluff, California. "They actually *listened* and set everything up exactly the way I wanted. That never, ever happened to me in the big computer centers," she adds.

And Wilson isn't alone. Without exception, all five of the consumers who bought from small, local retailers were impressed by the knowledge of the sales staff (often the owner of the business) and the quality of the final product.

"They were knowledgeable but not pushy. They seemed to have the answers at their fingertips, and I knew I wasn't just getting a line," says Steve Brawn, an electronics technologist at the University of West Ontario in London, Ontario.

Although these built-to-order PCs lacked the easy setup guides and software bundles that are typical with most consumer PCs, none of the buyers we spoke with missed these "extras." They chose the software they wanted and avoided the hassle of having to delete unwanted programs. And setup assistance was just a phone call away.

So what's the downside of going the local-retailer route? Technical support is generally available during nor- ▶

# Coping With Your New PC

**WHO BETTER THAN RECENT PC BUYERS to offer advice and suggestions for making it through the first six months of owning a PC? Here's the best advice our panel of 25 consumers had to offer.**

### Welcoming the Arrival

- Check the contents carefully to make sure you got what you paid for. If you have a fax or other written confirmation of your order, make sure you've received what it specifies.
- Test all your computer's components right away—speakers, fax-modem, floppy drive, CD-ROM drive, keyboard, and so on—to make sure everything works properly.
- Save all the boxes and your receipts. You'll need all these items if you have to return the computer for any reason.

### Staving Off Tears

- Contact the PC company's technical support department immediately if any component is broken or refuses to work.
- Act within the time allowed by the 30-day money-back guarantee (if available) in case you aren't satisfied with the company's resolution of any problem.
- Don't install your own software and hardware until you're sure the PC as purchased is functioning (see "The Care and Feeding of New PCs").

### Settling In

- Keep track of each hardware and software addition you make.
- Document any error messages or malfunctions that occur after installing new hardware or software. This information will be invaluable if you have to call technical support.
- Check your PC company's Web site periodically for updates to drivers and system software.

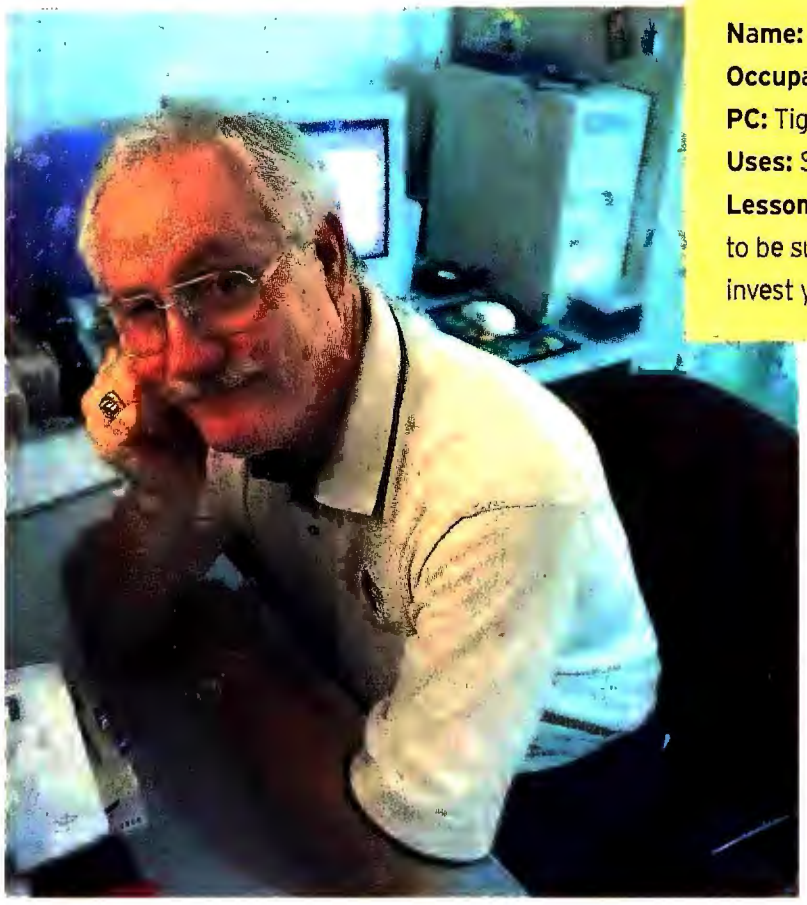
### Talking to Tech Support

- Be prepared. Sit at your computer when you call and have all the necessary documentation handy (receipt, customer ID, and so forth).
- Keep detailed notes of calls to technical support, including the names of people you spoke with and when, phone numbers, and the suggested course of action.
- Know your warranty. You may have to request extra-cost on-site service, since companies don't always offer it as part of your warranty package.

### Facing Obsolescence

- Research your needs carefully. Don't focus on just your current PC uses—think about what you might need in the future.
- Buy as much computer as you can afford—it's the best hedge against early obsolescence.
- Don't replace—upgrade. Upgrading critical components can often extend the life of your PC. Memory and storage—easily outgrown—are relatively inexpensive and easy to upgrade.

# Losing Time on Tech Support



**Name:** Ric Lange
**Occupation:** Graphics company vice president
**PC:** Tiger Direct 6x86
**Uses:** Solely for graphics business at office
**Lesson learned:** A "good buy" turns out not to be such a good buy when you have to invest your own time to make it work.

mal business hours, rather than around the clock as is common among larger PC companies. And if the store goes under, you're on your own.

Given these trade-offs, it's not surprising that most of the consumers who bought from a local store were experienced PC users. They knew what they wanted and felt they could resolve many technical problems themselves.

### MAIL-ORDER MODUS OPERANDI

ALTHOUGH MANY consumers we spoke with shopped locally, 15 of the 25 bought from mail-order companies; the favorites were Dell and Micron. Choice of components, performance, price, and top-quality sales assistance were frequently cited as reasons for buying through mail order. "I thought the salesperson would just be someone answering the phone, without a lot of knowledge about the PCs," says Scott Swanson, a photographer in West Hollywood, California, who purchased a Quantex QP5 166. "But they had an answer to everything I asked."

And what about delivery service after the sale? Six of the 15 mail-order buyers received their new systems later than promised (from a few days to a few weeks), but the rest of them got their orders on time—or even a little early. As for the accuracy of the orders, only one buyer reported a hardware mix-up: Saurabh Shah, a software programmer in Milwaukee, ordered a Micron Millennia Pro 200 with 8MB of extra video memory but received a card with only 4MB.

### BUNDLE OF JOY?

RESEARCH CAN go a long way toward ensuring you get the PC you really want and need. But unfortunately it can't guarantee your shiny new computer will be trouble-free.

Three of our computer buyers encountered component failures the first time they fired up their new system. The culprits: a bad keyboard, a bad CD-ROM drive, and a faulty monitor. But these early and obvious hardware failures were among the most easily diagnosed and corrected. It took only a single call to technical support, and a replacement part would be on its way—typically by overnight mail. End of problem. End of story.

Far more troubling—and much more difficult to resolve—were the multitude of software problems. Fifteen people struggled with everything from missing or out-of-date drivers to operating system snafus and incompatibilities with bundled hardware. Although some of these hassles were cleared up quickly and without much wrangling with technical support, many more led to endless hours of frustration. Too often, consumers felt at the mercy of hardware and software companies that seemed unable or unwilling to help.

That's the unenviable position Gerry Forbes, a civil engineer, and Elizabeth Wiecek, a research physician in Ontario, found themselves in last December. They were trying for the first time to use Internet Explorer, bundled with their Dell Dimension XPS P200s, to log on to The Microsoft Network. "When [MSN] asked for my password, it kept looping me back and saying, 'please log on now,'" recalls Wiecek, who spent several hours one

## Readers' Report Card

## The Truth About Living With a New PC

OUR 25 READERS provided us with detailed accounts of life with their brand-new PC. Here's a summary of their experiences during those crucial first six months.

### Bringing Baby Home

- Of the 15 machines purchased via mail order, 6 arrived on time, 6 were late, and 3 arrived early.

### Putting it All Together

- Twenty-three people found setup easy; 2 owners rated it a little better than fair.[1,2]

### First Push of the Button

- Nineteen of 25 PCs worked right out of the box. Owners of the other 6 systems reported problems with CD-ROM drives, floppy cables, keyboards, monitors, motherboards, and the OS.

### New-Toy Joy

- Two owners had no problems once the PC was up and running; 23 had problems along the way.
- Owners reported hardware problems with their CD-ROM drive, hard drive, joystick, monitor, motherboard, sound card, or video card, and conflict problems between the modem and the joystick.
- Other problems were software related: trouble with Windows NT (conflicts and driver issues), conflicts with Microsoft Network and fax-modem software, system crashes after installation of new software, and calibration of games with joysticks.

### Tech Support Sagas

- Two owners never had to call technical support. Of the 23 owners who had to pick up the phone, the longest hold time reported was 4

Sunday talking to Microsoft's technical support department. Since Wiecek has only one phone line, she kept having to hang up, try tech support's suggested fix, then call back again when it didn't work. The last time Wiecek called Microsoft, the techie told her the MSN server was down and that she would have to try again later.

Try again she did, but she continued to have problems logging on. She called Microsoft again, and this time the technician suggested that the problem might be the result of an outdated modem driver. "I said, 'This computer is 30 days old. Give me a break!'" recalls Wiecek. Still, she logged on to the U.S. Robotics site, downloaded the suggested driver, and tried once again to log on to MSN. Still no luck. Wiecek's next course of action was to call U.S. Robotics. The response? "USR said, 'It's not our modem. Dell installed it, so you have to go through Dell,'" says Wiecek. She called Dell, but it couldn't resolve the problems either. Wiecek and Forbes decided to scrap MSN entirely. "We took it off and signed up with a local Internet service provider, and we've had no problem logging on," Wiecek says.

Although most buyers probably assume PC manufacturers test the software that they bundle with their computers, there's lots of evidence to suggest this is not the case. Just ask Rene Aguilar, a research assistant in Corpus Christi, Texas, or David de Felice, a press secretary in Madison, Wisconsin—two of the many buyers who encountered conflicts between their new PC and its bundled software.

**Far more troubling** and much more difficult to resolve were the multitude of **software problems.**

Aguilar and de Felice separately discovered that they couldn't send or receive faxes on their new PCs. Aguilar was having difficulties faxing from within Microsoft Word using Fax Phone, the telephony software that came bundled with his HP Pavilion 7370. De Felice was struggling to send faxes and e-mail using FocalPoint, which came loaded on his Dell Dimension XPS P166s.

With just one call to the HP technical support department, Aguilar was able to work around the problem—the techie happened to be familiar with it and suggested he turn off background printing. De Felice, on the other hand, spent hours working with Dell technicians, none of whom could resolve the conflict. "We went through many calls," says de Felice, "and it got to the stage where one guy said, 'This program has more bugs in it than the rainforest. Why don't you just go with Microsoft Exchange?'" He did as suggested and got the e-mail hooked up and working properly. Six months later, though, he still could not send or receive faxes. Finally, de Felice just gave up trying to use the fax program.

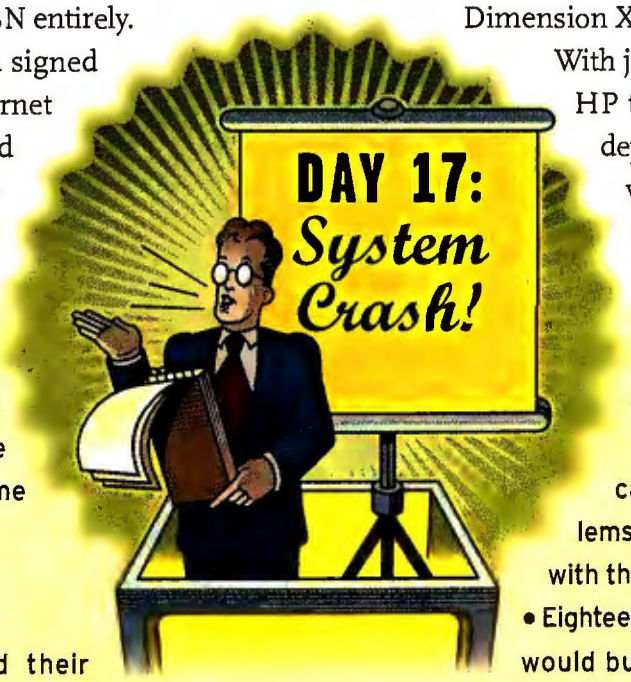
## BUNDLE OF TROUBLE?

BUGS AND INCOMPATIBILITIES were only two of the criticisms levied against the software that most companies bundle with new PCs. Although many buyers initially enthuse about all the "free stuff," that excitement turns to frustration when the software falls short of their expectations. With a few notable exceptions, most consumers told us they could do without the online demos, the sports and educational games, and the hodgepodge of gardening and cooking CD-ROMs, personal finance packages, and encyclopedias. (See "The Best—and Worst—Software Bundles.") In addition to the poor quality of the software, consumers objected to the lack of documentation and backup disks.

But not all the software that comes with a new PC is a bust. Many consumers saved a considerable amount of money by getting their office suite of choice either bundled with their system or at a substantial discount from the PC company.

Srinivas Pyla, a chemical engineer in Lafayette, Louisiana, is responsible for buying and maintaining all the PCs in his 50-person office. He couldn't care less about most of the software that comes with each new Micron PC he buys. He wipes the hard drive clean, runs diagnostics, then installs only the software he or his coworkers will use. But one program has had a big influence on Pyla's decision to buy from Micron: Microsoft Office.

"When I buy a Micron PC, Microsoft Office Small Business Edition is included, and they give you the CD-ROM. Dell also preinstalls Office, but you have to ▶




hours; the shortest reported time frame involved no hold time whatsoever.

### Problem Solving

- Two owners had their problems resolved with one phone call, while one owner waited nine months to sort out the problem.

### Doctor in the House

- Four owners requested and subsequently received an on-site service visit.
- After a request for on-site service was processed, technicians arrived either the next day or two days, three days, or six weeks later.

### If You're Happy...

- Twenty-three readers told us they were generally happy with their overall PC experience—despite the troubles their new pride and joy may have given them. Two readers said they were unhappy because of the problems they experienced with their PCs.[3]
- Eighteen readers said they would buy from the same PC manufacturer again. Four owners said they would not be in a hurry to buy from the same company again, and two others said emphatically they would never buy from that manufacturer again.[1]

[1] One reader built his own PC using separate components from various manufacturers; his report is not applicable to all of this Readers' Report Card, and thus in some cases, the information given comes from only 24 reports.

[2] We asked readers to rate their setup experience on a scale of 1 to 5 (5 for supereasy and 1 for confusing).

[3] We asked readers to rate overall satisfaction with their PC experience on a scale of 1 to 5 (5 for extremely happy and 1 for not happy).

PHOTOGRAPH: KEVIN HORAN, ILLUSTRATION: PETER HOEY

order a backup copy, which they send to you on floppies," explains Pyla. He considered buying from Quantex until he learned that Quantex bundles Corel's WordPerfect Suite with its PCs.

Pyla, like nearly all the computer buyers we spoke with, said he would prefer to get a stack of jewel cases with his PC, which he could then install or not as he chose, rather than have the PC maker install a bunch of software he might never use.

### MAKING IT YOUR OWN

GIVEN THE MEDIOCRE software that comes with most computers, many of the consumers we spoke with didn't wait long to add their own programs to the mix. These installations typically went off without a hitch, but for a few unlucky souls, new software meant new troubles.

Larry Masterman, an emergency medical services consultant in Weaverville, California, tried First Aid in the hopes of resolving some Windows 95 problems with his Micron Home MPC Pro P133. But the utility turned out to be more trouble than it was worth, causing his system to crash frequently. Masterman has not been able to resolve these conflicts—even with the help of technical support.

Ric Lange didn't have any problem installing LANtastic on the PC he purchased from Tiger Direct last December. But he ran into trouble after installing another program, Partition Magic. For a few months, everything worked fine; then the PC started making files disappear.

For two days, Lange and his associates played phone tag with their technical support provider, Aegis. During each call, they'd sit on hold for 20 to 30 minutes, then leave a message and wait for a return call. By week's end, Lange was frantic.

With Aegis closed for the weekend, Lange was on his own. He spent the better part of Saturday and Sunday wiping the hard drive clean, removing the partition, and reinstalling all the software—except for Partition Magic.

When Monday morning rolled around, Lange got a return call from an Aegis technician. When he explained the situation, the technician asked, "Did you change anything? Did you use any software that didn't arrive on the system?" He then told Lange that Aegis's warranty didn't cover problems that occur as the result of adding hardware and software, unless the offending program is removed from the system first. "I'd just lost two days of production and had spent most of my ▶

## True Confessions

# From the PC World Test Center

**I'VE BEEN TESTING computers in the PC World Test Center for six years. Here in the lab, we run about 50 computers a month (sometimes more) through the battery of trials that constitutes the PC WorldBench test suite. And that's no small number of computer systems in our midst.**

Susan Silvius

Even the Test Center doesn't get perfect computers.

Thirty-six hundred PCs later, I've got some strong opinions about what brands I'd buy if it was my money. Want the scoop?

As far back as January 1995, our test reports tell us that for every four PCs we've seen that work properly out of the box, one doesn't work at all. That's not to say we return that PC. We too call tech support and try to fix the problem. And that's when the fun begins. Sometimes we can get the machine to work, sometimes we admit defeat.

Why do so many brand-new machines fail so miserably? It could be due to rough handling during shipping, a bad power supply, or plain bad luck. But neither careless shipping nor the law of averages accounts for some of the wrecks we have seen land at the Test Center: A recent Quantex system arrived with its sound card barely clinging to the ISA slot. As if that wasn't enough, it wouldn't boot because it couldn't find its own hard drive. Tagram shipped one machine with the parallel port unconnected; a Blackship PC came with a virus; and IBM sent a monitor with a gash in the plastic casing. We've seen it all.

So, which companies are the biggest offenders? I examined the testing histories of more than 1100 desktop and notebook systems submitted to *PC World* for review from January 1995 through August 1997 to see which companies have the best—and worst—track records.

The companies with the highest failure rates are DTK (45 percent), Midwest Micro (33 percent), and Polywell (31 percent). One unfortunate DTK system arrived with its CPU fan banging around loose inside the case, and another one produced a video blizzard while running Windows. Midwest Micro sent systems with bad video cards, or wrong video and monitor settings. Two Polywell PCs arrived with the CPU clock set incorrectly on the motherboard, and two others had damaged parts.

Which companies are likely to send unblemished systems? Less than 11 percent of Compaq and Canon systems caused us undue pain and suffering. But what about Dell and Micron, which regularly hit the top of our charts? Both sent systems that failed about 15 percent of the time, and the problems were usually things that we could fix pretty easily. But then, we do this a lot. **—Susan Silvius**

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* DVI: Diagonal viewable image

**Circle 155 on reader service card**

weekend fixing the problem. I was mad as a cat in the bathtub," recalls Lange. To add insult to injury, Lange had bought an extended warranty with his PC—an investment he knows he'll never recoup.

### HARDWARE HASSLES

WHAT ABOUT HARDWARE additions? Do they spell trouble for PC owners? Many of the consumers we spoke with had added printers and Zip and Jaz drives, encountering only a few driver snafus along the way. The same can't be said of the gamers in the group, though, who met with considerable trouble when they tried to ready their PCs for action by adding a joystick.

David de Felice, for instance, is still having problems with the joystick he bought for $90. "Each game has a different simulation and a different calibration along with the joystick," says de Felice. "It's a real problem customizing every game, and these games will never run perfectly."

Doug Jenssen, a bartender in Sheboygan, Wisconsin, got more than he bargained for when he installed a TV-to-PC card in his Quantex QP5 120. "I must've done something wrong, because it fried the motherboard," says Jenssen. He called Quantex, explained the problem, and to his surprise, the company sent him a new motherboard, at no charge, in two days.

### A LESS-THAN-PERFECT PC

QUICK PROBLEM resolution is every PC user's dream. Unfortunately, it's not always the reality. For several years now, *PC World* has polled readers on their PC reliability and service experiences. Month after month a steady percentage of consumers report they have been unable to get their problems resolved. We heard similar stories from many of the consumers we spoke with for this article. After weeks—sometimes even months—of trying to fix problems, six consumers threw in the towel and decided to make do with what they had.

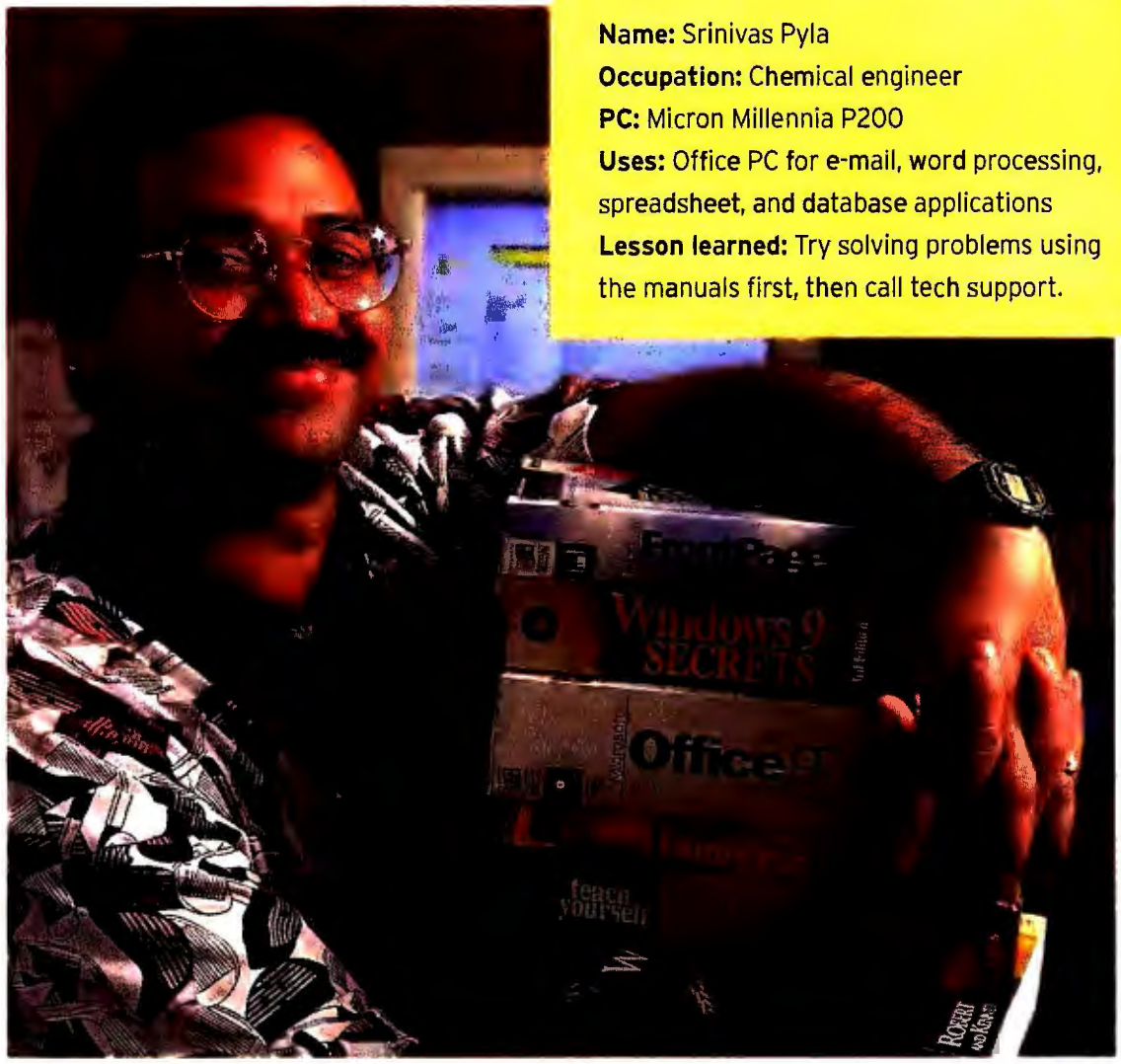
For Janyth Tolson, making do meant switching from Netscape Navigator—which crashed her home machine every time she logged on to the Internet—to Internet Explorer. She uses Navigator at work and prefers it to Microsoft's browser, but she couldn't take the constant crashes. "It kept locking up and I couldn't stay connected, so finally, without bothering to get it fixed, I just got Internet Explorer," she says. Tolson's not happy with the change, but at least she gets her work done.

Sue Feinman, a Brooklyn homemaker, didn't hesitate before spending $2800 on a new IBM Aptiva A50—she'd owned an IBM 286 PC since 1983, and grew to trust the name. In the first six months, she wound up having to replace the Aptiva's motherboard, hard drive, monitor, and keyboard, and often waited on hold for hours without getting a resolution. Now, Feinman doesn't dare install all the games she and her family would like to play. "If it was working perfectly, I'd have a lot more games on my PC, I'd have a joystick attached to it, and I would probably be doing a lot more downloading from AOL...I'm even afraid to sneeze on [the PC] for fear it will catch a virus," she says.

### COPING WITH OBSOLESCENCE

ALTHOUGH FEINMAN rues the day her husband brought the Aptiva home, most of the consumers we spoke with would buy the same brand of computer again. They do, however, have a few regrets. ▶

## Tech Support as a Last Resort




**Name:** Srinivas Pyla
**Occupation:** Chemical engineer
**PC:** Micron Millennia P200
**Uses:** Office PC for e-mail, word processing, spreadsheet, and database applications
**Lesson learned:** Try solving problems using the manuals first, then call tech support.

## The Best—and Worst—Software Bundles

DON'T EXPECT TO USE ALL THE SOFTWARE that comes with your new PC. Although some titles were a big hit with the PC owners we talked to, many more got tossed in the recycling bin. Here's a look at the winners and losers among bundled programs, based on responses from 25 *PC World* readers interviewed for this story.

| HITS | MISSES |
|---|---|
| Corel PerfectOffice | Compton's Encyclopedia |
| Intuit Quicken | Grolier's Encyclopedia |
| Microsoft Encarta | LucasArts Entertainment Indiana Jones |
| Microsoft Fury | LucasArts Entertainment Star Wars games |
| Microsoft Office/Office Professional | Microsoft Arcade Pack |
| Microsoft Works | Microsoft Network/Internet Explorer |
| Mindscape PrintMaster | Visio Express |

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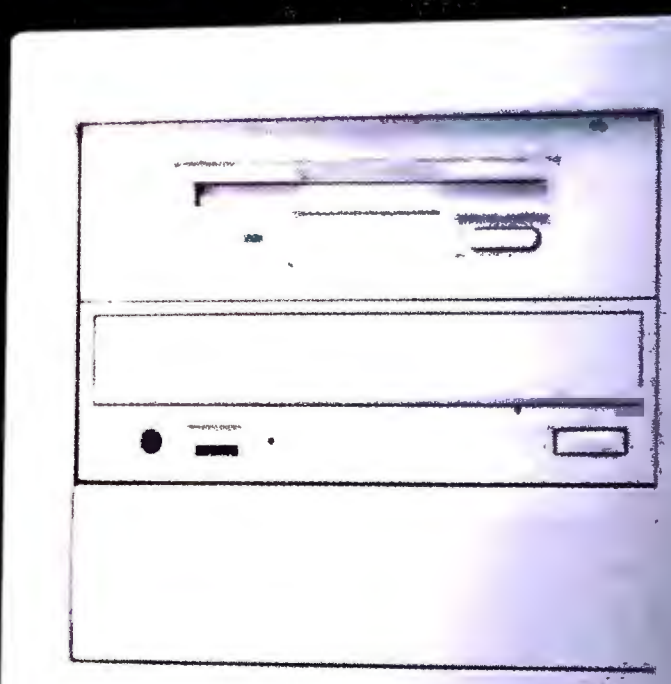

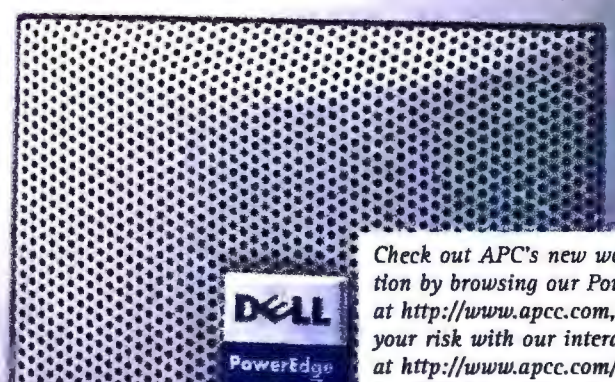


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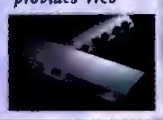

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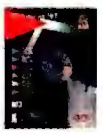

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Circle 17 on reader service card

When it comes to PCs, six months is a lifetime. Products advance, prices drop, and new technologies come on to the market. Even the most savvy consumers can end up feeling they bought too little, too soon, for too much money.

All the owners bought the most PC they could afford at the time—the biggest hard drive, the fastest processor, and the most RAM. But at the end of six months—or even sooner—all were wishing for just a little more. More memory was at the top of everyone's wish list, particularly since prices seem to be dropping almost daily. Next in line was more hard disk space.

Randall Whitaker is one of the many consumers frustrated at having purchased a PC just months before Intel released its MMX chip for multimedia applications. "I wish I [had] waited a few more months," says the mechanical engineer, an avid gamer.

There's no way to stop the steady progress of new PC technologies, but for Rebecca Stack, a homemaker in Montpelier Virginia, research was the best hedge against obsolescence. She and her husband spent months researching their purchase before buying a custom-built PC from a local store. "We sat down and figured out exactly what we were going to use the PC for and kept our minds open about where to buy," recalls Stack. Six months later she's as happy with the PC as she was the day she took it home.

## Brand Loyalty Doesn't Pay

**Name:** Sue Feinman
**Occupation:** Homemaker
**PC:** IBM Aptiva A50
**Uses:** Home PC for herself and the family's teenage children
**Lesson learned:** Having had a reliable machine from a vendor once before does not mean you'll encounter a similar experience with the same brand again.

### THE SECRET?

IT TAKES MORE than good fortune to find a PC that fits your budget *and* meets your needs. As so many consumers discovered, it takes work—often a lot of work—to ensure that your state-of-the-art computer doesn't bring state-of-the-art trouble with it.

It's no coincidence that the most satisfied new PC owners were also the ones who had invested the most time in assessing their needs, investigating their options, and researching the strengths and weakness of both PC manufacturers and resellers.

"Research, research, research," photographer Scott Swanson says emphatically. "That's all there is to it."

But of course, a little luck never hurts.

*Listen to sound clips from readers we interviewed at www.pcworld.com/sep97/ownership. Roberta Furger is a contributing editor and Aoife McEvoy a staff editor for* PC World. *Susan Silvius is manager of usability testing for the PC World Test Center. San Francisco freelance writer Naomi Wise also contributed to this article.* ■

## The Care and Feeding of New PCs

WHAT CAN YOU DO to prevent frustrating hardware failures? We talked to computer consultants, IS managers, on-site service technicians, telephone support staff, and repair technicians to get their advice.

**Know who you're buying from.** Do your homework, pay attention to recommendations and find out which companies have a good reputation for reliability.

**Industry standard or proprietary parts?** "Choose PC brand names that use industry standard parts, like Dell or Micron," says Chris Oman, systems consultant with Data Exchange Computer Services in Grants Pass, Oregon. If you need replacement parts for a machine that was built from proprietary parts, you have to go back to the manufacturer for parts, and that can be costly.

**Check the wiring.** John Featherman, an MIS consultant based in Wellsville, Pennsylvania, urges people to pay attention to the electrical wiring in order to reduce the likelihood of blowing out their computers.

**Avoid brownouts and blackouts.** Repeated brownouts can damage your PC, so be careful not to overload the circuit board. Make sure you've got a good surge protector to safeguard your PC.

**Grime and prevention.** Make sure you dust your PC regularly—especially if it's housed in a small space. A buildup of dust balls and dirt can bring on ventilation problems, causing components to overheat.

**Electrostatic discharge can kill components.** If you're opening the hood to install parts or clean the PC's insides, wear a grounded wrist wrap ($17 and up at computer retail stores) to help keep ESD from frying your components.

**Keep 'em cool.** If you notice a motor noise or rumbling sound, you could be on the brink of a cooling fan disaster. Replace the fan immediately before it stops working altogether.

**Be careful with do-it-yourself jobs.** Bill Blackwell, Vanstar's senior field engineer in Concord, California, urges PC owners to be cautious before adding components. Call the PC company to check on potential compatibility problems and for details on warranty coverage. —Aoife McEvoy

# The story of a PC Card that's really a digital camera.

TAKE A PICTURE

OPEN CAMERA

INSERT PC CARD

SEE YOUR IMAGES

[Actual size. And darn near actual weight.]

It begins with a digital camera that weighs less than **six ounces**. A sleek, ultra-portable, silver slip of a thing that fits right into your pocket. So compact and lightweight, it seems more fiction than fact. Yet the plot thickens. The PDR-2 has a **built-in PC Card.** Simply open the camera and plug it right into your computer's PC Card slot, then download images in practically less time than it takes to say "cheese." **Removable SmartMedia™** flash memory cards give you unlimited storage capacity—a critical chapter in our story because you can reuse them thousands upon thousands of times. When one card is full, you pop another one in just like a roll of film. And thanks to Toshiba's **CMOS sensor technology,** every single one of your batteries has a life span of more than 500 shots. But the PDR-2 isn't only for notebooks. An optional SmartMedia floppy disk adapter makes it just as easy to use with your desktop. Plus, it's compatible with PC and Mac. But the crux of the story is its price—a mere **$499**. And that includes Image Expert™ software for bringing up the image "filmstrip" for quick read and drag-and-drop, as well as LivePix™ image enhancement software which comes complete with templates for making things like cards, calendars, and posters. To learn more, visit our Web site at **www.toshiba.com/cad1.htm** or call us at **1-800-288-1354 xCAD1**. We'll give you the full story, unabridged.

**Circle 243 on reader service card**

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# Christian Murphy was non-verbal. He lived with a wall between himself and the world.

1 THIS IS CHRISTIAN.

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2 A TEACHER DISCOVERED *that Christian would respond to images from his life. She put visual cues to the story of his new puppy on a special keyboard.*

*NEC MultiSync Monitors*
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3 THE MONITOR BECAME HIS VOICE. *With it he makes class reports and conversation. With it, Christian, 11, has been in the regular Osterville, MA public school since first grade.*

**Until he found this window.**

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| E700 | 1600 x 1200 @ 65Hz | 177MHz | CROMACLEAR | 0.25mm mask |
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Common features listed above plus:
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- 4.3GB Hard Drive (10ms)
- 1000LS Monitor (15.9" v.i.s.)
- *NEW* 4MB EDO ViRGE 3D Video Card
- Sound Blaster 16 WaveSynth Wavetable Sound
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★ *Upgrade to a 1000TX Trinitron Monitor (15.9" v.i.s., .26dp), add $99.*

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**Common features:** ◆ Mini Tower Model ◆ 512KB L2 Cache ◆ *NEW* 24X Max‡ Variable CD-ROM Drive ◆ *NEW* 56K Capable** U.S. Robotics x2 Modem ◆ MS Windows 95 ◆ MS Mouse (MS IntelliMouse on XPS Systems) ◆ 2 Universal Serial Bus (USB) Ports ◆ 3 Year Limited Warranty with 1 Year On-site Service
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- 2MB EDO ViRGE 3D Video

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Dual Processor Capable, RAID Capable

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- 4GB Ultra-Wide SCSI-3 Hard Drive (27GB Max.)
- 8X SCSI CD-ROM Drive

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★ *Add a 4GB Ultra-Wide SCSI-3 Hard Drive, add $849.*
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- 72MB RAM
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- 2nd Lithium Ion Battery
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- 40MB RAM (72MB Max.)
- 2.1GB Hard Drive
- Motorola 33.6 Fax Modem
- MS Office 97 Small Business Edition

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★ *Upgrade to a 4GB Hard Drive, add $349.*
★ *2nd Lithium Ion Battery, add $199.*
★ *3Com 10Base-T Network Card, add $129.*

**$3599**‡

**Business Lease: $127/Mo.**
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### DELL LATITUDE LM M166ST
166MHz PENTIUM PROCESSOR W/MMX

Common features listed above plus:
- 12.1" SVGA Active Matrix Display
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# Invasion of the Webcasters

**Webcasters push** *news, stock quotes, software, horoscopes, and commercials* **directly** *to your PC's screen. We tuned in to 10 of them.* **Here's our take.**

By B. A. Nilsson and JoAnne Robb

REMEMBER THE GOOD OLD DAYS, when a newspaper landed on your front doorstep and you actually had time to read it? Now because of the Internet, the daily rag you subscribe to and hundreds of other newspapers—not to mention all kinds of other information and entertainment—are available online at any time of the day or night. Talk about pressure! Not only has your anxiety over staying abreast of current events quadrupled, you have no idea what to read first.

The solution? Webcasters—also called *push applications*—can deliver the news you want right to your desktop. No more scanning news headlines in half a dozen online publications before you find what you want to read. No more continually checking your stock portfolio so you can sell at the perfect moment. Using *channels*—streams of information from Web sources, such as the *New York Times* or *Wall Street Journal* sites—Webcasters send headlines or entire articles to your desktop as ticker tape or screen savers. You can get the latest news from Washington, the weather in San Diego, and basketball scores from Chicago, all served up on your screen and updated as often as every 30 minutes.

Webcasters have become such hot properties that Microsoft and Netscape are using them as yet another weapon in their ongoing battle for dominance in the Web browser market. Microsoft's Internet Explorer 4.0 and Netscape's Navigator 4.0 should both have built-in Webcasting components by the end of summer. (See "Channeling the Desktop" for a preview of these Webcasters.)

Meanwhile, about 30 other push products are jockeying for your attention. Almost all are free, so you can download and try out as many as you want without spending a dime. But most of them aren't that great. We looked at ten of the more interesting ones, and picked four to cover in depth. They include PointCast Network and Back- ▶

ILLUSTRATION BY RICK SEALOCK

Web, two of the most popular push products, according to research firm International Data Corporation. We also looked at Headliner, the best of the headline-only Webcasters here, and Intermind Communicator, which delivers content to your browser. (For minireviews of the remaining push products, see "Shovin' It to Ya.")

Marimba's Castanet is another big name in the world of push products, but we don't review it because its primary function is to deliver software, not news. (BackWeb does both.) Castanet is available as a stand-alone push product, and it will also be integrated into the Netscape Navigator browser.

We tested all the products by downloading them from the Internet, setting them up on a T1 connection on a Pentium-133 with 16MB of RAM and subscribing to a few channels. We evaluated each program's interface, its screen size, and the quality of the information. We also noted how often the Webcasters updated information and whether they let us determine the amount of space downloads would take up on our hard drive. Finally, we ran them alongside other applications to see how much they interfered with our regular work, if at all.

Our recommendation? Its ads are some of the most annoying of any Webcaster's, but PointCast does take the guesswork out of getting top-quality news channels and information. You can receive news from recognized sources like CNN, Pathfinder, and the *New York Times*. Headliner was another favorite, but just as we were going to press, BackWeb announced that it had purchased Lanacom and planned to integrate Headliner into the BackWeb product. Since Headliner will be available as a stand-alone product through the beginning of October, we still review it on its own. However, we didn't think it would be fair to give it our highest recommendation, since we don't know how the new BackWeb/Headliner combo—due out in the fall—will look.

## Recommended

**POINTCAST, AVAILABLE FREE as a stand-alone Webcaster and soon in Microsoft's Internet Explorer 4.0 browser, delivers some of the best news content on the Web. The interface is well organized, so you don't have to hunt through an endless number of channels to find what you want. Our only beefs: The animated ads that jump in the corner of your screen saver can be distracting, and PointCast gives you no control over how much hard drive space its full-story downloads eat up. (The company estimates that you'll need to allot about 10MB for both the product and all its stories.)**

### NEWS ON DEMAND

HOW DO PUSH programs work? They use technology that's better described as "smart pull." You decide on the channels and update schedule you want. Then the programs use that information to poll Web servers for changes and automatically pull down new information to your screen. Depending on the Webcaster (and the Web site being accessed), an entire HTML page complete with graphics might be saved to your hard drive and viewed through your browser. Or you may get a headline link that takes you back to the original Web site when you click on it. Many products save space on your hard drive by leaving out some graphics.

News can appear on your desktop in a variety of forms, such as pop-up boxes, but the two most popular options Webcasters offer are scrolling tickers and screen savers. We liked tickers a lot—at first. They gave us a real feel of being in the thick of the news, but we eventually had to switch to screen savers. The tickers' never-ending march of headlines across the screen drove us crazy after we had used them for a while.

Most Webcasters update no more than once every 30 minutes, and others have channels that update only once a week. If your Webcaster is smart, like PointCast, it won't update unless there are changes—no matter how often you've set the channels to refresh.

Content is the biggest differentiator among Webcasters, but don't confuse the number of channels with quality. For instance, PointCast offers only 25 channels, but each one has many subsections: If you subscribe to CNN, for example, you can then choose among topics ranging from world news to the latest on health. Interface can make a big difference in how useful a Webcaster is, too. For instance, Headliner offers a seemingly overwhelming number of channels—more than 700—but they're neatly arranged in categories such as Business, Lifestyle, and Travel. We had no problem finding what we were looking for.

### FEATURES COMPARISON

| PRODUCT | Platforms | Size (MB) | Number of channels [1] | What it downloads | Intrusiveness of interface |
|---|---|---|---|---|---|
| BackWeb 2.0<br>www.backweb.com | Windows 3.1, 95, NT 4.0 | 4 | 45 | Headlines or full stories, depending on the channel; software. | Flash deliveries can be irritating, but screen saver or wallpaper are other delivery options. |
| BackWeb Headliner 1.0.1<br>www.backweb.com | Windows 95, NT 4.0 | 2.7 | 700 | Headlines with summaries. | Ticker can distract attention; screen saver works like a charm. |
| Intermind Communicator 1.51<br>www.intermind.com | Windows 3.1, 95, NT 4.0 | 1.4 | 200 | Headlines and summaries or full stories, depending on the channel. | You can set different methods for notification of updates; none are invasive. |
| PointCast Network 2.0<br>www.pointcast.com | Windows 3.1, 95, NT 4.0 | 2.9 | 25 [2] | Headlines, summaries, and full stories. | Screen saver ads can be distracting. |

[1] As of 6/6/97. [2] More than 200 subchannels as well.

## STAYING INFORMED, AND WORKING, TOO

WITH ALL THE DIFFERENT approaches Webcasters take, developing tests wasn't easy. We finally settled on this general procedure: For each Webcaster, we subscribed to three popular channels—generally business news, weather, and financial information channels—and set updates for every 30 minutes. (If the product couldn't update every half hour, we chose the next closest interval.) To test whether the Webcasters interfered with work in other applications, we performed common tasks—like a mail merge in Microsoft Word and a name search in Lotus Organizer—and timed how long they took with and without the Webcaster working in the background.

On average, Webcasters didn't slow us down much—only about 2 percent. BackWeb won't slow you at all: Unlike Webcasters that consume part of your bandwidth when downloading, BackWeb works only when you're not using your line. (Most products split your connection; they take part of the bandwidth for downloads and leave you the rest for your online activities.) BackWeb also sends its downloads in small chunks—512 bytes, to be exact. That way, if a download is interrupted—while you check your e-mail, say—it can pick up where it left off.

## THE FUTURE OF WEBCASTING

WEBCASTERS ARE EVOLVING into more than single-purpose products that pull news off the Web. For instance, BackWeb is working with companies such as McAfee and Diamond Multimedia to send software updates to your PC. AirMedia, which broadcasts news wirelessly to desktops via NewsCatcher, a pyramid-shaped receiver, will be offering a mobile version by September. The new receiver looks like a futuristic pager and attaches to your notebook to display updates. PointCast is planning special push services for targeted markets, like college students and government employees.

Many Webcasting products also come in intranet versions so companies can send information to their own employees' desktops. Soon, you may have no excuse for ignoring the latest form from HR—instead of getting lost under a hundred e-mails, it will be displayed on your screen, just like any other news update (see "Pushing the Company Line").

## EXTRA, EXTRA

A BEEP SIGNALING that more news has just landed on your desktop may never give you the same old-fashioned feeling of being in the know the way a newspaper's *thwack* on the porch does. But if your professional or personal happiness depends on keeping up with the very latest news, Webcasters are the way to go. They're distracting, they litter your hard drive with old stories about Beijing, and some come with annoying ads. But they're also easier (and cheaper) to subscribe to than traditional papers, the information is even more diverse, and they can be downright fun. Best of all? You don't even have to tip the neighborhood carrier.

### BACKWEB 2.0

➤ www.backweb.com

**PRO:** Downloads software; downloads don't interfere with other online activities

**CON:** Fewer channels than most, InfoFlash delivery is distracting

Content may be king for most Webcasters, but others are taking push in new directions: They're pushing actual applications—not just news or stock quotes—to your PC. BackWeb is one product that delivers apps—and it's the only product that can send content as well as applications. That means you can get *Wall Street Journal* articles along with new modem drivers or the latest virus software update.

Compared to most other push programs, BackWeb offers relatively few channels—only about 45. In addition to some limited news channels, including Wall Street Journal Interactive Edition and Infoseek, you can choose from several computer publication sites like IDG.net and CMP Techweb. If you're in the mood for a little entertainment, there's everything from Boston's PBS station, which offers updates from Nova online, to JamTV, where you'll find a weekly magazine, tour schedules for dozens of artists, and CD previews.

You can pick from several types of delivery, depending on the options the content providers give you: screen savers, wallpaper (good for options like the Weather Channel, which sends a satellite map of the United States), or InfoFlashes ▶

**Content** *is the biggest differentiator among Webcasters, but don't confuse the* **number of channels** *with quality.*

| Caching | Content | Pro/Con | Suitable if you... |
|---|---|---|---|
| Yes (per channel) | Not a lot of quality news; software delivery is useful. | Polite agent makes downloads unobtrusive, excellent for software delivery; limited news choices. | requires software or driver updates from specific companies. |
| Purges after two days | Quality news and information; number of channels could be overwhelming, but categories are well organized. | Small profile, not intrusive; have to go online to read stories. | seek hard-core news and other information. |
| Yes (by time) | Varied content, but short on news; good number of technology channels. | Efficient delivery, good for technical support information; news content is minimal. | need technical support information; prefer channel updates in browser format. |
| No | Excellent range of info; acts as an excellent filter of overall Internet content. | Provides quality information, manageable number of channels; ads can be distracting. | want filtered Internet content from only the best news channels. |

(moving windows about the size of a headline ticker). We found InfoFlashes, which are usually animated and sometimes cross the line into advertising, too distracting. During our tests, an InfoFlash from Volvo startled us by popping up with a picture of the interior of a new car.

Unlike most other push applications, which are limited to text or text and photos, BackWeb can deliver almost anything a content provider wants to send, including audio files, TV and movie clips, and software demos. Vendors you can subscribe to include Diamond Multimedia, which distributes modem and graphics board drivers through BackWeb; Expert Software (a company that sells home remodeling and SOHO titles), which previews its newest CD-ROMs and will then download the full program, if you want it; and McAfee SecureCast, which updates the VirusScan signature files. Software Inbox Direct, an Internet-based company that distributes software, sends a new shareware, freeware, or demo program every week. When new versions of any of these drivers or programs become available, BackWeb automatically sends them to you, unless you tell it not to.

BackWeb handles updates and hard disk allocation sensibly. Downloads take place in the background of your online session, waiting until you're not transferring any other information. If you log off before a download completes, BackWeb will pick up where it left off when you go online again. It also lets you control the amount of disk space used by each channel. You can't set the frequency of updates, however; when you sign up for each channel, you'll get information about how often it will send new information.

We predict that as the Internet grows, more people will want their software delivered electronically. By getting a head start now with its limited software and driver delivery, BackWeb could have a bright future in the software update department. And when BackWeb folds Headliner ▶

# Channeling the Desktop

**A WEBCASTER BUILT INTO your Web browser? It makes sense. But how will the Webcasters in Microsoft's and Netscape's browsers compare to the stand-alone products available today? To get an idea, we looked at the push components in a beta of Netscape's Navigator 4.0 and a beta of Microsoft's Internet Explorer 4.0.**

**Internet Explorer's Active Desktop and Navigator's Netcaster operate like most standard push products. Both let you allot hard drive space and set channel updates. In Active Desktop, which we saw in a demo, channels appear in a long rectangular bar down the left side of the screen. When a channel has updated content, a gleam appears by the channel name on the bar. Netcaster's updates work similarly: You'll see a flag by the channel name in its channel bar. Netcaster also offers a unique delivery option called a Webtop. Webtops are a sort of dynamic wallpaper: You can see them updating in the background while you work.**

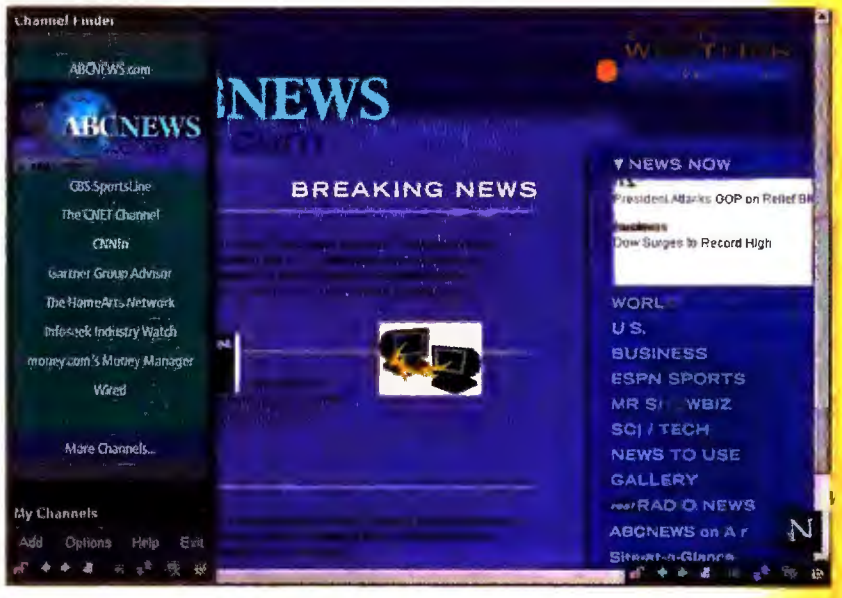
**BY THE TIME you read this, Microsoft should have announced more of its channel partners.**

## ANOTHER STANDARDS WAR?

**IT'S TOO EARLY TO SAY how good either Webcaster's content will be. At press time in July, Microsoft would confirm deals with only PointCast and MSNBC, which will come as preconfigured channels. Netcaster will come preconfigured with ten preselected channels, including Netscape's own Web site. But it will offer dozens more options in the Channel Finder section of its channel bar. When we went to press, Netscape had already lined up over 20 content providers, including familiar names like ABC News and Condé Nast. In addition, Netcaster will come with Castanet built in, so you'll be able to get Castanet apps without installing the product. Not to be outdone, Microsoft is developing the capability to distribute and update Java applications through its browser.**

**Exactly what content the two browsers will offer depends on which standard providers decide to follow. Microsoft's standard—Channel Definition Format (CDF)—requires content providers to add Extensible Markup Language code (closely related to HTML) to their pages. Netcaster, on the other hand, requires sites to prepare their pages with JavaScript.**

**Your Webcaster of choice might depend on your operating system. If you use Windows 95, pick Active Desktop. It's designed to integrate smoothly with that platform. But if you don't use Windows 95, or need a Webcaster that will work with multiple operating systems across a corporate intranet, choose Netcaster. Since it uses Java VM, it will work on any platform. The downside is that it may be slower because it's not optimized for a particular operating system. If you don't use Windows 95, though, Netcaster could be your only choice: Microsoft won't say when Active Desktop will be ready for any other platform.**




**USE NETCASTER's channel list to choose among specially configured Web sites such as abcnews.com.**

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**JULY 1997**
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When it comes to service and reliability, who's the one notebook maker you can truly count on? According to the nearly 8,500 people who responded to *PC Magazine's* 10th Annual Service and Reliability Survey, there is only one. (Impressive considering they rated some 3,800 notebooks from 15 vendors, isn't it?) How did we earn the only "A"? Over the last year, our users reported better than average scores on four key measures: satisfaction with reliability, repair experience, and technical support; and the need for recent repairs. They also said they'd buy one again. To say the same for your notebook, visit us on the Web or give us a call.

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# Shovin' It to Ya

THE INTERNET IS OVERRUN with free Webcasters. Which are worth the download time?

In addition to the four Webcasters we chose for in-depth review, we picked several others that we liked. They're all free, and you can link to any of them from *PC World*'s site (www.pcworld.com/sep97/push).

Many Webcasters work like Headliner: You pick stories from headlines that are sent to your screen. None of the other headline-based Webcasters we cover—**Downtown** (www.incommon.com), **Websprite** (www.dvorak.com), and **IBM NewsTicker** (infomarket.ibm.com/ht3/ticker.shtml)—have a screen saver option, in case you find scrolling tickers distracting. But if you're a ticker fan, you should check them out. Downtown has two dozen channels from reputable sources like the *Los Angeles Times;* each channel we chose showed up in its own section of the Downtown taskbar. To see the headlines from a particular channel, you just click on the section of the taskbar that's designated for the channel. Pick a headline and you'll link to the Web to read the story. WebSprite has content similar to Downtown, but leans more heavily toward business and financial headlines. WebSprite is really simple, without any extra buttons or fancy gadgets—though you can give each channel its own typeface color or background. IBM NewsTicker, our final ticker choice, is all hard-core news. Channels are available from a small selection of business-oriented Web-based news services.

**DOWNTOWN's headline bar scrolls headlines for each channel you choose.**

Want your news delivered on the wings of flying toasters? Then check out **After Dark Online** (www.afterdark.com), brought to you by the same folks who make the screen savers. After Dark Online brings you six channels, including *USA Today.* Animations acompany information as it flashes across your screen saver; not surprisingly, After Dark's animations are often more interesting than the news they bring.

If you don't want to peer at screen savers, have your news delivered via e-mail instead: **Digital Bindery** (www.bindery.com) lets you choose Web pages you want to track and then e-mails the changes to you.

More worried about a particular kind of content than the way it's delivered? **AlphaConnect StockVue** (www.alphaconnect.com) does stocks. Period. It tracks your portfolio and sends the information to your desktop in easy-to-read displays. If you're really neurotic about your finances, you can set it to page you when your stock hits a certain value. You can't be more connected than that.

**IBM's HIGH-TECH-LOOKING News Ticker shows headline and financial news in a small, scrolling display.**

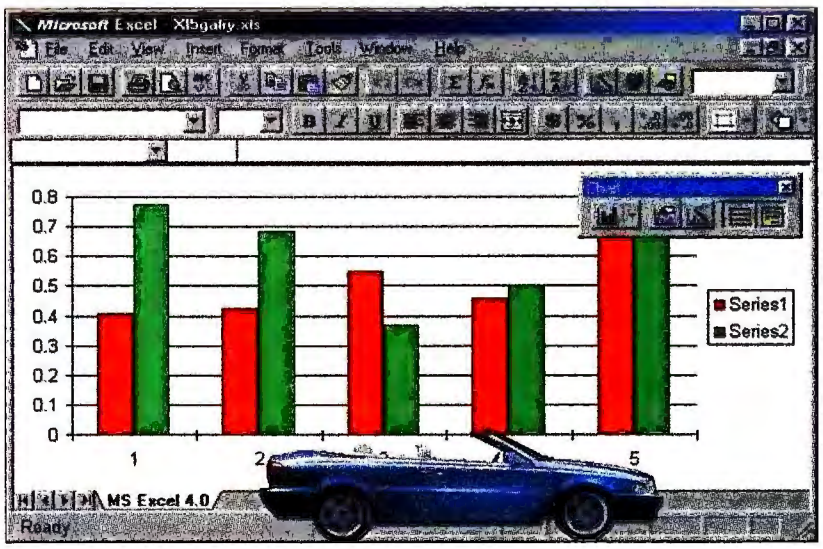
into its product, it should also have an abundant array of content choices. But, for now, if you're looking for a variety of hard-hitting news channels, you're still better off with a product like PointCast.

## BACKWEB HEADLINER 1.0.1

➤ www.backweb.com

**PRO:** Saves hard drive space by sending only headlines and story summaries, well-organized interface

**CON:** Scrolling ticker at top of screen can be distracting



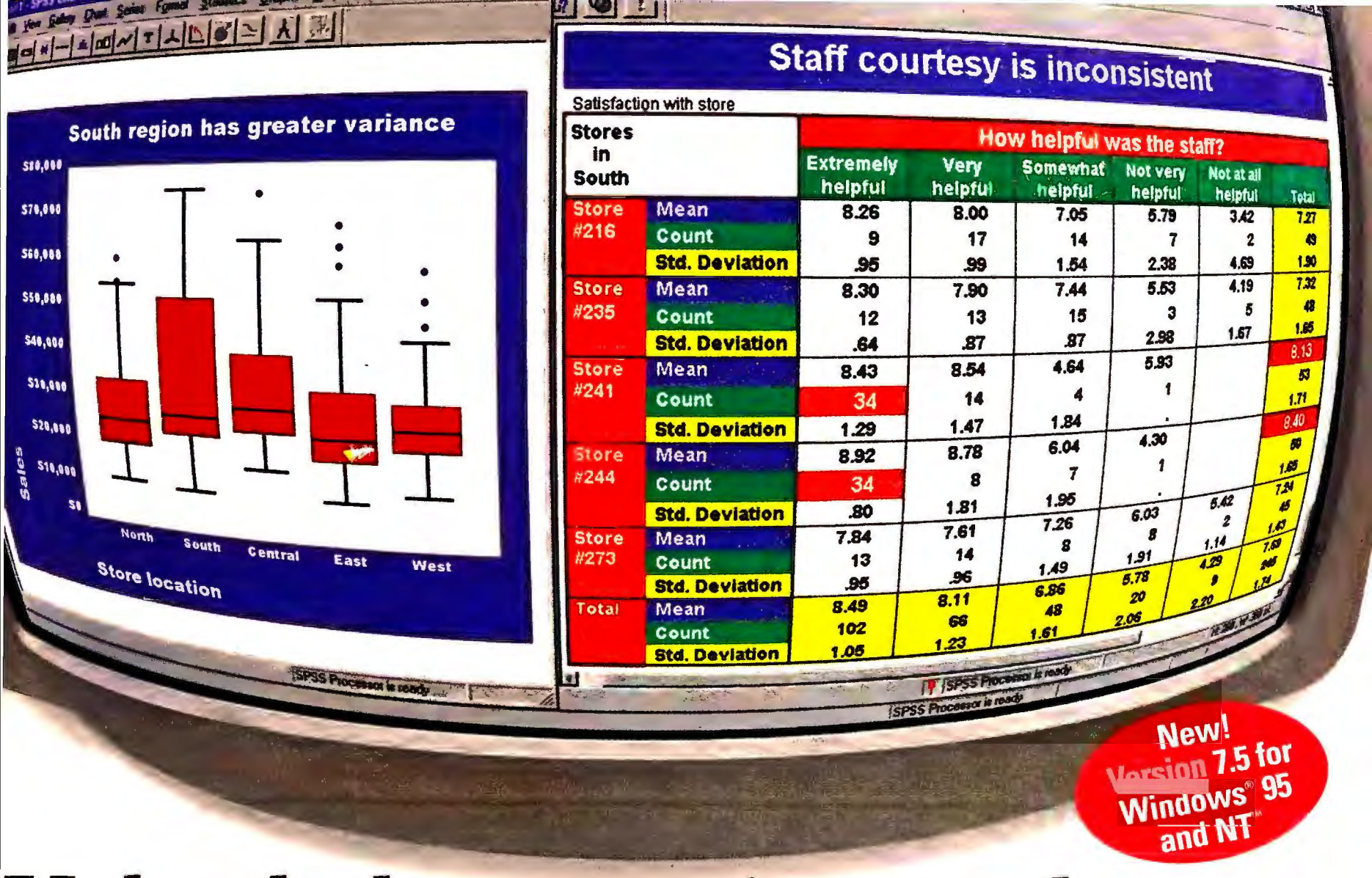

**BACKWEB's InfoFlashes are liable to drive onto your screen unexpectedly.**

True to its name, BackWeb's Headliner sends you only headlines, thus saving hard disk space. You track the headlines from a ticker that runs across your screen or read a brief summary from the screen saver. Either way, if you see a headline that intrigues you, a click on it links you to the Internet. (Headliner will launch your browser for you if it's not already open, but expect a brief wait.) By reading your news online, you won't fill your hard drive with lengthy news stories.

Headliner offers more than 700 channels from content providers ranging from news sources like Reuters International, *USA Today,* and MSNBC WorldNews, to fluffy but fun downloads like David Letterman's Top Ten List. Despite the overwhelming number of channels, they're organized into 24 categories, so it's easy to browse and choose the ones you want to receive. If you choose channels from different categories, you'll see those categories as tabs on your screen saver or as menu options on your ticker. By default, the ticker or screen saver will cycle through all of the channels you've picked, but if you want to check your investment portfolio, say, then you just select the Stock Quotes tab for an immediate update.

Headliner also lets you fine-tune your news delivery more than many of the other Webcasters allow you to: For example, you can tell Headliner to send you an alert if it finds a particular word in a story or if a stock hits a certain price. You can set the alert to beep or have Headliner download an entire article so you can read it offline. And you can even set up Headliner to page you with an alert. There are still other customization options. For instance, if you're viewing your news in the ticker, you can change the font and the speed at which the headlines scroll across your screen.

Overall, Headliner is an elegant product that delivers a wide choice of different content without using up too much of your precious system resources. ▶

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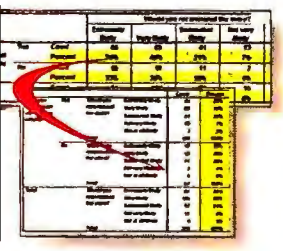

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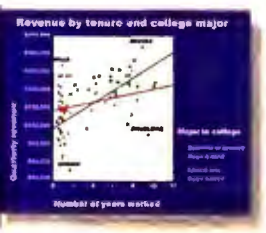


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### INTERMIND COMMUNICATOR 1.51

➤ www.intermind.com

**PRO:** Variety of channels with emphasis on technical support

**CON:** Interface is somewhat confusing, channels don't update often enough

Intermind can't match the breadth of daily news that competitors like PointCast and Headliner offer. But you might find this Webcaster worth setting up if you like off-the-wall channels or own products from any of the half-dozen computer companies that offer technical support channels through Intermind's Webcaster.

Intermind's content providers are an eclectic group. The 200 channels range from the newsworthy (CBS News Up-to-the-Minute) to the technical (product support information from Novell, Macromedia, and Epson, among others), to the arcane (astrology, model railroading, Biblical prophecy).

Intermind does a good job of organizing this hodgepodge into eight broad categories. You subscribe to channels through a listing on Intermind's Web site, then view headlines or both headlines and summaries in a customized browser window that's been saved to your hard drive. Unfortunately, navigating through the browser window is not as streamlined as it could be—the window is designed with frames that actually make information harder to find. To read a complete story, just click on the headline. If a story is cached to your hard drive (the channel provider decides whether to send the whole story or not), it will appear on your screen. If the story isn't cached, you'll jump out to the Internet to read it.

You won't be able to set how often new material is sent to you. Since most of the channels don't update that often, the content providers determine how often you'll receive new material. We found the lack of frequent updates a little frustrating—it was more like subscribing to a weekly magazine than a daily newspaper. What was even more irritating was that we sometimes got more updates—press release material and the like—from the Intermind company channel (which you'll get automatically) than we got from the

**AFTER A WHILE,** the constant movement of the Headliner ticker irritated us; we switched to its screen saver instead.

## Pushing the Company Line

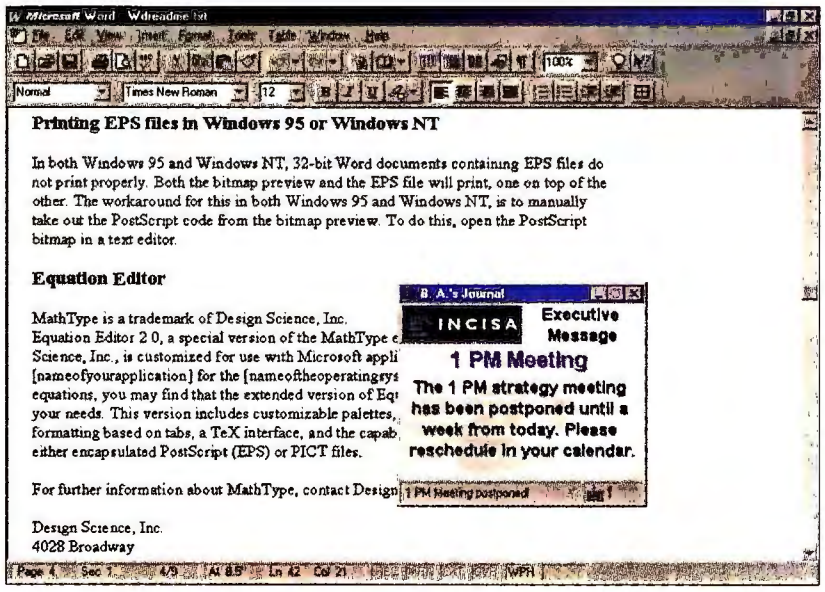
YOUR COMPANY intranet may be the logical place to post the latest sales report, but that doesn't mean anyone goes there to read it. If you want to make sure corporate news is getting its fair share of space on users' desktops, you may want to consider an intranet Webcaster. Like Internet push applications, Webcasters for intranets use screen savers, tickers, and the like to flash new information from your company Web site on employees' screens.

We tested four intranet Webcasters: **BackWeb,** Marimba's **Castanet Transmitter,** Wayfarer's **Incisa,** and PointCast's **I-Server.** We installed each on a Pentium-166 running Windows NT 4.0 and on four PCs running Windows 95. Our "channel" was a corporate HTML Web page we created. To test Castanet, which downloads only applications, we sent sample Java apps across to the PCs. At press time, Incisa couldn't track changes in intranet Web pages. Instead, we looked at its ability to send messages directly to client desktops.

Incisa was the easiest to install: We breezed through a series of point-and-click windows. BackWeb was the most difficult to set up. To get it running, you'll need a rudimentary knowledge of programming and an in-depth understanding of your LAN.

As with Internet Webcasters, each product has a different way of delivering messages to employee screens. BackWeb and PointCast both monitor your intranet page and notify employees of a change the same way they do on the Internet versions: BackWeb shows updates in screen savers or InfoFlashes. PointCast news shows up in screen savers or tickers. When we looked at Incisa, it didn't monitor corporate Web pages, but by the time you read this a new version will be out that the company says will have that function. We still liked the ease with which we could compose messages with Incisa and direct them to specific desktops at specific times in pop-up windows.

Like its Internet counterpart, Castanet Transmitter for intranets is a different beast than other Webcasters: It focuses on distribution of Java-based applications. The advantage of this is that you can distribute the same Java software to a variety of different platforms in a company. (At press time, Castanet was adding the ability to send software written in languages other than Java.) Castanet can also upgrade applications by sending only the new code, which saves employees from downloading the whole application again.




**INCISA ALERT!** Pop-up windows bring messages and other information from your company's news center.

**INTERMIND'S interface is more complicated than it needs to be.**

channels that we subscribed to.

Each time material is updated, you get an audible cue. (If you don't want your PC to beep at you, you can switch that off and instead have a green light shine from your taskbar when there is an update.) Unlike most push products, which limit the number of stories you get by limiting the amount of space for them on your hard drive, Intermind lets you choose the length of time a story will sit on your hard drive by selecting a number of days in the options menu.

Intermind has a few interesting advantages, particularly if you like to go online for technical support. But it's a basic product at best: It doesn't have a broad range of channels and headline news or a particularly compelling way of delivering that information.

### POINTCAST NETWORK 2.0

➤ www.pointcast.com

**PRO:** Quality news, intuitive interface

**CON:** Advertising is distracting, can't set caching limits

Since it was the first Webcaster on the Internet in early 1996, PointCast is the granddaddy of the pack. One of the reasons it continues to be popular is the quality of its news and information. No other Webcaster can match the select group of channels it offers—17 sources including CNN, the *Chicago Tribune*, and the *New York Times*. Another reason for its popularity is its appealing interface—to subscribe to a channel, just pick and click from well-organized headings.

PointCast collects content a little differently than other Webcasters, but you probably won't notice any difference in how you receive or use its channels (we didn't). Rather than pull news from various ▶

## INTRANET WEBCASTING HIGHLIGHTS

| PRODUCT | Price (as of 6/6/97) | Platform (server/client) | Pro/Con |
|---|---|---|---|
| BackWeb<br>800/863-0100 www.backweb.com | $10,500 for up to 250 users; $15 to $35 per user above 250. | Windows NT 4.0/Windows 3.1, 95, NT 4.0 | InfoPaks are eye-catching ways to send info to employee desktops; configuration requires knowledge of basic programming. |
| Marimba Castanet<br>888/800-5444 www.marimba.com | from $995 to $25,000 for unlimited use | Windows 95, NT 4.0/Windows 95, NT 4.0 | Updates applications effectively; doesn't send news or track changes to Web pages. |
| PointCast I-Server [1]<br>888/564-6726 www.pointcast.com | free | Windows NT 4.0/Windows 3.1, 95 | Delivers intranet and Internet info, free; ads can be distracting. |
| Wayfarer Incisa<br>800/300-8559 www.wayfarer.com | $5000 for 100 users | Windows NT/Windows 3.1, 95, NT 4.0 | Good for intranet news distribution, easy to use; at press time, didn't monitor intranet page. |

[1] Will be available as three separate products by the time you read this: PointCast Caching Manager, PointCast Administrator, and PointCast Broadcast Manager.

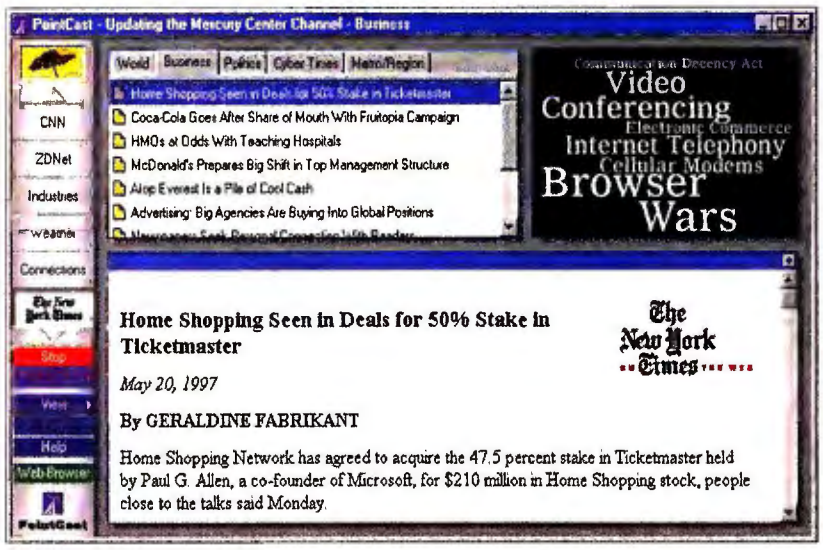
BackWeb can distribute programs as well—and it also can sense which parts of a program have changed so it sends you only the updated section. Unlike Castanet, however, BackWeb can also monitor Web pages, so it's the best pick if you need to do both.

If you want your employees to use only one Webcaster for both Internet and intranet use, PointCast and BackWeb are your best bets. They're both capable of tracking the same Web information as their Internet-only versions. (According to the company, you will soon be able to use BackWeb's server to turn any Web site into a channel. Once you define a new channel with this powerful tool, story headlines can be sent to client desktops, even if the content provider isn't one of the available BackWeb channels.) Incisa's forthcoming version promises to track Web information as well.

These intranet products can also keep network traffic to a minimum. PointCast's I-Server is a good example: If 50 employees monitor CNN's channel, only one copy of an update is downloaded to the server, which then distributes it to all the subscribers. If you're not crazy about the idea of your employees using the company intranet server to monitor Internet sites, you can configure BackWeb to restrict access to handpicked channels or cut off access to the Internet altogether. By the time you read this, PointCast should be able to restrict access to particular sites as well.

As we went to press in July, PointCast borrowed a tactic from Microsoft and began offering its intranet Webcaster for free. The "new" I-Server splits the old I-Server's capabilities into two new products—PointCast Caching Manager and PointCast Corporate Broadcast Manager—and adds a new component, PointCast Administrator. The only drawback: You'll get PointCast's ads along with the content. PointCast Administrator allows an IS department to filter some channels and some ads from Web downloads—but they still can't get rid of all the ads. (To turn off Internet channels and ads completely, you'll have to buy PointCast Added Control. At press time, PointCast didn't know how much this product would cost.) Still, considering other intranet servers range in price from $1000 for 100 users for Castanet to $10,000 for 250 users for BackWeb, the ads are a price we'd bet most companies would be willing to pay.

Web sites, like most other Webcasters do, PointCast actually takes the content from its 17 primary providers and broadcasts it in compressed form from its own Web servers. Although we didn't check this, the compressed stories are supposed to use much less bandwidth as they come over your phone line or network connection. And accessing channels from PointCast's powerful servers instead of from individual Web sites is supposed to prevent access problems when a large number of people are simultaneously trying to get information from a particular channel.




**THE SCREEN that started it all: PointCast combines a channel list, headlines, complete stories—and ads—all in one window.**

Content from PointCast's primary providers appears in 25 channels, only nine of which you can subscribe to at once. It's not as limiting as it sounds, though. Each channel contains multiple subsections that you can also subscribe to once you've selected the main channels. That brings the actual number of channels available from PointCast's servers to more than 200. For instance, the CNN channel offers categories such as Politics, Health, and Technology. Subchannel subscriptions such as these show up as separate tabs in the PointCast screen saver under the primary channel.

As we went to press in July, PointCast launched Connections, which will expand PointCast's repertoire. Connections channels will come straight from the providers' sites, instead of through PointCast's servers, and will be listed under one heading in the interface. Although PointCast couldn't tell us what kind of content the Connections channels would offer, it said hundreds of providers had already signed up—PC World Online among them. If you choose Connections as one of your channels, it won't count as one of the nine you can select. It's like a bonus channel—you'll still be able to choose another nine from the original providers.

We weren't completely happy with some of PointCast's features. For one thing, it's one of the only Webcasters with ads, animated productions that shout at you from the upper right corner of the screen saver. You can always switch to PointCast's ticker, but since tickers can be quite distracting, it's a toss-up as to which is the lesser evil. Another obvious drawback is that there's no option to get just headlines—PointCast downloads entire stories, taking up more space on your hard drive than Webcasters that send only parts of stories. (PointCast says that you should allot about 10MB of disk space for it.) We also missed being able to set how much data individual channels can cache.

If you go with Internet Explorer 4.0 as your browser, PointCast will be one of the built-in channels. If not, PointCast is worth installing anyway if news monitoring is your bag. It isn't perfect, but of all the push products we reviewed, PointCast does the best job of filtering the content of the Web if you're just interested in top-quality news and financial information.

*Find links to products in this article at www.pcworld.com/sep97/push. B. A. Nilsson is a freelance computer writer based in Glen, New York; JoAnne Robb is an associate editor and Grace Aquino an assistant editor for* PC World. ■

## Jamming Through Network Traffic

ARE WEBCASTERS causing a traffic jam on corporate America's networks? Lots of companies have a sneaking suspicion they are, but few have the hard data to prove it. When Webcasters first appeared on the Internet, some companies—like Hewlett Packard—asked their employees to think twice before using something like PointCast, which sends entire stories to your hard drive.

Is it paranoia or practicality? Probably a little of both. Products like Headliner send only headlines, so their impact on corporate networks is small. But products like PointCast, which download larger content files, should and do worry corporate IS managers.

"IS hates this technology," claims Albert Behr, vice president of product marketing for Sequel Technology, which makes an Internet monitoring product. "Someone downloads a copy of PointCast, and pretty soon almost everyone is using it, and then there's this huge spike on the network."

To avoid being shut out of corporations, Webcasting software manufacturers are looking for ways to let users get smaller packages of information. For instance, if several news stories all use the same photo, PointCast will send only one copy to your hard drive, so other data have more room on corporate lines.

Several companies like PointCast and BackWeb have developed server products to help alleviate the bandwidth strain. (See "Pushing the Company Line.") Does this approach work? It does for Houston Industries, an electric utility company in Texas that uses PointCast's I-Server. According to Bob Bertrand, a systems analyst with the company, over 80 percent of hits now come from cache instead of clogging bandwidth by pulling directly from the Internet. —Grace Aquino

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|---|---|---|
| **Imaging Devices** | 1/4" CCD w/ 380K pixels | 1/4" CCD w/ 380K pixels |
| **Program Auto Exposure** | Auto only | Auto/5 Mode Setting |
| **Exposure/Iris Control - ISO Rating** | 100 | 100 |
| **Exposure Compensation (EV)** | 7 Steps | 7 Steps |
| **White Balance** | Auto | Auto |
| **Shutter Speed** | 1/60-1/4000 | 1/60-1/4000 |
| **Recording Mode** | Up to 20 shots Fine/up to 40 shots Standard | 20 shots Fine/40 shots Standard |
| **Picture Effects** | | 4 (Monotone, Sepia, Negative, Pastel) |
| **Flash** | Built-in | Built-in |
| **Self Timer** | 10 sec(on/off) | 10 sec(on/off) |
| **Lens** | Fixed f=4.8, F=2.0 [3] | 10:1 Zoom f=4.2-42mm,F=1.8 - 2.9 [3] |
| **35mm Conversion** | f=47mm | f=40–400mm |
| **Focusing** | Fixed | Auto/Manual focus dial |

| PLAYBACK | | |
|---|---|---|
| **Format** | JPEG | JPEG |
| **Recording Media** | 3.5" floppy disk 2HD only [4] | 3.5" floppy disk 2HD only [4] |
| **Image Size** | 640x480 (VGA) | 640x480 (VGA) |
| **LCD** | 2.5" 61K pixels | 2.5" 61K pixels |
| **LCD Brightness** | Yes (+/-) | Yes (+/-) |
| **Delete Picture** | Yes (All/Select) | Yes (All/Select) |
| **Index Viewing** | 6 Picture Display on LCD | 6 Picture Display on LCD |
| **Time Stamp** | Yes (Date/Time) | Yes (Date/Time) |
| **Menu** | Yes | Yes |

| GENERAL SPECS | | |
|---|---|---|
| **Battery** | InfoLithium NP-F530 | InfoLithium NP-F530 |
| **Dimension (WxHxD)** | 5"x4.5"x2.5" | 5"x4.5"x3" |
| **Weight** | 1.1 lbs | 1.3 lbs |
| **Power Requirements** | DC 7.2V | DC 7.2V |

| SUPPLIED ACCESSORIES | | |
|---|---|---|
| **Rechargeable Battery** | NP-F530 | NP-F530 |
| **Hand Strap** | Yes | Yes |
| **Battery Charger** | BC-V615 | BC-V615 |
| **PhotoStudio from ArcSoft** | Bundled | Bundled |
| **Back up Memory Battery** | CR-2025 | CR-2025 |

| OPTIONAL ACCESSORIES | | |
|---|---|---|
| **Wide Angle Lens** | | VCL-ES06 (MVC-FD7 only) |
| **Telephoto** | | VCL-ES20 (MVC-FD7 only) |
| **Soft Carrying Case** | LCS-FDC | LCS-FDC |
| **Cleaning Kit** | KK-LC3 | KK-LC3 |

VCL-ES20

VCL-ES06

LCS-FDC

KK-LC3

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1. Continuous recording (10-second intervals with flash off) 2. Some systems may require supplied ArcSoft™ software
3. Filter diameter-special 4. MS-DOS formatted

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TOP 5 WORKGROUP SERVERS

# Servers *with* Room *to* Grow

Digital Prioris MX 6200 SMP

PHOTOGRAPH: KEVIN CANDLAND

## Digital's Prioris MX 6200 SMP tops our list of low-cost workgroup servers.

BY WILLIAM J. RINKO-GAY

YOU DON'T HAVE TO bust your budget to buy an excellent network server built for that job from the ground up. You can pick one up today for under $6000, and for that price you can even get high-reliability features and room to expand. A case in point is our new Best Buy, Digital's Prioris MX 6200 SMP, which supports hot-swappable drives, reasonable expandability, and other enhancements that simplify management—all for a street price of $5300.

The latest servers also pack plenty of power. Except for the HP NetServer E 40 (an unusual server tailored for small offices) every model we review here features one Pentium Pro processor (often upgradable to dual processors), 64MB of memory, a 10/100-megabits-per-second ethernet adapter, and at least 6GB of disk storage. In addition to the models reviewed here, we tested machines from AST, Koutech, and Micron. ▶

INSIDE

225 **8 Ways to Work Across the Web**

*Here's how to collaborate with anyone on the Net.*

EDITED BY

**Eric Bender**

## TOP 5 WORKGROUP SERVERS

### 1 DIGITAL PRIORIS MX 6200 SMP

**PRO:** Excellent manageability and expandability.

**CON:** None significant.

A FREQUENT RUNNER-UP in our server reviews, Digital finally takes the workgroup prize with the MX 6200 SMP. This $5300 machine offers the well-regarded Prioris line's standard features, including hot-swappable drives, Prioris ServerWorks management software, and ease of maintenance that is second to none.

The MX 6200 has a Pentium Pro-200 with a 512K secondary cache (expandable to dual processors), up to 1GB of memory, two open bays, seven open slots, and 8GB of hot-swappable storage, upgradable to 36GB by swapping in 9GB drives.

The Prioris MX is a very good overall performer, ranking second among the servers. It took top honors in the NetWare database and NT Notes tests and scored second as a NetWare file server behind the speedy Compaq ProLiant 800. Its other scores were in the middle of the pack.

Prioris Quick Launch allows users to set up Windows NT and Novell NetWare quickly with little fuss. We tried using Quick Launch with InternetWare 4.11, although it had not yet been certified with this program. Quick Launch initially had trouble finding our source files, but when we started regular InternetWare installation after running Quick Launch, the utility jump-started itself and finished the installation. Other ServerWorks products worked equally well for managing our server, creating driver disks, and providing online documentation.

It's easy to get inside this large tower system. The front bezel is held on by a keyed lock. Once the lock is removed, two thumbscrews release the side panel, which has a reference label for easy configuration. You can reach the processors and memory easily without removing the card they're mounted on. If you do need to remove the card, you won't need to use any tools—a captured thumbscrew keeps it in place. No slots are in use—all the necessary adapters are integrated into the system—and even the cables are kept well out of the way for ease of service. Digital also provides a tool to make it easy to pull out the hot-swappable drive carriers.

Digital is known for good service and support worldwide, and the MX is no exception. The warranty covers three years of on-site service, and there's round-the-clock phone support.

**You can think of the NetServer E 40 as a Server for Dummies. Well, not dummies, but small businesses or branch offices that lack any in-house computer staff.**

### 2 COMPAQ PROLIANT 800

**PRO:** Top performance, excellent features.

**CON:** No open drive bays.

AT $5465, the ProLiant 800 is all Compaq—at a price that should make buyers happy. This is still the fastest workgroup server we've seen. It's also easy to install, manage, and service. Its only drawback is lack of expandability.

The machine we tested came with a Symbios Logic Ultra-Wide SCSI adapter and three 2.1GB Seagate Barracuda drives, but it had no open drive bays for expansion. You can expand storage to 22.5GB internally by replacing the internal drives with one 4.3GB and two 9.1GB models.

Externally, the ProLiant's chassis is a typical minitower. The PCI-and-ISA-adapter bus is mounted on a daughtercard. You can remove the daughtercard with a single pull—you don't even have to unplug the monitor or network connectors. You can easily replace option cards, and the entire system board is accessible for servicing.

Compaq offers first-class installation and management tools, round-the-clock phone support, and a three-year warranty for on-site next-business-day service.

## PC WORLD TOP 5 WORKGROUP SERVERS

| | SERVERS | Street price (6/27/97) | Overall rating[1] | PC WorldBench for Servers[2] | Comments | CPU/RAM (MB) |
|---|---|---|---|---|---|---|
| 1 | Digital Prioris MX 6200 SMP<br>800/344-4825 www.windows.digital.com | $5300 | 97 | 92 | First-class features include hot-swappable drives, good performance. | PPro-200/64 |
| 2 | Compaq ProLiant 800<br>800/345-1518 www.compaq.com | $5465 | 91 | 100 | Top performance; strong features, manageability; no open drive bays. | PPro-200/64 |
| 3 | HP NetServer LD Pro 6/180<br>800/752-0900 www.hp.com | $5351 | 86 | 81 | High-reliability features, good design, manageability; so-so performance. | PPro-180/64 |
| 4 | HP NetServer LH Pro 6/200<br>800/752-0900 www.hp.com | $11,071 | 82 | 89 | High price, excellent features, moderately good performance. | PPro-200/64 |
| 5 | HP NetServer E 40 6/200<br>800/752-0900 www.hp.com | $3713 | 80 | 70 | Targeted for small offices, easy operation and remote support; slow. | P-200/64 |

Best Buy

[1] Overall rating is based on features and expandability (30 percent), performance (30 percent), price (30 percent), and reliability, service, and support (10 percent).

## 3 HP NETSERVER LD PRO 6/180

**PRO:** High-reliability features, good design.

**CON:** Middling performance.

THE LD PRO is a middle-of-the-road member of Hewlett-Packard's NetServer workgroup line. At $5351, it's less than half the price of the highly expandable and feature-rich LH Pro 6/200 (reviewed at right), but it's costlier and more capable than HP's $3713 E 40 6/200. The LD Pro doesn't skimp on reliability or management features. It's a strong general-purpose player.

The LD Pro placed fifth in overall performance among the eight machines tested, though it has only a Pentium Pro-180.

Housed in a smaller chassis than the fourth-ranked LH Pro, the LD Pro can take only three hot-swappable drives (the machine we tested came with three 2.1GB Seagate drives). You can add standard drives to this configuration; maximum internal storage is 35GB. There are six expansion slots, five of which were available in our test configuration. HP includes one Adaptec Fast & Wide SCSI controller.

This machine is easy to support. The system board is housed on the right half of the chassis; the drives are on the left. Memory and processor are on a separate board; you can change DIMM memory modules without removing the board.

HP bundles its excellent server management features and provides round-the-clock phone support (toll-free during business hours) and a three-year warranty for next-business-day on-site service.

## 4 HP NETSERVER LH PRO 6/200

**PRO:** Excellent reliability, expandability.

**CON:** High price.

LAST YEAR, HP's high-end NetServer LH Pro was the fastest workgroup server we tested. This year, it falls to third in overall speed—a good but not stellar performer.

The LH Pro, priced at $11,071, includes a Pentium Pro-200 with a 512K secondary cache and 1GB maximum memory. You can add a second processor in a ZIF socket. It offers seven open slots and comes with 8.4GB of storage, expandable to 54GB internally, all hot-swappable. The LH Pro also adds a redundant power supply, plus (at our request) a NetRAID adapter, configured at RAID 0 so we could see how well a high-reliability workgroup server performed with disks set up for maximum speed. The short answer is that this adapter doesn't greatly improve speed. Set it up for RAID 5, however, and you get fail-safe operation and the ability to add disks to your array dynamically.

The LH Pro is thoughtfully laid out for maintenance. It comes with the same well-regarded software tools and support policies as the LD Pro.

## 5 HP NETSERVER E 40 6/200

**PRO:** Ease-of-operation aids for small offices.

**CON:** Slow, limited expandability.

YOU CAN THINK of the NetServer E 40 as a Server for Dummies. Well, not dummies, but small businesses or branch offices that lack any in-house computer staff. If that sounds like you, you'll appreciate the E 40's built-in smarts for simple operation and remote management.

The $3713 E 40 stands out from the pack with its bundled software: Windows NT Advanced Server or Novell IntraNetware for Small Businesses, NetServer Navigator to help you configure and install your server, and HP Support Anywhere, which aims to let non–computer professionals (or professionals at a different location) maintain the system. Support Anywhere includes an alert program, an intuitive Web-based management program, and a remote-operation console.

The hardware is not particularly impressive. The system includes a Pentium-200 with a 256K secondary cache, 64MB of memory expandable to 384MB, four open slots, and 4.2GB of slow disk storage, expandable to 16.8GB internally.

The E 40 is at the back of this pack of workgroup servers in overall performance. Support is a bit less comprehensive than you would get with the NetServer L series; you probably should fork out $895 for three years of on-site service and round-the-clock phone support. But if you need a reliable server that's easy to configure and maintain, especially from a distance, then the E 40 is for you.

*William L. Rinko-Gay is* PC World*'s manager of benchmark development.* ▶

### Find More Server Reviews Online

online **FOR FULL REVIEWS of Enterprise servers (including the Best Buy Compaq ProLiant 5000) plus Best of the Rest Workgroup models, see www.pcworld.com/networking/servers. Here are the models we had tested by press time:**

**ENTERPRISE** Compaq ProLiant 5000, HP NetServer LX Pro 6/160, SAG STF Quad RAID 5, Data General AViiON 3600

**WORKGROUP** AST Manhattan D6200, Koutech KSI Goliath 1100 Application Server, Micron Vetix LXI

| Max. CPUs/ max. RAM (MB) | Number of drives/ total capacity as tested (GB) | Maximum internal drives/capacity (GB) | Available slots/bays as tested | Features [3] | Expandability | Reliability | Service and support | Reader service number |
|---|---|---|---|---|---|---|---|---|
| 2/1024 | 4/8.4 | 4/36 | 7/2 | outstanding | very good | outstanding | very good | 610 |
| 2/512 | 3/6.3 | 3/22.5 | 6/0 | very good | good | very good | very good | 611 |
| 2/512 | 3/6.3 | 5/35 | 5/2 | very good | outstanding | outstanding | very good | 612 |
| 2/1024 | 4/8.4 | 6/54 | 7/3 | outstanding | outstanding | outstanding | very good | 613 |
| 1/384 | 2/4.2 | 4/16.8 | 4/2 | good | fair | very good | very good | 614 |
| | | | | | | | All products: | 902 |

[4] Relative to Compaq ProLiant 800 performance.

[5] Tested configuration, design, setup, and documentation.

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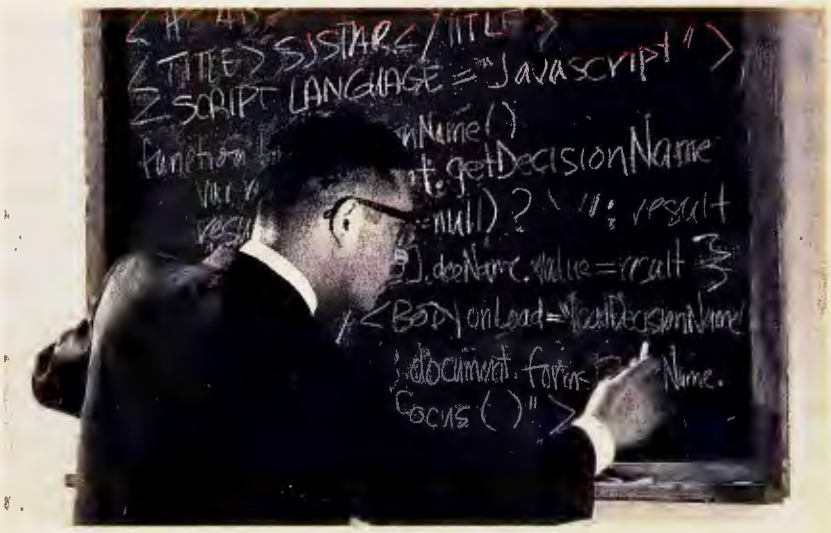


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# 8 Ways to Work Across the Web

Here's a **do-it-yourself kit for collaborating with anyone,** anywhere on the Net.

BY ERIC BENDER

YOU'RE AN OLD HAND on the Web. You waste time at blue-armadillo.org or spankthenanny .com. You chat into the wee hours with disagreeable strangers at alt.betterthanyou. You can unleash an Amazonian river of electronic news on your unsuspecting PC, book a flight to the Amazon, or buy books at amazon.com.

You've had your fun—now brace yourself for a radical new role for the Web, one that can be expressed in a simple four-letter word. (Hint: It's not "cool" or "free" or "Java".)

*Work.*

Turns out that the Internet offers great new tricks for collaborating on projects with any colleague anywhere. These techniques are particularly helpful for projects that cut across countries or companies. No matter where you are, you and your coworkers or contractors or customers can work together, in real time or any time, efficiently sharing information and handling tasks much more quickly.

You can do a surprising amount of this collaboration with free or cheap desktop PC packages, especially if you're ▶

"You can do a first demonstration over the Internet rather than having to travel. **We've saved so much money this way!** And you can react quickly to prospects."

**Peggy Gritt, manager of strategic business development, Interactive Intelligence, software firm, Indianapolis; Netopia Virtual Office user**

# Serve Up Your Own Web Office...

**You can turn your own PC into a mini-Web server, as with Farallon's Netopia Virtual Office (right). This lets you share information and collaborate with your coworkers no matter where you are.**

**Task**

**Open an electronic office that lets you pick up files, handle remote control tasks, launch conferences, and stay in touch with key contacts when you're away.**

**TOOLS:** Netopia Virtual Office (shown here) makes it easy; Microsoft Personal Web Server (free or bundled with FrontPage and Windows 98) offers more limited services.

**KEEP IN MIND:** Your PC needs to stay on and connected to the Net, and you have to think about security.

willing to delve a little into the mysteries of Internet programs and protocols. Whether you work in a Fortune 50 firm with a warp-speed Web connection or are a sole proprietor with a dial-up account, these packages can make you more efficient. Here are eight tips for working across the Web with software you already have or can buy for cheap. Get used to these tools—you'll be spending a lot of time with them in the future.

## SHARE THE LATEST INFORMATION IN HTML FORMAT

**1** YOU CAN TAKE just about any standard company, department, or project document and convert it into HTML (the lingua franca of the Web). You can then put the document on a shared directory on any PC or server—and it doesn't have to be a Web server.

**What kinds of documents?** Project plans, calendars, status sheets, product data—anything that a number of people need to see regularly.

**What do I use?** Almost any current application lets you save a document, page, or view in basic HTML form. Older packages may require you to first install an add-on—for example, Internet Assistant for Word 95. This year's suites all let you easily export to HTML, usually just by selecting *File•Save As HTML*. With the most recent word processors and spreadsheets, you can later import the result from HTML, make updates, and reexport the file. You can also update the document from any HTML-capable editor, including those bundled with Internet Explorer 4.0 and Netscape Communicator.

**Why is this system better than sending information by e-mail?** If the only tool you have is a hammer, every problem looks like a nail. Today we all use e-mail for tasks on which it quietly fails. But a variety of better tools now exist for many of these tasks.

Imagine, if you will, that you're running a project involving people who travel and work at different locations, and you want to make sure they all get project update summaries. If these summaries can't fit into 20 lines of plain e-mail text, or if the recipients start firing back replies with minor updates, or if they're working on another PC that doesn't store all their messages, or if they're simply sinking beneath a blizzard of e-mail, your updates start to get lost.

But post a status summary in HTML format to a known Web address, and your recipients need only create a bookmark, available in any browser, to get your summary. Even better, all of you can get the summary from any PC on the Net, if your intranet is set up to allow such access. You receive the updated information only when you need it. And everyone with proper clearance can update the summary as needed, either in the originating application or in any HTML editor.

If the only tool you have is a hammer, everything looks like a nail. Today we all use e-mail for tasks on which it quietly fails. But better tools now exist.

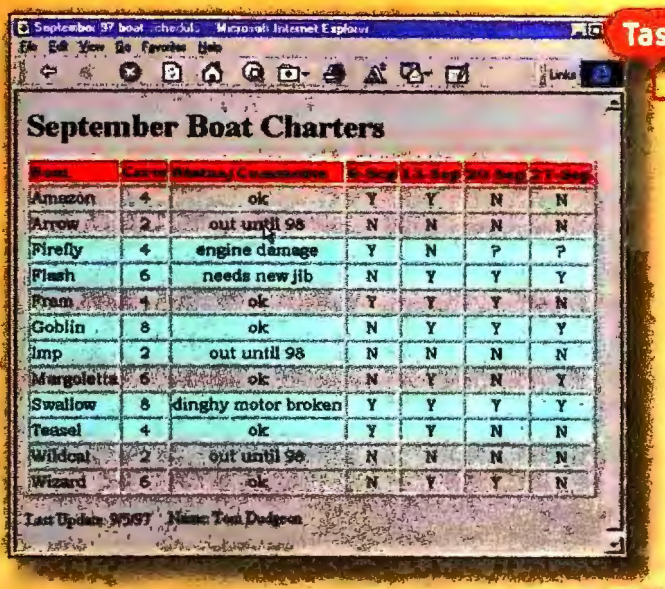
## HOLD A WEB CONFERENCE

**2** I WANT TO AVOID those cross-town meetings that end at rush hour, or those red-eyes back from San Francisco? Internet conferencing packages can help you skip some of those trips by handling tasks that phones and faxes can't. Their tools include shared on-screen whiteboards, application sharing, chat sessions, and low-budget videoconferencing. Increasingly, many packages now let you bring folks from multiple locations into the conference. But you must think carefully about when conferencing would be practical.

**Okay, just when is conferencing practical?** Conferencing makes good sense when you have appropriate tools for your meeting and when sufficient communications bandwidth is available. Audioconferencing on the Net is still mostly a gimmick, except if you're stuck in a hotel room or calling overseas and really have no other choice (see "Internet Phones Take On Ma Bell," June). As for videoconferencing, it's relatively easy to set yourself up with a slick camera like Connectix's $200 Color QuickCam2 (www.connectix.com), but

# ...and Work From Any PC on the Internet

**On intranets or the Net you can easily share information, hold conferences, remotely control another PC, and hold discussions. Some of the tools you need are free, some are bundled in browsers and suites, and others can be picked up for $100 or less.**




**Task**

**Share information in HTML format.**

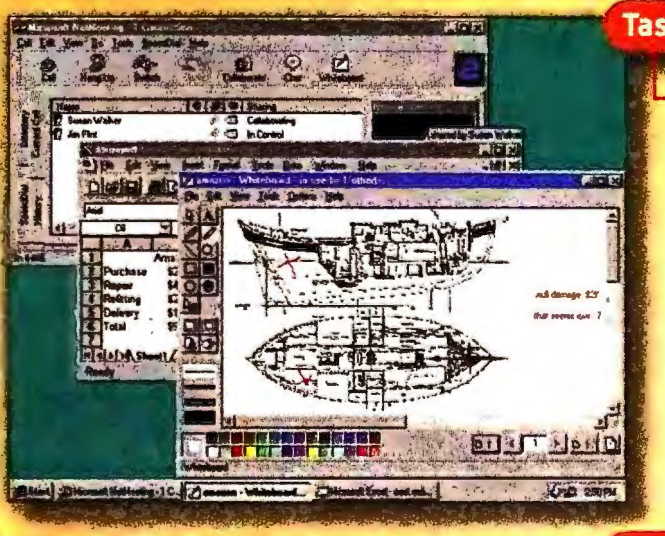
**TOOLS:** Most modern PC applications.

**KEEP IN MIND:** You can post any document that a number of people need to see regularly. You don't need a Web server—you can put the document on any shared directory.

the images are small and updated infrequently unless you have an excellent direct network connection. (Still, there are times when a single video image is worth a thousand words.) Shared whiteboards offer acceptable speed even on dial-up connections. Application sharing, such as collaborating on a budget within Excel, may be very slow but still quite useful.

**What do I use?** You have quite a choice of packages—stand-alone, or bundled with browser or office suites. One of the best packages is free: Microsoft NetMeeting (www.microsoft.com/ie/download).

**Why go through the Net rather than establishing direct connections to other PCs?** With this approach, you and your co-conferencers each connect to the Net as usual, with a dial-up or direct network connection. You then connect to each other, either through the appropriate Net address (the domain name, such as mrbig.bigbiz.com, or IP address, such as 124.124.124.4), or through public "directory" servers on the Net. This is generally easier than trying to set up an individual PC-to-PC connection. Also, directory servers make it easier to set up multiuser connections. And if you're connected directly to the Net, conferences aren't restricted to dial-up speeds.



**Task**

**Conference over the Net (whiteboards, application sharing, audioconferencing, videoconferencing).**

**TOOLS:** Microsoft NetMeeting (shown here), Netscape Conference, White Pines' CUSeeMe, VoxWare's Televox, Vocaltec's Internet Phone.

**KEEP IN MIND:** Connections may be very slow; audio- and videoconferences require special hardware and software.

## CONTROL A PC REMOTELY

3 REMOTE CONTROL SOFTWARE does what it says: It allows you to control one PC from another, through a dial-up line or network connection. These packages are mighty useful for running applications from another ▶

**Task**

**Remotely control another PC over the Net.**

**TOOLS:** Packages such as Symantec's pcAnywhere, Microcom's Carbon Copy, and Stac's ReachOut; some have versions that work as browser add-ons, such as ReachOut Global (shown here).

**KEEP IN MIND:** You must leave host software running on the host PC.

**Task**

**Discuss projects in bulletin boards or chat groups.**

**TOOLS:** eShare's Reunion (shown here), Microsoft FrontPage, private areas of public services.

**KEEP IN MIND:** If you host the software on your PC, the system must stay on and connected to the Net. Most bulletin boards don't let you attach files to your messages.

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## Are These Programs Ready for Prime Time?

THE SPECIALIZED WEB tools discussed here are fast, powerful, and able to leap tall continents in a single bound. And we've successfully tested them all, both within an intranet and by dial-up access.

But everything except publishing documents in HTML format took considerable experimentation. These tools are not necessarily easy to install, and each has its own idiosyncrasies. Like most Web software, these tools are often released with significant bugs—and like everything else on the Web, they sometimes fail for reasons you will not be able to discover.

Since you can get free trial versions of almost all these programs, there's no excuse not to try before you buy. Prepare to spend time learning the program's peculiarities and what works for you. Also be ready to learn a little about basic Net technologies like TCP/IP and firewalls. (Hint: It helps to know your PC's IP address, such as 199.0.65.2; you can find it on a Windows 95 machine connected to the Net by clicking *Start•Run* and typing **winipcfg**). And if you want to set up ongoing services, especially those you can tap from outside your intranet, find out your organization's basic security precautions and *observe them.*

site or picking up files you forgot to take on a trip. And the latest versions work very nicely over the Internet. You just need the other PC's Net name or IP address. Be warned, though, that connections may be slow and a bit unstable.

**What are the advantages over dialing in directly to the host PC?** Assuming that the host PC is connected to the Net, it doesn't need a modem, you don't need to make a long-distance call, and you can surf the Web or pick up your mail on the same Net connection. Obviously, access becomes a great deal quicker if you are calling from a system that has a fast direct connection to the Net, since in that case you are not restricted to dial-up speeds.

Some remote control products have been modified to work as browser add-ons. Stac's ReachOut Global offers bare-bones remote control, and both the viewer and the program you run on the host PC are downloadable for free (www.stac.com). The full-featured ReachOut 7 costs $189.

Remote control also lets you deliver presentations across the Net. Say you've got a really slick PowerPoint presentation but you aren't quite sure you want to fly to Johannesburg to show it. Sometimes it's perfectly workable to deliver a presentation by remote control—you run through the presentation on your machine, and the other person sees it on his or her PC.

### 4 OPEN A PERSONAL WEB OFFICE

FARALLON'S $50 NETOPIA Virtual Office (www.netopia.com) is the best current example of all you can do on the Web. It's a well-designed mini–Web server that keeps you in touch with key contacts, no matter where you—or they—are. You can control your PC from another location (using a browser add-in, which is free to you and to any visitors to your Web site). You also can set up remote control sessions with others, launch a conferencing program such as NetMeeting, post files to share, chat, leave a note indicating your whereabouts, and be alerted if someone "knocks" on your office door. The users we're highlighting in this article are all Virtual Office enthusiasts.

A few caveats: You'll need to enforce ▶

**"Customers can get in touch with me instantly,** as opposed to with e-mail, where you can lose time, lose messages, lose customers. **And I can support my customers** from a remote site."

**Debbie Warren, owner, Beepster, software firm, Atlanta; Virtual Office user**

PHOTOGRAPH: ANN STATES

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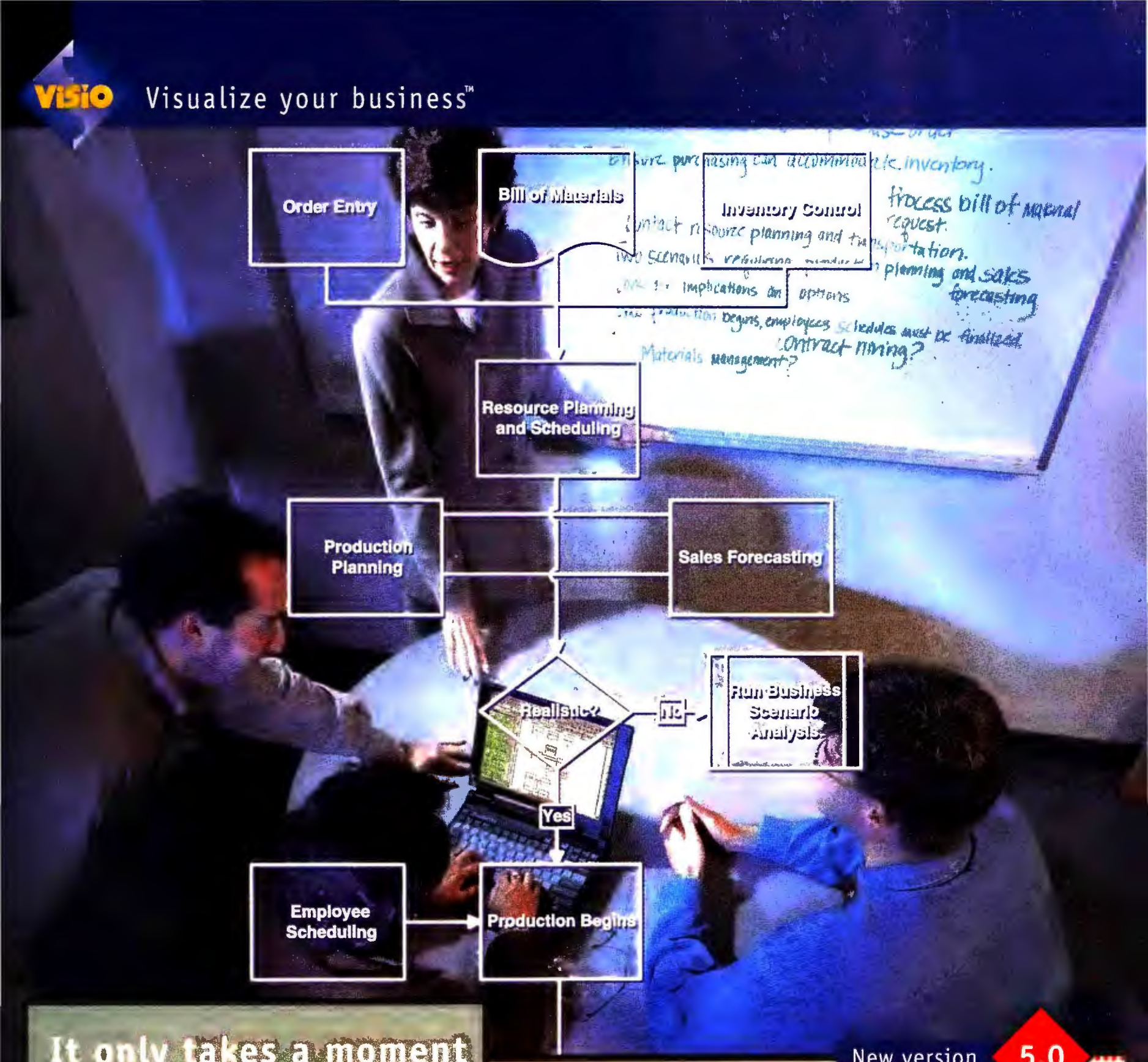


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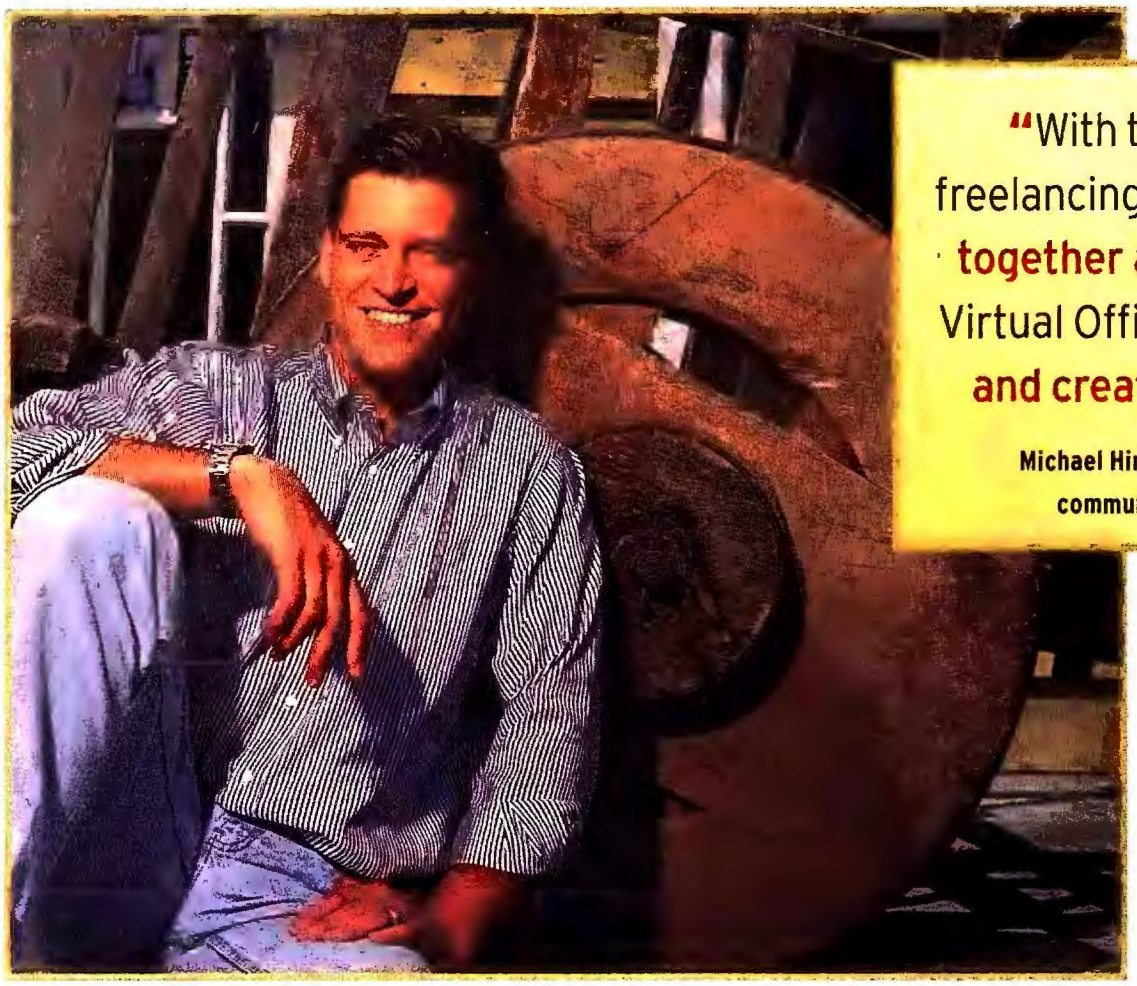

> "With the increased amount of freelancing, **people don't tend to work together as much.** But products like Virtual Office **can include both clients and creative staff** in the process."
>
> **Michael Hinshaw, president, Triad, marketing and communications firm, Larkspur, California**

security precautions, and be aware that some firewalls will block any access from outside your network. Also, your PC must stay connected to the Net for your office to stay open, unless you can find an Internet service provider that will host the office.

## TALK ABOUT IT

5 BULLETIN BOARDS (aka newsgroups, conferences, and discussion forums) lay at the heart of the pioneer online communities, and they're still very effective for dealing with business projects. (By contrast, e-mail gets unwieldy when more than three people are involved.) If your organization doesn't provide such sites, check out cheap and friendly Windows 95/NT packages that support discussions and chat and run on a mini–Web server right on your own PC. eShare's $79 Reunion (www.eshare.com), for example, is fairly simple to set up. As with the virtual offices, you'll need to think about security and your firm's firewall.

## SHARE YOUR WORK THROUGH INTERNET E-MAIL

6 THE LATEST OFFICE suites from Corel, Lotus, and Microsoft are fairly smart about using e-mail to distribute and synchronize versions of a document in progress, identifying each contributor's edits and comments. And some personal information managers and contact managers, such as NetManage's Ecco Pro (www.netmanage.com) and Starfish Software's Sidekick 97 (www.starfish.com), are good about sharing updated databases in the same way. Of course, this setup works only if every recipient's e-mail system can send and receive file attachments without scrambling them. So in practice, making this all work may require that everyone involved use not only the same desktop application but also the same e-mail program.

## SHARE YOUR WORK FROM A COMMON LOCATION

7 WHEN YOU SHARE documents by e-mail, you've still got the who's-got-the-latest-version-where problem, which can be especially frustrating if your cohorts live in different time zones. Post those documents in a common place—your personal FTP server, on your own machine—and you can be sure you've got the latest version.

**Excuse me, but did you say "personal FTP server"?** Yes, FTP is the default way to post and share files on the Net, and Microsoft offers a personal Web server that includes an FTP server. It's free at www.microsoft.com/ie/download. It also comes bundled with FrontPage and the forthcoming Windows 98. Farallon's Netopia Virtual Office (discussed above) offers a much slicker program. Make sure that you restrict access and enforce passwords as needed.

**Why not just put those files in a shared directory?** Because it's often hard to reach a shared directory. If you put the files on an FTP server instead, and you do so with the right access methods and safeguards, you can pick them up from anywhere you can get on the Net. Alternatively, if your ISP gives you server space (and it should), you can post nonconfidential files there.

## RENT A PROJECT OFFICE

8 AS PROJECTS SCALE UP in size and complexity, you need software running on an industrial-strength server administered by grizzled professionals. But you can now *rent* such an electronic workplace, equipped with canned intranet applications delivered through any standard browser.

For example, Changepoint (www.involv.net) lets you rent a host application for launching a project and then assigning and tracking tasks. You don't need to install any software to do this. You can check out the service with a free 30-day trial. Monthly costs then run $10 per user for discussions, and $25 per user for project collaboration.

*Eric Bender, a* PC World *executive editor, has spent the past 14 years working with colleagues three time zones away. He can be reached at eric_bender@pcworld.com.*

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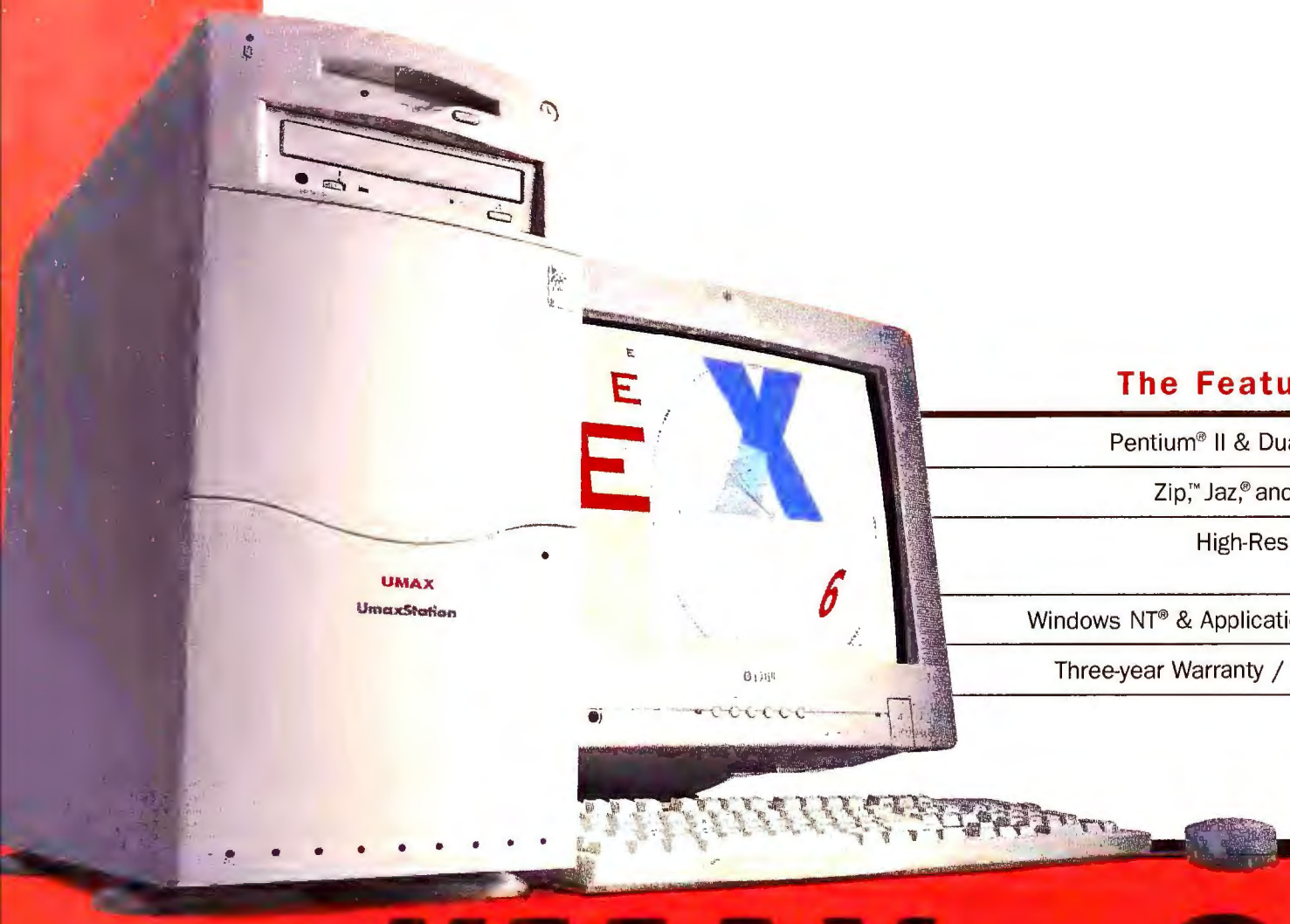


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- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
- Adobe PhotoDeluxe, Adobe PageMill 2.0, Adobe Type Manager, Lotus SmartSuite

**#S6200.....$3895**
*Business leases starting at $110/month*

### UmaxStation 6400

- Intel 266MHz Pentium II processor
- 128MB EDO RAM/512KB Pipeline Burst Cache
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- DVD Multimedia/CD-ROM Drive
- 1GB Jaz Drive, 3.5" Floppy Drive
- ELSA Gloria-L 8MB VRAM/8MB DRAM 3D Graphics Accelerator
- 19" Multi-Step Dynamic Focus Color Monitor (18" v.a.)
- 56Kbps Data & Fax Modem
- 10/100TX PCI Ethernet Card
- Creative Labs 3D Sound, Audio In/Out & Mic ports
- Amplified Stereo Speakers with Sub-Woofer
- Mid-tower Case with 250W Power Supply
- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
- Adobe PhotoDeluxe, Adobe PageMill 2.0, Adobe Type Manager, Lotus SmartSuite

**#S6400.....$5795**
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- 10/100TX PCI Ethernet Card
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- Amplified Stereo Speakers with Sub-Woofer
- Mid-tower Case with 250W Power Supply
- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
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- 1GB Jaz Drive, 3.5" Floppy Drive
- Matrox Millenium 8MB WRAM Graphics Card
- 21" DiamondTron Color Monitor (19.7" v.a.)
- 56Kbps Data & Fax Modem
- 10/100TX PCI Ethernet Card
- Creative Labs 3D Sound, Audio In/Out & Mic ports
- Amplified Stereo Speakers with Sub-Woofer
- Mid-tower Case with 250W Power Supply
- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
- Adobe PageMaker 6.5, Adobe Photoshop 4.0, Adobe Illustrator 7.0, Adobe PageMill 2.0, Adobe Type Manager, Lotus SmartSuite

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- 10/100TX PCI Ethernet Card
- Creative Labs 3D Sound, Audio In/Out & Mic ports
- Amplified Stereo Speakers
- Mid-tower Case with 250W Power Supply
- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
- Adobe PhotoDeluxe, Adobe PageMill 2.0, Adobe Type Manager, Lotus SmartSuite

**#P2000.....$1895**
*Business leases starting at $54/month*

### UmaxPC 2200

- Intel 200MHz Pentium processor with MMX
- 32MB EDO RAM/512KB Pipeline Burst Cache
- 4GB EIDE Hard Disk Drive
- 100MB Zip Drive, 3.5" Floppy Drive
- 24X ATAPI CD-ROM Drive
- Matrox Millenium 4MB WRAM Graphics Card
- 17" Flat Square Color Monitor (15.8" v.a.)
- 56Kbps Data & Fax Modem
- 10/100TX PCI Ethernet Card
- Creative Labs 3D Sound, Audio In/Out & Mic ports
- Amplified Stereo Speakers
- Mid-tower Case with 250W Power Supply
- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
- Adobe PhotoDeluxe, Adobe PageMill 2.0, Adobe Type Manager, Lotus SmartSuite

**#P2200.....$2195**
*Business leases starting at $62/month*

### UmaxPC 2400

- Intel 200MHz Pentium processor with MMX
- 64MB EDO RAM/512KB Pipeline Burst Cache
- 5GB EIDE Hard Disk Drive
- 100MB Zip Drive, 3.5" Floppy Drive
- 24X ATAPI CD-ROM Drive
- Matrox Millenium 4MB WRAM Graphics Card
- 19" Multi-Step Dynamic Focus Color Monitor (18" v.a.)
- 56Kbps Data & Fax Modem
- 10/100TX PCI Ethernet Card
- Creative Labs 3D Sound, Audio In/Out & Mic ports
- Amplified Stereo Speakers
- Mid-tower Case with 250W Power Supply
- EPP/ECP printer port, (2) 16550 serial ports, (2) USB ports
- PS/2 Keyboard & Microsoft IntelliMouse
- Windows NT Workstation (Windows 95 available)
- Adobe PhotoDeluxe, Adobe PageMill 2.0, Adobe Type Manager, Lotus SmartSuite

**#P2400.....$2695**
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- 21" DiamondTron Color Monitor (19.7" v.a.) .....**$1345**
- 4x/6x Yamaha Recordable CD-ROM ....**$675**
- Iomega® Jaz Drive .....**$345**
- Adobe Premiere® 4.0 .....**$495**
- Adobe After Effects® .....**$645**
- Iomega Ditto™ 3200 Tape Drive .....**$195**
- Adaptec 2940UW SCSI Controller .....**$185**
- Yamaha Stereo Speakers with Sub-Woofer .....**$115**
- Three-Year Onsite Extended Warranty .....**$125**

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### Shipping

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PC WORLD

# TOP 100

240 Power Desktops

250 Budget Desktops

258 Notebooks

271 Printers

277 Monitors

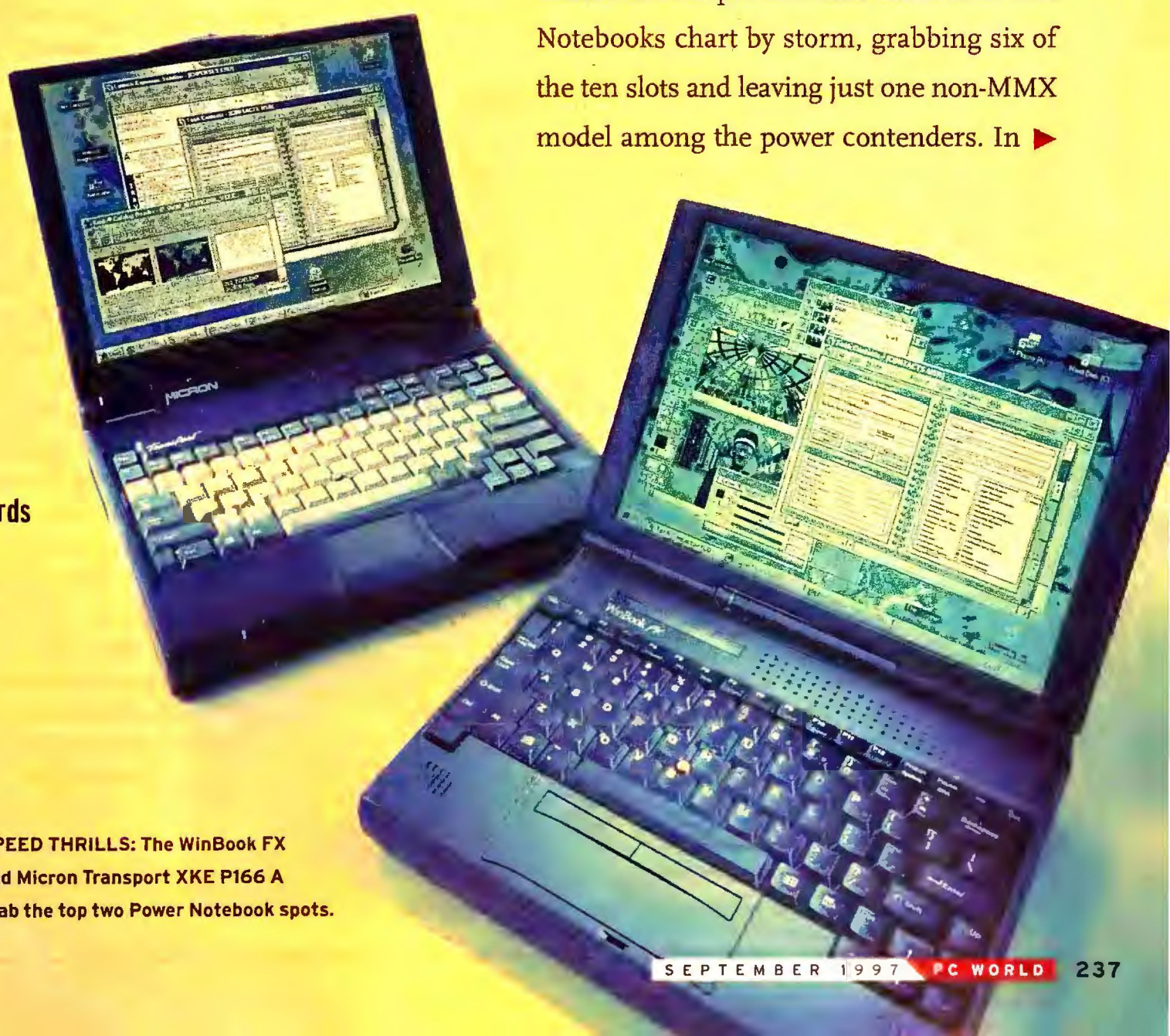
279 Graphics Boards

281 Modems

# Notebooks *with* MMX Appeal

EDITED BY MICHAEL DESMOND

MMX IS ON THE MOVE. The latest crop of Pentium MMX portables has taken the Power Notebooks chart by storm, grabbing six of the ten slots and leaving just one non-MMX model among the power contenders. In ▶




SPEED THRILLS: The WinBook FX and Micron Transport XKE P166 A grab the top two Power Notebook spots.

just two months, the average PC WorldBench score for Top 10 power notebooks jumped to 213, from 188 in July—an increase of nearly 15 percent.

These MMX notebooks make their presence felt at the top of the chart, garnering the first three spots. The WinBook FX and Micron Transport XKE P166 A share Best Buy honors, with the CTX EzBook 764MT close behind. The message is clear: If you want cutting-edge performance, MMX is the way to get it.

### THAT MMX MAGIC

BEHIND THE SURGE of new portables is the 166-MHz version of Intel's MMX-optimized Pentium CPU for notebooks. The five PMMX-166 models we tested this month posted an astounding average PC WorldBench score of 219, nearly 30 percent better than the average score of 171 for Pentium-150 notebooks tested over the last six months. The fastest of the bunch are the Micron Transport and Gateway Solo 9100-XL, both of which posted a record-setting score of 221.

Surprisingly, these PMMX-166 notebooks fared well in our battery rundown tests, lasting an average of almost 4.75 hours. Once again, the Gateway and Micron notebooks stood out: The Transport ran an incredible 6.3 hours, while the Solo 9100-XL lasted 5.5 hours—times that are long enough to let you work all the way through a cross-country flight.

The new notebooks also ratchet up the selection of features. Two systems include large 13.3-inch screens that can display resolutions as high as 1024 by 768 pixels. However, be prepared to pay $5000 or more for fast notebooks with these big screens. Hard disk capacities continue to go up too, with 3GB drives becoming standard equipment on many power notebooks. Feeling behind the times with your notebook's 4X CD-ROM drive? The Micron Transport comes with a variable-speed CD-ROM drive that runs at speeds as high as 20X.

This month we also tested three Pentium MMX-200 notebooks: the ArmNote TS97MX, 5D Technology's 5D 6800A, and the Broadax 6200AT. Unlike the PMMX-166 systems, these 200-MHz models use standard desktop CPUs, making them prone to overheating and failure.

What's surprising is that neither 200-MHz system matched our top PMMX-166 contenders in performance. The sixth-ranked ArmNote came close, with a PC WorldBench score of 220—about average for PMMX-166 notebooks. But neither the 5D nor the Broadax scored high enough to make our chart.

*Three new Pentium MMX-233 desktops made our Top 20 Power Desktops chart, including one Best Buy.*

### LUCKY NUMBER 233

SUMMER MAY BE ending, but September will be remembered as the month that Advanced Micro Devices' K6 processor turned up the heat. For the Budget Desktops chart, we tested our first AMD K6-PR233–based system, the twelfth-place Micro Express MicroFlex-PR/233, and it ran rings around the competition. This $1899 system chalked up an amazing PC WorldBench score of 246—10 points higher than the next-fastest budget contender—making it a match for Pentium II-233 power desktops. A lack of features and a reliability rating of just fair kept the MicroFlex from Best Buy contention.

We also looked at five systems based on the Pentium MMX-233, as well as one Pentium II-233 system. The PMMX-233 desktops turned in an average PC WorldBench score of 238, about 5 percent faster than the 228 average for Pentium MMX-200 desktops.

Three of the Pentium MMX-233 desktops made our Top 20 Power Desktops charts, including one Best Buy. The $2899 Dell Dimension XPS M233s lands at number two, thanks to swift performance, thoughtful design, and Dell's outstanding service and reliability. The $2678 Gateway 2000 G5-233 is at number six. And Dell's sluggish OptiPlex GXi 233 nevertheless vaulted into ninth place with its corporate-savvy configuration and strong reliability scores. DTK's poor record for system reliability helped keep its Quin-55M/PM233 off the power chart.

**FEATURE PERFECT: No-compromise notebooks like the Gateway Solo 9100-XL boast advanced multimedia features that match their desktop counterparts.**

**1** Extrawide 13.3-inch screens provide as much viewable area as many desktop CRTs.

**2** Video and audio ports connect to VCRs and stereos.

**3** Plug, play, and go: connections for USB peripherals.

Quantex's QP5/233 SM-3, meanwhile, became the first PMMX-233 system to make the Budget Desktops chart, thanks to a low $2449 price and a great PC WorldBench score.

The lone 233-MHz Pentium II system tested this month landed at seventh place on the Power Desktops chart. At $2499, the Quantex QP6/233 SM-3 is one of the least expensive systems on the chart, yet posted an impressive PC WorldBench score of 247. The Quantex may appeal to budget-minded buyers who run Windows NT: The Pentium II comes heavily optimized for the 32-bit code found in NT.

**K6 KICKS: MicroFlex sets budget performance record.**

## PROCESSOR ROULETTE

THE PAST SIX MONTHS have seen an unprecedented number of CPU introductions—and the fast action continues with Cyrix's entry into the market. In *PC World* tests, Cyrix's 6x86MX processor—previously known as the M2—yielded performance equal to that of AMD's K6-PR233 (see *Top of the News*, August). Adding fuel to the fire, the company has priced its 6x86MX line of CPUs aggressively, allowing systems costing less than $2000 to match the performance of the fastest 200-MHz K6 and Pentium MMX PCs. Next month, look for our reviews of two new Cyrix 6x86MX-PR200 machines: the Flex Program from USA Flex and the ValueMax C5 200+ MMX from CyberMax.

Intel has responded with deep price cuts of its own. At press time, the company announced that it would slash its processor prices in August and November, dropping the price of the popular Pentium MMX-200, for example, from $484 to $247. The news is good for buyers: Expect PMMX-200 and faster CPUs to populate the budget chart, as system prices fall below $2000.

*Michael Desmond is a senior associate editor for* PC World. *Assistant Editor Grace Aquino, Editorial Researcher Julie Campagna, Editorial Assistant Mick Lockey, Staff Editor Eric Hellweg, Associate Editors Melissa Riofrio and JoAnne Robb, and freelance writer Jon Jacobi contributed to the Top 100. Testing by Ulrike Diehlmann, Robert James, Elliott Kirschling, Jeffrey Kuta, Mike Salayko, and Susan Silvius.*
*See page 14 for contact information.* ▶

# YOUR GUIDE TO THE TOP 100

QUESTIONS ABOUT OUR CHARTS? The following section should answer most of them. If not, ask us; see page 14 for contact information.

**How do the charts work?** The Top 20 and Top 10 charts are evolving lists of the best PCs, monitors, modems, printers, and graphics boards we've tested. The Top 20 charts are divided by price. Power desktops cost $2500 or more; power notebooks cost $2750 or more. Every month we test the latest products in each category and compare them to the pool of items we've already reviewed. As new products earn places on the charts, those at the bottom drop off. Price cuts also cause chart changes.

**Where do you get your prices?** We estimate street prices based on vendor information and our own research, including surveys of retail outlets. We recheck all prices every month.

**What does the overall rating mean?** It's the sum of all our tests—both hands-on evaluations and automated speed tests. The scale is 1 to 100, so a product that scores in the 90s is generally considered exceptional, one in the 80s is among the best, one in the 70s is above average, and one that scores lower usually doesn't place.

**What does the PC WorldBench score mean?** It's a measure of how fast a PC is in relation to our baseline machine, a Dell P75t configured with 8MB of RAM, a 540MB hard drive, and no secondary cache. A PC that scores 200, for instance, is twice as fast as the baseline unit.

**Where do the scores for reliability, support quality, and support policies come from?** The reliability and support quality scores come from readers who respond to the Reliability and Service fax-back survey in each issue of *PC World*. The policies score is based on the vendor's support policies (such as length of warranty and support hours).

**What do all those word scores mean?** Word scores for performance and price are based on a product's rating in relation to other products in its category. For example, a budget PC that is rated "expensive" is high priced only in relation to other budget PCs. Likewise, a power notebook rated "good" for performance is good only in relation to other power notebooks. Word scores for other categories, such as features, are relative to all desktops or all notebooks.

**Where can I find the online version of the Top 100?** Go to PC World Online (www.pcworld.com). There you'll find not only the current issue of *PC World* and reviews for the last 10 months, but some extra features you'll want to check out. For one thing, PC World Online includes reviews you won't find in print. If a product misses a chart and we don't cover it here, you can go directly to an online review by using the URL provided in each Top 100 section.

**Have you ever wished you could build your own chart based on your buying criteria?** You can, with Buyer's Guide, our Web site's unique chart customizer. Buyer's Guide combines your criteria with *PC World*'s current data and test results to generate customized Top 20s and Top 10s. For instance, if you want your chart to rank notebooks that have 120-MHz processors and 1.6GB hard drives, the guide's Personal Adviser will find and rank all the machines that fit your specifications.

PC WORLD

# TOP 20 POWER DESKTOPS

| | SYSTEMS | Last month | Month tested | Street price (6/11/97) | CPU | Comments |
|---|---|---|---|---|---|---|
| 1 | Dell Dimension XPS H266<br>800/388-8542 www.dell.com | 1 | July 97 | $3156 | Pentium II-266 | Fastest PC gets even better with $493 price drop, 56K modem. |
| 2 | Dell Dimension XPS M233s<br>800/388-8542 www.dell.com | – | NEW | $2899 | Pentium MMX-233 | Takes over spot held by XPS M200s sibling; top service, fastest PMMX-233. |
| 3 | Gateway 2000 G6-233<br>800/846-2000 www.gw2K.com | 4 | Aug 97 | $2889 | Pentium II-233 | Fast, loaded; Ultra-DMA hard drive, Office 97; PII-266 also good value. |
| 4 | Dell OptiPlex GXi 200<br>800/388-8542 www.dell.com | 5 | June 97 | $3164 | Pentium MMX-200 | Do-it-all corporate PC has ethernet, multimedia, and a voice modem. |
| 5 | Micron Millennia Pro2 200 B<br>800/223-6571 www.micron.com | 6 | Feb 97 | $2898 | Pentium Pro-200 | Fully loaded, but price edges up for second month. |
| 6 | Gateway 2000 G5-233<br>800/846-2000 www.gw2K.com | – | NEW | $2678 | Pentium MMX-233 | Affordable, full multimedia, 56K modem; reliability rating just fair. |
| 7 | Quantex QP6/233 SM-3<br>800/896-4898 www.quantex.com | – | NEW | $2499 | Pentium II-233 | Low-cost, expandable, lots of software, multimedia features. |
| 8 | Gateway 2000 G6-266<br>800/846-2000 www.gw2K.com | 10 | Aug 97 | $2999 | Pentium II-266 | Fast, business-minded Pentium II doubles RAM, drops modem and sound. |
| 9 | Dell OptiPlex GXi 233<br>800/388-8542 www.dell.com | – | NEW | $3281 | Pentium MMX-233 | Network-ready, great reliability rating and design; lags PMMX-233 performers. |
| 10 | Dell OptiPlex GX Pro 200<br>800/388-8542 www.dell.com | 7 | July 97 | $3749 | Pentium Pro-200 | Corporate powerhouse is slightly faster than its PMMX-200 sibling. |
| 11 | HP Vectra VA 6/200 MT<br>800/322-4772 www.hp.com | 11 | Mar 97 | $3160 | Pentium Pro-200 | Nice corporate PC, top reliability rating, $82 price cut; support hours limited. |
| 12 | Sys Technology Sys Performance 200K6<br>800/613-9963 www.systechnology.com | – | Aug 97 | $2469 | AMD K6-PR200 | Price increase moves swift K6 system from budget to power charts. |
| 13 | Quantex QP6/200 SM-4<br>800/896-4898 www.quantex.com | 13 | May 97 | $2649 | Pentium Pro-200 | Nimble business PC is $150 less than PII-233 sibling; not as good for graphics. |
| 14 | Multiwave P-200 MMX<br>800/234-3358 www.mwave.com | – | June 97 | $2495 | Pentium MMX-200 | Bargain-price power system gets on chart with $255 price drop. |
| 15 | NMC Expert Pro II<br>800/800-4662 www.natmicro.com | – | NEW | $2889 | Pentium II-266 | Pentium II-266 features 64MB of RAM, 5GB hard disk; support is minimal. |
| 16 | Sys Technology Sys Performance P200T2M<br>800/613-9963 www.systechnology.com | 15 | July 97 | $2499 | Pentium MMX-200 | $158 price cut, speedy, sharp monitor; parts warrantied from one to six years. |
| 17 | Sys Technology Sys Performance Pro 200<br>800/613-9963 www.systechnology.com | 19 | Dec 96 | $2624 | Pentium Pro-200 | Quick, $255 off; generic design, no online support. |
| 18 | Acma EXP 200<br>800/786-6888 www.acma.com | 18 | Aug 97 | $2495 | Pentium MMX-200 | Fast, $100 price cut, comes with CorelDraw; limited support. |
| 19 | CLR Infinity PT5-A 200MMX<br>800/611-1555 www.clrusa.com | 16 | July 97 | $2720 | Pentium MMX-200 | $200 off puts multimedia PC back in running; good support policies. |
| 20 | IBM PC 365<br>800/426-2968 www.pc.ibm.com | 17 | Mar 97 | $4221 | Pentium Pro-200 | Classy business PC comes with rewritable optical drive, great design. |

Best Buy See features chart, page 242; performance chart, page 244. Recommended as home system

[1] Insufficient data.

FOLLOWING THE PENTIUM II ONSLAUGHT, the Pentium MMX fights back, with three PMMX-233 PCs taking spots on our Power Desktops chart. Dell's offering, the Dimension XPS M233s, is particularly impressive, seizing a Best Buy for its speed, rich features, and reasonable sub-$3000 price. Gateway 2000's number six G5-233 provides similar value. With performance very close to that of the pricier Pentium II-233 chip, the PMMX-233 is excellent for Windows 95 power users. Of interest but just off the chart is Nova's K6-200TX, an AMD K6-PR200 system that costs just $2799 yet boasts a competitive PC WorldBench score of 238. Nova's poor support policies kept this machine out of the Top 20.

## SCORECARD

| ★ Overall rating | PC WorldBench score/performance | Vendor's system reliability | Features and design | Price | Vendor's support quality/policies | Reader service number |
|---|---|---|---|---|---|---|
| 97 | 263/outstanding | best | outstanding | average | best/best | 632 |
| 94 | 243/outstanding | best | outstanding | inexpensive | best/best | 633 |
| 92 | 251/outstanding | fair | outstanding | inexpensive | best/best | 634 |
| 90 | 226/very good | best | outstanding | average | best/best | 635 |
| 87 | 231/very good | good | very good | inexpensive | best/best | 636 |
| 87 | 240/outstanding | fair | very good | inexpensive | best/best | 637 |
| 86 | 247/outstanding | fair | good | very inexpensive | good/best | 638 |
| 86 | 258/outstanding | fair | good | inexpensive | best/best | 639 |
| 85 | 232/very good | best | good | average | best/best | 640 |
| 85 | 230/very good | best | good | expensive | best/best | 641 |
| 84 | 229/very good | best | good | average | good/fair | 642 |
| 82 | 238/outstanding | [1] | very good | very inexpensive | [1]/poor | 643 |
| 82 | 230/very good | fair | good | inexpensive | good/best | 644 |
| 81 | 235/outstanding | [1] | very good | very inexpensive | [1]/poor | 645 |
| 81 | 260/outstanding | [1] | very good | inexpensive | [1]/fair | 646 |
| 81 | 233/very good | [1] | very good | very inexpensive | [1]/poor | 647 |
| 80 | 236/outstanding | [1] | very good | very inexpensive | [1]/poor | 648 |
| 80 | 233/very good | [1] | very good | very inexpensive | [1]/fair | 649 |
| 80 | 229/very good | [1] | very good | inexpensive | [1]/good | 650 |
| 79 | 232/very good | fair | outstanding | very expensive | good/best | – |
| Scorecard weightings ▶ | Performance 25 percent | Reliability 25 percent | Features 20 percent | Price 15 percent | Support 15 percent | All products: 904 |

# This Month's Best Buys

## 1 DELL DIMENSION XPS H266

**PRO:** Superfast, fine features, big price drop

**CON:** Case is hard to remove, somewhat pricey

Dell stays on top thanks to a big $493 price cut on its Dimension XPS H266. At $3156, this Pentium II-266 powerhouse sells for little more than competing models from Gateway and NMC, yet offers Dell's unrivaled record of service and support. The XPS H266 also boasts unmatched performance, with a PC WorldBench score of 263 that's tops among the three Pentium II-266 machines in the Top 20.

The XPS H266's features are strong too. The Matrox Millennium II graphics card comes with a substantial 8MB of video memory, while the 17-inch monitor produces exceptionally crisp text and graphics. A 12X CD-ROM drive, wavetable MIDI sound card, and Altec Lansing ACS 90 speakers with subwoofer offer plenty of multimedia impact.

**Dell Dimension XPS H266**

The XPS H266 also comes with a huge 6.4GB hard drive, plus all the communications components a home office needs. Dell sweetens the deal this month by upgrading the 33.6-kbps modem to a 56-kbps model that uses 3Com's (formerly U.S. Robotics') x2 technology. Dell also throws in Microsoft Office Small Business Edition and an Iomega Zip drive.

Dell's documentation is excellent, though we'd prefer to see the separate component booklets integrated into a single manual. Also, we found that the side panel takes some finagling to pull off.

*PC World* readers continue to report high satisfaction with the company's system reliability and service in our ongoing fax-back survey. Dell provides a three-year parts and one-year labor warranty for its Dimension line.

## 2 DELL DIMENSION XPS M233S

**PRO:** Fastest PMMX-233 we've tested, large hard disk, Zip drive

**CON:** RAM maxes out at 64MB

A terrific balance of power and value helps the Dell Dimension XPS M233s slide in to second place on our Power Desktops chart. The $2899 minitower replaces the XPS M200s in our rankings, ending a six-month Best Buy run for that $2579 Pentium MMX-200 system. (Dell continues to sell the older model.)

To edge out the M200s, Dell bulked up the M233s. The Pentium MMX-233 processor drives the system to an impressive PC WorldBench score of 243—the best of the five PMMX-233 PCs tested to date. The gigantic 6.4GB EIDE hard disk and 8MB Matrox Millennium II graphics card are both outstanding. Dell adds an internal Iomega Zip drive with three 100MB cartridges, plus an internal ▶

## TOP 20 POWER DESKTOPS

### STANDARD FEATURES

| | SYSTEMS | CPU | RAM (MB) | Secondary cache (K) | Hard drive (GB) | Graphics adapter | Video RAM (MB/type) | Monitor tube/ viewable diagonal (inches) | Screen pitch (mm) | CD-ROM drive speed |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dell Dimension XPS H266* | Pentium II-266 | 32 | 512 | 6.4 | Matrox Millennium II | B/WRAM | 17/15.9 | .25 | 12X |
| 2 | Dell Dimension XPS M233s* | Pentium MMX-233 | 32 | 512 | 6.4 | Matrox Millennium II | 8/WRAM | 17/15.7 | .28 | 16X |
| 3 | Gateway 2000 G6-233* | Pentium II-233 | 64 | 512 | 3.2 | STB Virge 4MB 3D PCI | 4/VRAM | 17/15.9 | .28 | 16X |
| 4 | Dell OptiPlex GXi 200* | Pentium MMX-200 | 32 | 512 | 3.2 | Matrox Millennium II | 4/WRAM | 17/16 | .28 | 8X |
| 5 | Micron Millennia Pro2 200 B* | Pentium Pro-200 | 32 | 256 | 3.1 | Diamond Stealth 3D 2000 | 4/EDO DRAM | 17/16 | .26 | 16X |
| 6 | Gateway 2000 G5-233 | Pentium MMX-233 | 32 | 512 | 3.2 | STB Virge 4MB 3D PCI | 4/VRAM | 17/16 | .28 | 16X |
| 7 | Quantex QP6/233 SM-3 | Pentium II-233 | 32 | 512 | 4 | Matrox Millennium II | 4/WRAM | 17/16 | .25 | 16X |
| 8 | Gateway 2000 G6-266 | Pentium II-266 | 64 | 512 | 6.4 | STB Virge 4MB 3D PCI | 4/VRAM | 17/16 | .28 | 16X |
| 9 | Dell OptiPlex GXi 233 | Pentium MMX-233 | 32 | 256 | 3.2 | Matrox Millennium II | 4/WRAM | 17/15.4 | .26 | 8X |
| 10 | Dell OptiPlex GX Pro 200 | Pentium Pro-200 | 32 | 512 | 3.1 | Matrox Millennium | 4/WRAM | 17/15.8 | .28 | 8X |
| 11 | HP Vectra VA 6/200 MT | Pentium Pro-200 | 32 | 256 | 2.5 | Matrox Millennium II | 2/WRAM | 17/15.7 | .28 | 8X |
| 12 | Sys Technology Sys Performance 200K6 | AMD K6-PR200 | 32 | 512 | 3.2 | Matrox Millennium II | 4/WRAM | 17/15.8 | .26 | 16X |
| 13 | Quantex QP6/200 SM-4 | Pentium Pro-200 | 32 | 256 | 3.2 | Matrox Millennium | 4/WRAM | 17/16 | .28 | 12X |
| 14 | Multiwave P-200 MMX | Pentium MMX-200 | 32 | 512 | 2.1 | Matrox Millennium II | 4/WRAM | 17/16 | .26 | 12X |
| 15 | NMC Expert Pro II | Pentium II-266 | 64 | 512 | 5.1 | Matrox Millennium II | 4/WRAM | 17/15.9 | .28 | 16X |
| 16 | Sys Technology Sys Performance P200T2M | Pentium MMX-200 | 32 | 512 | 3.2 | Diamond Stealth 30 3000 | 4/VRAM | 17/15.8 | .26 | 12X |
| 17 | Sys Technology Sys Performance Pro 200 | Pentium Pro-200 | 32 | 256 | 2.5 | Matrox Millennium | 2/WRAM | 17/15 | .26 | 12X |
| 18 | Acma EXP 200 | Pentium MMX-200 | 32 | 512 | 3.2 | Matrox Millennium II | 4/WRAM | 17/15.9 | .25 | 12X |
| 19 | CLR Infinity PT5-A 200MMX | Pentium MMX-200 | 32 | 512 | 3.2 | Number Nine Imagine 128 | 4/VRAM | 17/15.7 | .28 | 16X |
| 20 | IBM PC 365 | Pentium Pro-200 | 32 | 256 | 2.1 | Matrox Millennium II | 4/WRAM | 17/15.7 | .28 | 6X |

* Best Buy [1] Downloads only, uploads at 33.6 kbps; uses 3Com/U.S. Robotics' x2 technology. [2] Five years on CPU and main RAM, three years on other parts. [3] Toll call. [4] First year.

3Com U.S. Robotics 33.6-kbps modem.

The M233s comes with 32MB of SDRAM and 512K of secondary cache. The Altec Lansing ACS 90 speakers produce rich sounds, while the 17-inch monitor and 3-D-savvy graphics card will be pleasing to the eyes. There's also a variable-speed NEC 12X/16X CD-ROM drive.

We liked the case design of the XPS M233s. You won't mistake the panel's reset button for an on/off switch. Color-coded I/O ports make monitor and mouse installations quick and easy, and a single thumbscrew allows quick access.

The PC's interior is clean and free of clutter. The motherboard sports a pair of Universal Serial Bus ports, though no compliant peripherals are included.

Dell bundles Microsoft Office Small Business Edition, in addition to Publisher and Photo Editor.

If the XPS M233s has any drawback, it is with expandability. The system limits RAM to a maximum of 64MB—a once unheard-of amount of memory that could become mainstream. Dell's documentation is top-notch, and technical support is available 24 hours a day. The warranty covers parts for three years and labor for one year, and our readers rate Dell's service and system reliability in a class by itself.

**Dell Dimension XPS M233s**

## 3 GATEWAY 2000 G6-233

**PRO:** Fast, excellent documentation, nice design

**CON:** Drive bays can be tough to access

Terrific performance and thoughtful touches help make Gateway's $2889 G6-233 a sturdy, stylish multimedia system that's suitable for both power home and business use.

With a 251 PC WorldBench score, this fleet-footed Pentium II-233 minitower rivals some Pentium II-266 systems in performance. The PC comes with a 16-bit Ensoniq Audio PCI Wavetable sound card, Altec Lansing speakers with a subwoofer, and an STB Virge 4MB 3D PCI graphics card. Gateway throws in a 3.2MB Ultra-DMA hard drive boasting a top data transfer rate that's double that of existing EIDE drives, plus a 56-kbps modem that

| | | EXPANDABILITY | | | | | CUSTOMER SUPPORT | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Modem speed (kbps) | Sound board | Case style | Max. RAM (MB) | Maximum secondary cache (K) | Open RAM sockets | Open drive bays (ext./int.) | Open slots | Warranty for parts/labor (years) | Weekday toll-free support (hours) | Weekend support | Online support |
| 56 [1] | Yamaha | minitower | 128 | 512 | 2 | 2/1 | 4 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 33.6 | integrated | minitower | 64 | 512 | 1 | 2/2 | 4 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 56 [1] | Ensoniq Audio PCI Wavetable | minitower | 256 | 512 | 2 | 3/2 | 4 | 3/3 | 24 | Sat., Sun. | AOL, BBS, CIS, MSN, WWW |
| 33.6 | integrated | desktop | 512 | 512 | 3 | 1/0 | 3 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 33.6 | integrated Sound Blaster 16 | minitower | 512 | 512 | 3 | 3/0 | 4 | 3 [2]/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 56 [1] | Ensoniq Audio PCI Wavetable | minitower | 256 | 512 | 1 | 3/2 | 0 | 3/3 | 24 | Sat., Sun. | AOL, BBS, CIS, MSN, WWW |
| 33.6 | integrated | tower | 128 | 512 | 2 | 3/3 | 4 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| – | – | minitower | 128 | 512 | 2 | 2/2 | 5 | 3/3 | 24 | Sat., Sun. | AOL, BBS, CIS, MSN, WWW |
| – | Sound Blaster AWE32 PnP | desktop | 512 | 512 | 3 | 1/1 | 3 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 33.6 | Vibra 16s | desktop | 512 | 512 | 3 | 1/1 | 3 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| – | Sound Blaster 16 PnP | minitower | 192 | 256 | 4 | 2/1 | 4 | 3/3 | 11 [3] | – | AOL, BBS, CIS, WWW |
| 33.6 | Sound Blaster AWE32 PnP | minitower | 256 | 512 | 4 | 3/1 | 3 | varies/1 | 24 [4] | Sat., Sun. | – |
| 33.6 | Ensoniq Soundscape Vivo PnP | minitower | 128 | 256 | 0 | 3/3 | 4 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| 33.6 | Ensoniq Soundscape Vivo | minitower | 512 | 512 | 2 | 3/1 | 4 | 1/1 | 10 | Sat. | BBS |
| 33.6 | Creative Labs CT 36 (OEM) | minitower | 384 | 512 | 4 | 1/1 | 4 | 3/3 | 9 | – | BBS, WWW |
| 33.6 | Sound Blaster 32 IDE PnP | minitower | 512 | 512 | 4 | 3/2 | 4 | varies/1 | 24 [4] | Sat., Sun. | – |
| 33.6 | Sound Blaster 32 PnP | minitower | 128 | 512 | 2 | 3/1 | 4 | varies/1 | 24 [4] | Sat., Sun. | – |
| 33.6 | integrated | minitower | 128 | 512 | 2 | 1/1 | 4 | 3/1 | 10 | – | BBS, WWW |
| 33.6 | Sound Blaster AWE64 | minitower | 128 | 512 | 2 | 2/0 | 4 | 3/3 | 12 | Sat. | WWW |
| – | – | desktop | 512 | 256 | 3 | 0/1 | 3 | 3/3 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |

uses the U.S. Robotics x2 specification.

The system looks unusual: Soft edges and a slight billowing effect lend some grace to this minitower. The large thumbscrews ease internal access, and we like its use of color-coded I/O ports. Our unit had plenty of expansion room. The drawbacks were minor: We had to undo thumbscrews on the case's right side panel to remove the drive cages, and the hard drive occupies the most accessible of the internal drive bays.

Documentation is terrific. System reliability ranks as only fair, but support earns top marks: You get a three-year warranty on parts and labor, and round-the-clock toll-free tech support.

Gateway 2000 G6-233

## 4 DELL OPTIPLEX GXI 200

**PRO:** Fast; above-average service, support, and system reliability

**CON:** Expensive, limited expandability

Even after a $91 price cut, the $3164 OptiPlex GXi 200 remains expensive when compared to most of the Pentium MMX-200 competition. But this corporate desktop has everything you need in a high-end business box—snappy performance, bountiful storage, built-in networking, and great support. A minor caveat: The D1728D-LS monitor isn't Dell's top 17-inch model; for an extra $100 you can upgrade to the better 17HS Trinitron, which displays even sharper text and provides additional on-screen controls.

Dell OptiPlex GXi 200

The GXi 200 is particularly well designed. Expansion slots sit on a daughtercard above the motherboard; we found plugging cards into slots as painless as it gets. But we do have a couple of complaints. With just one available external drive bay, one free 32-bit slot, and two 16-bit slots, the expansion options are a bit tight. Also, the 8X CD-ROM drive is slower than most.

As with all OptiPlexes, support and reliability records garner top marks from readers, though Dell's three-year parts and one-year labor warranty is only average. Free 24-hour technical support is a plus. ▶

## 5 MICRON MILLENNIA PRO2 200 B

**PRO:** Fast; second processor socket, good reliability rating

**CON:** Long waits for technical support

Despite a slight price increase to $2898, Micron's business-minded Millennia Pro2 200 B has the distinction of being the only Pentium Pro–based system to earn a Best Buy. One intriguing feature: The dual-processor–capable Millennia has a socket to accept a second Pentium Pro-200 chip—useful if you work with multiprocessing operating systems like Windows NT.

Micron Millennia Pro2 200 B

A PC WorldBench score of 231 is a bit above average for Pentium Pro-200 systems. A sharp 17-inch monitor and a Diamond Stealth 3D 2000 graphics board enhance this well-designed minitower. The Millennia also includes the Microsoft Office suite.

Micron's warranty covers the CPU and main RAM for five years and other parts for three; labor is free for a year. You also get free on-site service for the first year and 24-hour toll-free tech support. Micron gets high marks for support quality and system reliability. ▶

## TOP 20 POWER DESKTOPS

PERFORMANCE

| | SYSTEMS | CPU | RAM (MB) | Secondary cache (K) | PC WorldBench score |
|---|---|---|---|---|---|
| 1 | Dell Dimension XPS H266* | Pentium II-266 | 32 | 512 | 263 |
| 2 | Dell Dimension XPS M233s* | Pentium MMX-233 | 32 | 512 | 243 |
| 3 | Gateway 2000 G6-233* | Pentium II-233 | 64 | 512 | 251 |
| 4 | Dell OptiPlex GXi 200* | Pentium MMX-200 | 32 | 512 | 226 |
| 5 | Micron Millennia Pro2 200 B* | Pentium Pro-200 | 32 | 256 | 231 |
| 6 | Gateway 2000 G5-233 | Pentium MMX-233 | 32 | 512 | 240 |
| 7 | Quantex QP6/233 SM-3 | Pentium II-233 | 32 | 512 | 247 |
| 8 | Gateway 2000 G6-266 | Pentium II-266 | 64 | 512 | 258 |
| 9 | Dell OptiPlex GXi 233 | Pentium MMX-233 | 32 | 256 | 232 |
| 10 | Dell OptiPlex GX Pro 200 | Pentium Pro-200 | 32 | 512 | 230 |
| 11 | HP Vectra VA 6/200 MT | Pentium Pro-200 | 32 | 256 | 229 |
| 12 | Sys Technology Sys Performance 200K6 | AMD K6-PR200 | 32 | 512 | 238 |
| 13 | Quantex QP6/200 SM-4 | Pentium Pro-200 | 32 | 256 | 230 |
| 14 | Multiwave P-200 MMX | Pentium MMX-200 | 32 | 512 | 235 |
| 15 | NMC Expert Pro II | Pentium II-266 | 64 | 512 | 260 |
| 16 | Sys Technology Sys Performance P200T2M | Pentium MMX-200 | 32 | 512 | 233 |
| 17 | Sys Technology Sys Performance Pro 200 | Pentium Pro-200 | 32 | 256 | 236 |
| 18 | Acma EXP 200 | Pentium MMX-200 | 32 | 512 | 233 |
| 19 | CLR Infinity PT5-A 200MMX | Pentium MMX-200 | 32 | 512 | 229 |
| 20 | IBM PC 365 | Pentium Pro-200 | 32 | 256 | 232 |

*Best Buy

Word 7.0 for Windows 95 · Excel 7.0 for Windows 95 · Picture Publisher 6.0 for Windows 95 · Paradox 5.0 for Windows · WordPerfect 6.1 for Windows · 1-2-3 release 5 for Windows

**HOW WE TEST** All systems are tested with PC WorldBench, PC World's application-based benchmark. A higher PC WorldBench score is better. All PCs have Windows 95, and video resolution is set to 800 by 600 in 256 colors. We run automated scripts on six popular business applications, performing common tasks such as spelling checks, scrolls, saves, sorts, and recalculations. The PC WorldBench score is a sum of the weighted result of each script: Word (25 percent), Excel (20 percent), Picture Publisher (15 percent), Paradox (15 percent), WordPerfect (15 percent), and 1-2-3 (10 percent). For more details on our benchmark and how we run it, see PC World Online (www.pcworld.com/testing).

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**Circle 250 on reader service card**

# New This Month

The following PCs made our Power Desktops chart for the first time this month. For original reviews of previously tested PCs on the chart, visit our Web page (www.pcworld.com/t20pcs).

## 6 GATEWAY 2000 G5-233

**PRO:** Loaded, affordable, backed by strong service and support

**CON:** Poor display, some wires left unconnected

The PMMX-233–based Gateway 2000 G5-233 posted a 240 PC WorldBench score, less than 5 percent off the pace set by the more expensive Pentium II-233 systems.

Gateway 2000 G5-233

This multimedia-ready $2678 minitower comes with a CD-ROM drive, a sound card, and speakers. Gateway also bundles Microsoft Office Small Business Edition, as well as a 56-kbps x2 modem. The 17-inch CrystalScan 700 monitor suffered from a less-than-sharp picture.

The G5-233 is nicely constructed, and the case shows little flex, but we noticed that wires going from the sound card to the modem and CD-ROM drive had been left unconnected.

Gateway's service and support are top-flight. Besides the three-year limited warranty on parts and labor, you get round-the-clock phone support and a year of free on-site service. But in our fax-back surveys, readers give Gateway a less-impressive fair rating for system reliability.

## 7 QUANTEX QP6/233 SM-3

**PRO:** Fast performance, low price, good multimedia software bundle

**CON:** System reliability rating only fair

The Quantex QP6/233 SM-3 steps ahead of its PII-266 sibling, the QP6/266 SM-4 (reviewed in July) to grab the seventh spot on our Power Desktops chart. The secret: an affordable $2499 street price and an impressive PC WorldBench score of 247.

The hard disk is spacious at 4GB, and the CD-ROM drive zips along at 16X. We liked the 17-inch display mated with a 4MB Matrox Millennium II graphics card. The Altec Lansing AC45 speaker set lacks power, but the included subwoofer does add kick to game play.

Quantex QP6/233 SM-3

With the exception of Corel WordPerfect Suite 7, Quantex's software bundle is aimed at home users.

The sturdy tower chassis won't win any style points, but we found the interior free of clutter. Novices will need to contend with Quantex's rather basic user manual and component guides.

Quantex offers a three-year warranty on parts and one year on labor, plus 24-hour tech support and free on-site service for a year. In our fax-back surveys, Quantex's system reliability scores are just so-so.

## 9 DELL OPTIPLEX GXI 233

**PRO:** Built-in networking; above-average service, support, and system reliability

**CON:** Pricey for a Pentium MMX-233, slightly below-average performance

The Dell OptiPlex line's GXi 233 is a solid network-ready system. With a PC WorldBench score of 232, it's also the slowest Pentium MMX-233–based machine we've tested so far. Credit Dell's peerless system reliability and service record for turning this potential also-ran into a true contender.

Dell OptiPlex GXi 233

The $3281 GXi 233 is the most expensive PMMX-233 machine we've seen, but it comes equipped with a built-in ethernet interface card and a 17-inch Dell C1728D-LS monitor. This business box also has a somewhat slow 8X CD-ROM drive and a Sound Blaster AWE32 PnP sound card.

The GXi 233 features an intelligent interior layout and an easy-open case. Expandability is limited, though, with just two free drive bays (one external and one internal) and three available slots.

Among corporate desktops, reliability is king, and Dell delivers that in spades. Its system reliability consistently earns a best rating, and service and support scores rank near the top. Technical support is available 24 hours a day.

## 15 NMC EXPERT PRO II

**PRO:** Great price, clean interior

**CON:** Flimsy keyboard, no system documentation

National Micro Computers' Expert Pro II combines some top-of-the-line components with an attractive $2889 price that makes it among the least expensive Pentium II-266 machines you can buy. With a 260 PC WorldBench score, this minitower performs about average for its processor class—but that's kind of like saying that Eric Clapton is average among guitar greats.

NMC Expert Pro II

NMC skimped a bit to achieve the Expert Pro's tempting price. The keyboard feels cheap, and there are no speakers for the Sound Blaster 32 board. Otherwise, this PC means serious business. You get 64MB of EDO DRAM, a 5.1GB hard drive, and a 3Com U.S. Robotics 33.6-kbps fax-modem. The 17-inch ADI Microscan LM-1764 monitor and Matrox Millennium II graphics card with 4MB of WRAM make a winning visual combination.

The system's interior is neatly organized, so should you ever need more memory (up to 384MB), installing it into any of the four free RAM sockets shouldn't pose a problem.

The case detaches easily with thumbscrews and latches, though the lack of system-specific documentation means you're on your own once inside.

NMC backs its system for three years on parts and labor. Toll-free technical support is available only 9 hours a day, Monday through Friday. We haven't received enough reader responses to rank NMC's service and system reliability. ▶

## Beyond the Top 20

We evaluated these systems along with the others, but they didn't score high enough to reach the Top 20 Power Desktops chart. For write-ups, see PC World Online (www.pcworld.com/t20pcsnaps).

- **Acma Power Z Series**
- **DTK Quin 55M/PM233**
- **Nova K6-200TX**

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## MICRON™ VETIX™ LXI

Intel 200MHz Pentium® Pro processor
64MB ECC EDO RAM
4GB Ultra-Wide SCSI-3 hard drive

### STANDARD FEATURES

Dual Pentium Pro ZIF sockets
256KB integrated L2 cache
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress™ Pro 100 controller
Integrated SVGA graphics
12X SCSI-2 CD-ROM drive
3.5" floppy drive
9 drive bays: 6 internal 3.5", 3 external 5.25"
15" Micron 500FGx, .28dp(13.7" display)
Microsoft® Mouse, 104-key keyboard
Microsoft Windows NT® Server 4.0 (10-user license)
Intel LANDesk® Server Manager 2.52
Integrated hardware instrumentation
Dedicated server technical support, 7x24
5-year/3-year Micron Power℠ limited warranty
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## MICRON VETIX MXI

Intel 200MHz Pentium Pro processor
128MB ECC EDO RAM
Three 4GB Ultra-Wide SCSI-3 hard drives (12GB total)

### STANDARD FEATURES

256KB integrated L2 cache
Dual Pentium Pro ZIF sockets
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress Pro 100 controller
Integrated SVGA graphics
12X variable speed SCSI CD-ROM drive
3.5" floppy drive
5 internal, hot-swappable, hard drive array bays (upgradable to 10)
3 external 5.25" media bays
1 (one) 330 watt power supply standard
(upgradable to 3 for added redundancy)
Microsoft Mouse, 104-key keyboard
Microsoft Windows NT Server 4.0 (10-user license)
Intel LANDesk Server Manager 2.52
Integrated hardware instrumentation
Dedicated server technical support, 7x24
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NOS Support (3 incident resolutions/
1st year), 7x24

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## MICRON VETIX 2MXI

Dual Intel 200MHz Pentium Pro processors
256MB ECC EDO RAM
Five 4GB Ultra-Wide SCSI-3 hard drives (20GB total)

### STANDARD FEATURES

512KB integrated L2 cache
Mylex dual channel Ultra SCSI-3 RAID caching controller with 4MB
Dual Pentium Pro ZIF sockets
Memory upgradable to 1GB (8 DIMM slots)
8 open expansion slots: 5 PCI, 2 ISA, 1 shared ISA/PCI
Integrated Adaptec PCI Ultra-Wide SCSI-3 controller
Integrated Intel EtherExpress™ Pro 100 controller
Integrated SVGA graphics
12X variable speed SCSI CD-ROM drive, 3.5" floppy drive
5 internal, hot-swappable, hard drive array bays (upgradable to
3 external 5.25" media bays
1 (one) 330 watt power supply standard
(upgradable to 3 for added redundancy)
Microsoft Mouse, 104-key keyboard
Microsoft Windows NT Server 4.0 (10-user license)
Intel LANDesk Server Manager 2.52
Integrated hardware instrumentation
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5-year/3-year Micron Power
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1st year), 7x24

**$13,49**

On-site service for the Micron Vetix is provided by Digital Equipment Corporation and is optio

## INTERNET OPTIONS

| | | | |
|---|---|---|---|
| 3Com OfficeConnect Hub 8/TPC | $149 | Sony 4/8GB SCSI DDS-2 tape backup drive with tape | $749 |
| 3Com OfficeConnect Switch 140 | $969 | Cheyenne ArcServe/InocuLAN | $499 |
| APC Smart-UPS 700 with PowerChute plus software | $389 | | |

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## MICRON CLIENTPRO® MTE

Intel 166MHz Pentium processor with MMX™ technology
16MB EDO RAM
2.1GB SMART EIDE hard drive
15" Micron 500FGx, .28dp (13.7" display)

**STANDARD FEATURES**

512KB pipeline burst cache, flash BIOS, DMI Support
3.5" floppy drive
3Com 3C905 network adapter
Integrated S3 ViRGE/DX graphics accelerator, 2MB EDO RAM
Integrated wavetable sound
Tool-free minitower or desktop
Microsoft Intellimouse,™ 104-key keyboard
Microsoft Windows® 95
Intel LANDesk Client Manager
5-year/3-year Micron Power limited warranty

**$1,549**

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PC WORLD

# TOP 20 BUDGET DESKTOPS

| | SYSTEMS | Last month | Month tested | Street price (6/11/97) | CPU | Comments |
|---|---|---|---|---|---|---|
| 1 | Dell Dimension XPS M166s<br>800/388-8542 www.dell.com | 1 | July 97 | $2199 | Pentium MMX-166 | $80 price drop for fast PC with big hard drive, improved graphics and modem. |
| 2 | Dell Dimension M200a<br>800/388-8542 www.dell.com | 2 | June 97 | $2099 | Pentium MMX-200 | Quick, well-rounded, $50 off, 56K modem; now with 512K cache. |
| 3 | Micron Home MPC<br>800/223-6571 www.micron.com | – | NEW | $2249 | Pentium MMX-200 | Polished design, affordable, home-oriented, good reliability rating. |
| 4 | IBM PC 350<br>800/426-2968 www.pc.ibm.com | 4 | Dec 96 | $1715 | Pentium-166 | Good design, rock-bottom price, great networking features; slow. |
| 5 | Gateway 2000 G5-166 M<br>800/846-2000 www.gw2k.com | 3 | Aug 97 | $1934 | Pentium MMX-166 | Higher price on multimedia PC; 17-inch monitor isn't Gateway's best. |
| 6 | Dell OptiPlex Gs+ 166L<br>800/388-8542 www.dell.com | 5 | June 97 | $1952 | Pentium-166 | This Pentium corporate PC won't be around much longer. |
| 7 | Micro Express MicroFlex-K5/5166<br>800/989-9900 www.microexpress.net | 8 | Aug 97 | $1349 | AMD K5-PR166 | Generic PC with great price and long warranty. |
| 8 | Quantex QP5/166 SM-3<br>800/896-4898 www.quantex.com | 6 | Aug 97 | $1899 | Pentium MMX-166 | Quick Pentium MMX-166 system comes loaded for multimedia and graphics. |
| 9 | CyberMax Power Max<br>800/437-4956 www.cybmax.com | – | NEW | $1649 | AMD K6-PR166 | Speedy, low-cost AMD K6 benefits from improved support policies. |
| 10 | Midwest Micro MWH-200<br>800/728-8582 www.mwmicro.com | 9 | Feb 97 | $1875 | Pentium-200 | Aging P-200 holds on with multimedia features, decent performance. |
| 11 | Polywell Poly 500 QX<br>800/999-1278 www.polywell.com | 14 | June 97 | $1395 | AMD K5-PR166 | P-200 speed, fast modem, full multimedia, good warranty. |
| 12 | Micro Express MicroFlex-PR/233<br>800/989-9900 www.microexpress.net | – | NEW | $1899 | AMD K6-PR233 | Fastest budget PC by far; good design, but no software bundle. |
| 13 | Quantex QP6/200 PD-4<br>800/896-4898 www.quantex.com | 11 | Feb 97 | $2459 | Pentium Pro-200 | Very fast; pricey but comes with good modem, load of software. |
| 14 | HP Vectra VE 5/133<br>800/322-4772 www.hp.com | 12 | Dec 96 | $1705 | Pentium-133 | Last Pentium-133 on chart; corporate PC includes nice touches. |
| 15 | ProGen Atlas X 200<br>888/776-9595 www.progen.com | 18 | Aug 97 | $1799 | Pentium MMX-200 | Fleet-footed, $200 off, speakers with subwoofer; no weekend support. |
| 16 | Kingdom 6x86 P166+ Super Value<br>800/385-3436 www.kingdomcomputers.com | 15 | May 97 | $1247 | Cx6x86-P166+ | Least expensive on chart, reasonably fast, 16X CD-ROM drive; no modem. |
| 17 | Quantex QP5/200 M-4<br>800/896-4898 www.quantex.com | 20 | June 97 | $2299 | Pentium MMX-200 | Very fast but a bit pricey; nice software bundle, full multimedia, fast modem. |
| 18 | Micro Express MicroFlex-686/P200+LC<br>800/989-9900 www.microexpress.net | – | Aug 97 | $1799 | Cx6x86-P200+ | $200 price drop, upgraded 4GB hard disk, good performance. |
| 19 | Quantex QP5/233 SM-3<br>800/896-4898 www.quantex.com | – | NEW | $2449 | Pentium MMX-233 | Fast, affordable, has all the trimmings; Quantex reliability rating is just fair. |
| 20 | Kingdom Pentium MMX 200 Home & Office<br>800/385-3436 www.kingdomcomputers.com | 17 | July 97 | $2297 | Pentium MMX-200 | Very fast, full multimedia, 33.6-kbps modem. |

Best Buy

See features chart, page 252; performance chart, page 254.

Recommended as home system

[1] Insufficient data.

[2] Limited data; score is based on responses for this company and average of all companies.

THE STAR THIS MONTH is Micro Express's MicroFlex-PR/233. Powered by the AMD K6-PR233 processor, the $1899 MicroFlex shattered the budget desktop performance record. In fact, its PC WorldBench score of 246 is 7 points higher than the average for Top 20 power desktops. Five other PCs on the chart boast non-Intel CPUs. New this month, the $1649 CyberMax Power Max uses AMD's K6-PR166 and posted a solid 223 score on its way to a ninth-place finish. The new Micron Home MPC, meanwhile, uses a Pentium MMX-200 to gain Best Buy distinction, with a strong PC WorldBench score of 230. The polished minitower costs $2249 and comes well appointed with multimedia features.

## SCORECARD

| ★ Overall rating | Price | Vendor's system reliability | Features and design | PC WorldBench score/performance | Vendor's support quality/policies | Reader service number |
|---|---|---|---|---|---|---|
| 86 | expensive | best | very good | 223/very good | best/best | 651 |
| 86 | average | best | very good | 219/very good | best/best | 652 |
| 84 | expensive | good | very good | 230/very good | best/best | 653 |
| 82 | average | fair | outstanding | 197/good | good/best | – |
| 81 | average | fair | very good | 213/very good | best/best | 654 |
| 81 | average | best | satisfactory | 198/good | best/best | 656 |
| 81 | inexpensive | [1] | very good | 208/good | [1]/best | 655 |
| 80 | average | fair | very good | 218/very good | good/best | 657 |
| 80 | average | [1] | very good | 223/very good | [1]/best | 658 |
| 79 | average | fair | very good | 210/very good | good [2]/fair | 659 |
| 79 | inexpensive | [1] | good | 213/very good | [1]/best | 660 |
| 79 | average | [1] | very good | 246/outstanding | [1]/best | 661 |
| 78 | expensive | fair | very good | 235/outstanding | good/best | 662 |
| 78 | average | best | good | 166/satisfactory | good/fair | 663 |
| 78 | average | [1] | very good | 232/outstanding | [1]/fair | 664 |
| 77 | inexpensive | [1] | good | 197/good | [1]/good | 665 |
| 77 | expensive | fair | very good | 221/very good | good/best | 666 |
| 76 | average | [1] | good | 217/very good | [1]/best | 667 |
| 76 | expensive | fair | very good | 236/outstanding | good/best | 668 |
| 76 | expensive | [1] | outstanding | 233/outstanding | [1]/good | 669 |
| Scorecard weightings ▶ | Price 25 percent | Reliability 25 percent | Features 20 percent | Performance 15 percent | Support 15 percent | All products: 905 |

# This Month's Best Buys

## 1 DELL DIMENSION XPS M166S

**PRO:** Great reliability and support, slight price drop, upgraded graphics

**CON:** Somewhat expensive

For a home office system that gives you the most for your money, consider the XPS M166s. This fast, affordable minitower comes with a set of components that reads like a Who's Who of our Top 10 charts, and it's backed by excellent support. This month a good deal just got better, thanks to an $80 price cut that brings the M166s down to $2199.

Dell beefed up the graphics board to the Matrox Millennium II model, which adds 3-D tweaks and other performance enhancements. The system also includes a spacious 4.3GB hard drive and a 33.6-kbps 3Com U.S. Robotics Sportster Voice modem—one of the best that *PC World* has tested.

**Dell Dimension XPS M166s**

This PC's software bundle makes it a nice choice for a small business or home office. Besides the Vocal Point communications package, Dell includes Microsoft Office Small Business Edition.

Dell's Dimension PCs are backed by a three-year warranty on parts and one year of free labor; toll-free support is available 24 hours a day. The company continues to earn top marks for service and system reliability in our reader fax-back surveys.

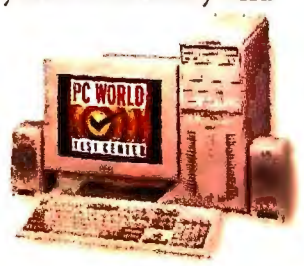
## 2 DELL DIMENSION M200A

**PRO:** Inexpensive for a PMMX-200, excellent support, modem upgraded to 56 kbps

**CON:** Slow for its class, monitor a little dull

With a PC WorldBench score of 219, this Pentium MMX-200 minitower is only slightly faster than the average PMMX-166 system. A $50 price cut to $2099 improves an already attractive value, as does the upgraded 56-kbps 3Com U.S. Robotics modem. The M200a has an appealing set of components: a 2.1GB hard disk, a 12X CD-ROM drive, and Microsoft Office Small Business Edition. Unfortunately, the 15-inch LS monitor lacks sharpness.

The M200a's clean interior makes the system easy to upgrade. Deel's documentation is complete with illustrations, index, and glossary, though we wish the manuals were integrated into a single, easy-to-navigate book. The M200a also benefits greatly from Dell's success at the polls—readers continue to rate the company best in both system reliability and service.



**Dell Dimension M200a**

Dell provides a three-year warranty on parts and one year for labor. Toll-free technical support 24 hours a day (including weekends) makes help easy to reach, and there's a 30-day money-back guarantee. ▶

## TOP 20 BUDGET DESKTOPS — STANDARD FEATURES

| | SYSTEMS | CPU | RAM (MB) | Secondary cache (K) | Hard drive (GB) | Graphics adapter | Video RAM (MB/type) | Monitor tube/ viewable diag-onal (inches) | Screen pitch (mm) | CD-ROM drive speed |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | Dell Dimension XPS M166s* | Pentium MMX-166 | 32 | 512 | 4.3 | Matrox Millennium II | 4/WRAM | 15/13.8 | .28 | 12X |
| 2 | Dell Dimension M200a* | Pentium MMX-200 | 16 | 512 | 2.1 | integrated | 2/DRAM | 15/13.8 | .28 | 12X |
| 3 | Micron Home MPC* | Pentium MMX-200 | 32 | 512 | 3.2 | Diamond Stealth 3D 2000 | 2/EDO DRAM | 17/15.9 | .26 | 12X |
| 4 | IBM PC 350* | Pentium-166 | 16 | 256 | 1.3 | integrated S3 Trio64V+ | 2/EDO DRAM | 15/13.7 | .28 | 6X |
| 5 | Gateway 2000 G5-166 M* | Pentium MMX-166 | 16 | 256 | 1.3 | integrated | 2/EDO DRAM | 17/16.1 | .28 | 16X |
| 6 | Dell OptiPlex Gs+ 166L | Pentium-166 | 32 | 256 | 2.1 | integrated | 2/VRAM | 15/14 | .25 | 8X |
| 7 | Micro Express MicroFlex-K5/5166 | AMD K5-PR166 | 32 | 512 | 2.1 | ATI PC2TV | 2/WRAM | 15/13.8 | .28 | 10X |
| 8 | Quantex QP5/166 SM-3 | Pentium MMX-166 | 32 | 512 | 2.5 | STB Velocity 3D | 4/SGRAM | 17/16.1 | .25 | 12X |
| 9 | CyberMax Power Max | AMD K6-PR166 | 32 | 512 | 3.2 | Matrox Mystique | 4/SGRAM | 15/13.8 | .28 | 16X |
| 10 | Midwest Micro MWH-200 | Pentium-200 | 16 | 512 | 3.2 | STB Lightspeed 128 | 2/MDRAM | 15/14 | .28 | 16X |
| 11 | Polywell Poly 500 QX | AMD K5-PR166 | 32 | 512 | 2.5 | Diamond Stealth 3D 2000 | 2/EDO DRAM | 15/13.8 | .28 | 12X |
| 12 | Micro Express MicroFlex-PR/233 | AMD K6-PR233 | 64 | 512 | 2 | STB Velocity 3D Video | 4/VRAM | 17/15.8 | .26 | 12X |
| 13 | Quantex QP6/200 PD-4 | Pentium Pro-200 | 32 | 256 | 3.2 | Matrox Millennium | 2/DRAM | 17/16 | .28 | 12X |
| 14 | HP Vectra VE 5/133 | Pentium-133 | 16 | 256 | 1.1 | integrated SiS 6205 | 2/EDO DRAM | 15/14 | .28 | 8X |
| 15 | ProGen Atlas X 200 | Pentium MMX-200 | 32 | 512 | 3.2 | Matrox Millennium | 4/WRAM | 17/15.8 | .26 | 16X |
| 16 | Kingdom 6x86 P166+ Super Value | Cx6x86-PR166+ | 16 | 256 | 2.1 | PCI-60V | 2/EDO DRAM | 15/13.8 | .28 | 16X |
| 17 | Quantex QP5/200 M-4 | Pentium MMX-200 | 32 | 512 | 3.2 | Matrox Mystique | 4/SDRAM | 17/16.1 | .28 | 12X |
| 18 | Micro Express MicroFlex-686/P200+LC | Cx6x86-PR200+ | 32 | 512 | 4 | STB Velocity 3D | 4/EDO VRAM | 17/15.8 | .28 | 12X |
| 19 | Quantex QP5/233 SM-3 | Pentium MMX-233 | 32 | 256 | 4 | Matrox Millennium | 4/WRAM | 17/16 | .25 | 16X |
| 20 | Kingdom Pentium MMX 200 Home & Office | Pentium MMX-200 | 32 | 512 | 3.2 | Hercules Dynamite 128 | 4/MDRAM | 17/15.8 | .28 | 16X |

* Best Buy [1] Downloads only, uploads at 33.6 kbps; uses 3Com/U.S. Robotics' x2 technology. [2] Five years on CPU and main RAM, three years on other parts. [3] Toll call.

## 3 MICRON HOME MPC

**PRO:** Good performance, impressive design, high-quality components

**CON:** Limited drive bay expandability

Micron's Home MPC, one of our Top 5 Home PCs, bridges the gap between home and office systems with its thoughtful design, bundled software, and affordable price tag of $2249. Garnering a score of 230 on our PC WorldBench tests, this Pentium MMX-200 minitower proves that it can definitely compete with its more business-oriented chartmates.

We found much to admire about this system. The 3.2GB hard disk is spacious, while the Micron LM-1764 17-inch monitor delivers crisp images and text. Multimedia software gets a boost from the Diamond Stealth 3D 2000 video card with 2MB of EDO DRAM.

The Home MPC's external design shows a lot of polish, with convenient case latches and thumbscrews to ease upgrades. Too often the front panels of machines are left unlabeled, but the Home MPC's on/off and reset switches are marked clearly, as are the I/O ports on the back. A case lock lets you secure your equipment against prying hands.

Micron Home MPC

The design touches continue inside. Cables are neatly bundled, wires are tucked out of the way, and PCI slots and RAM sockets are easily accessible for upgrades. One shortfall: Only two drive bays—one 5.25-inch external and one 3.5-inch internal—are available.

Micron bundles home-oriented software with the Home MPC, including Microsoft Works, Quicken Deluxe, MechWarrior 2, and Encarta.

The Home MPC is an exceptional system, and Micron's support rates highly. The company provides a three-year warranty on parts and one year for labor. Micron spots you a five-year warranty on the RAM and CPU, but these components aren't as prone to failure as moving parts like CD-ROM drives and hard disks. You can take comfort in Micron's system reliability record: Our readers awarded it a good rating in our fax-back surveys.

| | | EXPANDABILITY | | | | | CUSTOMER SUPPORT | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| Modem speed (kbps) | Sound board | Case style | Max. RAM (MB) | Maximum secondary cache (K) | Open RAM sockets | Open drive bays (ext./int.) | Open slots | Warranty for parts/labor (years) | Weekday toll-free support (hours) | Weekend support | Online support |
| 33.6 | Sound Blaster 16 | minitower | 64 | 512 | 1 | 3/1 | 4 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 56 [1] | Sound Blaster 16 | minitower | 64 | 512 | 1 | 3/1 | 6 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 33.6 | Sound Blaster CT 1920 (OEM) | minitower | 128 | 512 | 2 | 1/1 | 4 | 3 [2]/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| – | – | desktop | 192 | 512 | 4 | 1/1 | 4 | 3/3 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |
| 56 [1] | Integrated | minitower | 128 | 512 | 1 | 3/2 | 5 | 3/3 | 24 | Sat., Sun. | AOL, BBS, CIS, MSN, WWW |
| – | Sound Blaster 16 | compact | 128 | 256 | 2 | 0/0 | 2 | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 33.6 | Supersound32 | minitower | 128 | 512 | 4 | 3/2 | 3 | 4/4 | 24 | Sat., Sun. | WWW |
| 33.6 | Ensoniq Audio PCI Wavetable | minitower | 384 | 512 | 2 | 2/1 | 4 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| 33.6 | Ensoniq Audio PCI Wavetable | tower | 128 | 512 | 5 | 3/2 | 5 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| 33.6 | Sound Blaster AWE32 PnP | minitower | 128 | 512 | 4 | 3/2 | 3 | 5/3 | 12 | Sat. | BBS, WWW |
| 33.6 | Supersound Origins 3D | minitower | 256 | 512 | 4 | 3/0 | 4 | 3/5 | 24 | Sat., Sun. | BBS, WWW |
| 33.6 | Ensoniq Audio PCI Wavetable | tower | 256 | 512 | 1 | 3/0 | 3 | 4/4 | 24 | Sat., Sun. | WWW |
| 33.6 | Ensoniq Vivo 90 | minitower | 192 | 512 | 2 | 3/3 | 4 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| – | Sound Blaster 32 PnP | desktop | 256 | 256 | 4 | 1/1 | 3 | 3/3 | 11 [3] | – | AOL, BBS, CIS, WWW |
| 33.6 | Progen AWE32 PnP 3D | minitower | 128 | 512 | 4 | 3/1 | 4 | 3/1 | 9 | – | BBS, WWW |
| – | Schubert 3D | tower | 128 | 512 | 3 | 3/3 | 5 | 3/1 | 13 | Sat. | WWW |
| 33.6 | Ensoniq Soundscape Vivo | minitower | 128 | 512 | 2 | 2/1 | 4 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| 33.6 | Sound Blaster AWE64 | minitower | 512 | 512 | 2 | 2/3 | 3 | 4/4 | 24 | Sat., Sun. | WWW |
| 33.6 | Ensoniq Audio PCI Wavetable | minitower | 256 | 512 | 4 | 3/2 | 4 | 3/1 | 24 | Sat., Sun. | BBS, WWW |
| 33.6 | Schubert 3D | minitower | 128 | 512 | 3 | 3/3 | 4 | 3/1 | 13 | Sat. | WWW |

## 4 IBM PC 350

**PRO:** LAN tools, USB ports, infrared option

**CON:** Subpar monitor, reliability rated just fair

First reviewed in December, IBM's venerable Pentium-166–based PC 350 continues its run on the chart with a $1715 street price and attractive networking features. Along with the equally seasoned HP Vectra VE 5/133, the PC 350 is one of the few systems to lack MMX capability—but that's not a problem for a buttoned-down business box.

What may concern some is the system's 15-inch IBM G50 monitor, which produced particularly dark colors. Still, the display provided crisp images and useful controls.

IBM PC 350

The PC 350 comes with tools that allow a network administrator to monitor and work on it from a remote location. NetFinity can update software and track PC configurations across a network, while Wake-on-LAN lets administrators perform upgrades and take inventory when no one is in the office. The PC 350 also features built-in infrared support, with a port for connecting a receiver/transmitter. The infrared kit costs an extra $79.

IBM backs its PCs with a three-year warranty on parts and labor. Toll-free support is available around the clock. In our surveys, readers give IBM good marks for its support quality, but system reliability scores are just fair.

## 5 GATEWAY 2000 G5-166 M

**PRO:** Excellent internal design

**CON:** Price bumped up by $155

The Gateway 2000 G5-166 M hangs on to its Best Buy status despite a $155 price correction that pushes this PMMX-166 minitower's price to $1934. Still, the system remains a bargain for home and business users alike, with a good PC WorldBench score of 213 and a terrific internal design.

The unit comes with Gateway's 17-inch CrystalScan monitor, 2MB of integrated video RAM, and a 16X CD-ROM drive. The Telepath 56-kbps modem is welcome; however, many users may find the 1.3GB hard disk too cramped.

From the outside, the G5-166 is quite a looker. Gateway's trademark bulging ▶

case is sturdy, and thumbscrews make it very easy to open. The I/O ports in back are color-coded, and the interior of the system is one of the cleanest we've seen. We found the manual to be helpful and friendly.

Gateway 2000 G5-166 M

Gateway bundles a strong selection of business and home-oriented applications with the G5-166, including Encarta Encyclopedia 97, Microsoft Office 97 Small Business Edition, and Street Plus (a mapping application). The company also throws in a few titles, such as The Human Body 2.0, that take advantage of MMX technology.

Our readers rate Gateway's system reliability as only fair, but hail its support as among the best.

## New This Month

The following PCs made our Budget Desktops chart for the first time this month. For original reviews of previously tested PCs on the chart, visit our Web page (www.pcworld.com/t20pcs).

### 9 CYBERMAX POWER MAX

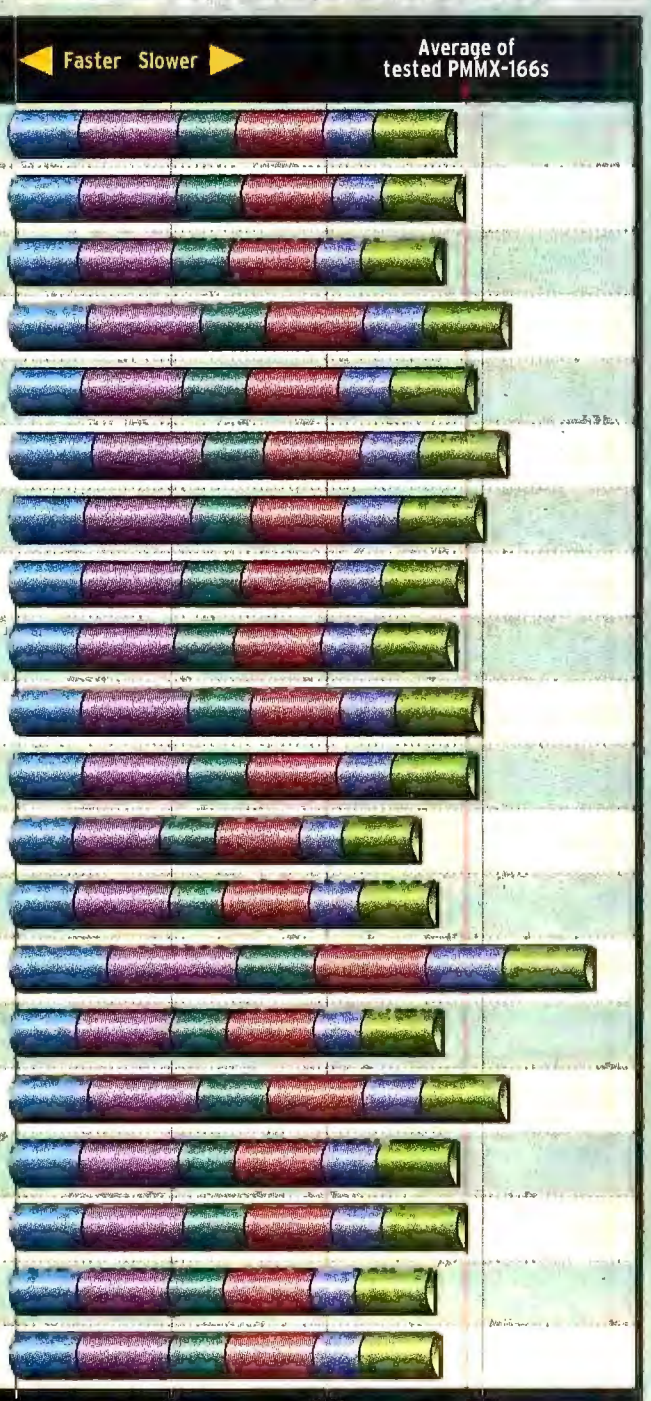
**PRO:** Good performer, inexpensive, great sound, good support policies

**CON:** Cables found hanging loose

## TOP 20 BUDGET DESKTOPS

PERFORMANCE

| | SYSTEMS | CPU | RAM (MB) | Secondary cache (K) | PC WorldBench score |
|---|---|---|---|---|---|
| 1 | Dell Dimension XPS M166s* | Pentium MMX-166 | 32 | 512 | 223 |
| 2 | Dell Dimension M200a* | Pentium MMX-200 | 16 | 512 | 219 |
| 3 | Micron Home MPC* | Pentium MMX-200 | 32 | 512 | 230 |
| 4 | IBM PC 350* | Pentium-166 | 16 | 256 | 197 |
| 5 | Gateway 2000 G5-166 M* | Pentium MMX-166 | 16 | 256 | 213 |
| 6 | Dell OptiPlex Gs+ 166L | Pentium-166 | 32 | 256 | 198 |
| 7 | Micro Express MicroFlex-K5/5166 | AMD K5-PR166 | 32 | 512 | 208 |
| 8 | Quantex QP5/166 SM-3 | Pentium MMX-166 | 32 | 512 | 218 |
| 9 | CyberMax Power Max | AMD K6-PR166 | 32 | 512 | 223 |
| 10 | Midwest Micro MWH-200 | Pentium-200 | 16 | 512 | 210 |
| 11 | Polywell Poly 500 QX | AMD K5-PR166 | 32 | 512 | 213 |
| 12 | Micro Express MicroFlex-PR/233 | AMD K6-PR233 | 64 | 512 | 246 |
| 13 | Quantex QP6/200 PD-4 | Pentium Pro-200 | 32 | 256 | 235 |
| 14 | HP Vectra VE 5/133 | Pentium-133 | 16 | 256 | 166 |
| 15 | ProGen Atlas X 200 | Pentium MMX-200 | 32 | 512 | 232 |
| 16 | Kingdom 6x86 P166+ Super Value | Cx6x86-PR166+ | 16 | 256 | 197 |
| 17 | Quantex QP5/200 M-4 | Pentium MMX-200 | 32 | 512 | 221 |
| 18 | Micro Express MicroFlex-686/P200+LC | Cx6x86-PR200+ | 32 | 512 | 217 |
| 19 | Quantex QP5/233 SM-3 | Pentium MMX-233 | 32 | 256 | 236 |
| 20 | Kingdom Pentium MMX 200 Home & Office | Pentium MMX-200 | 32 | 512 | 233 |



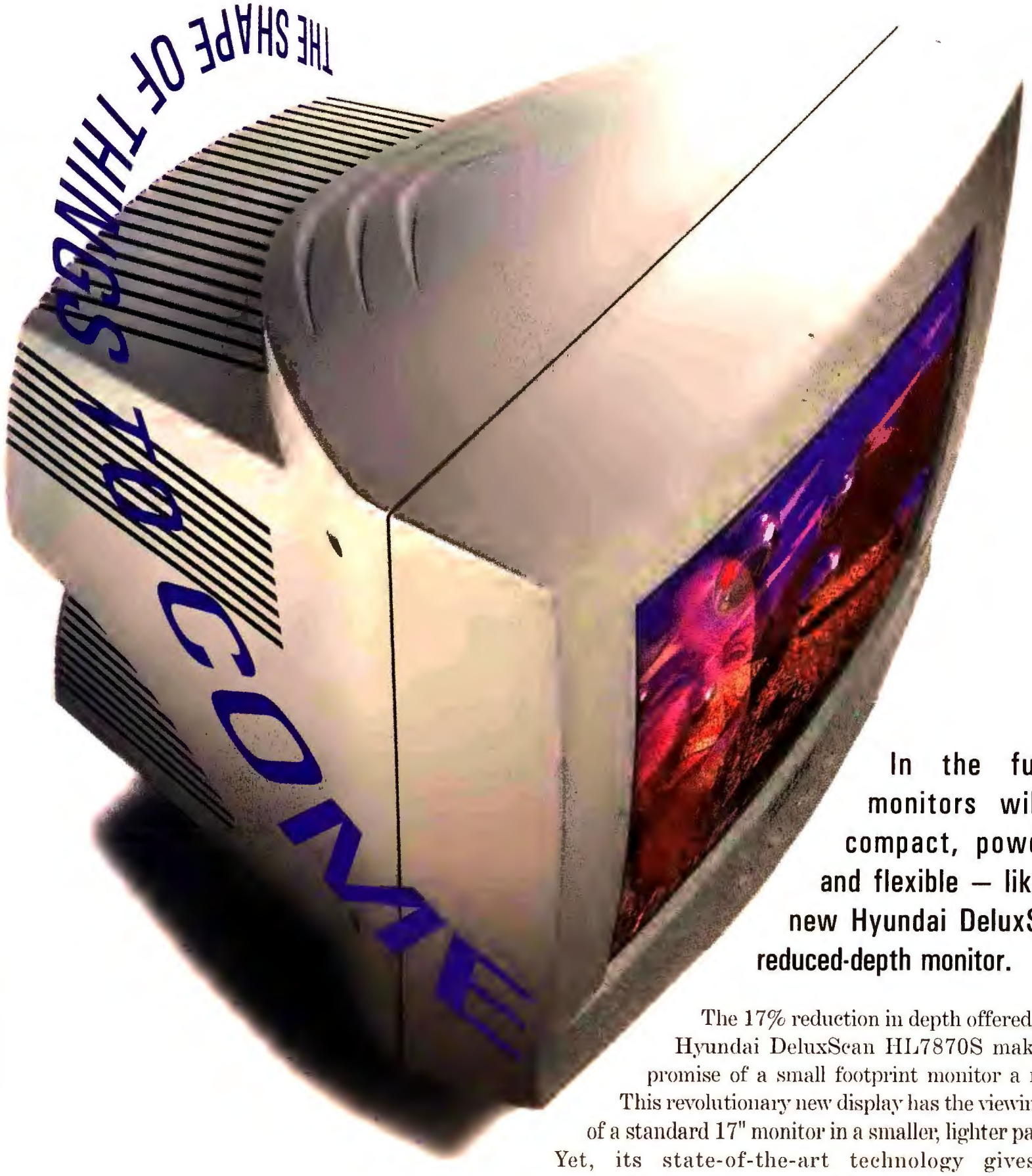

*Best Buy

Application test times in minutes

Word 7.0 for Windows 95 | Picture Publisher 6.0 for Windows 95 | WordPerfect 6.1 for Windows

Excel 7.0 for Windows 95 | Paradox 5.0 for Windows | 1-2-3 release 5 for Windows

**HOW WE TEST** All systems are tested with PC World8ench, PC World's application-based benchmark. A higher PC WorldBench score is better. All PCs have Windows 95, and video resolution is set to 800 by 600 in 256 colors. We run automated scripts on six popular business applications, performing common tasks such as spelling checks, scrolls, saves, sorts, and recalculations. The PC World8ench score is a sum of the weighted result of each script: Word (25 percent), Excel (20 percent), Picture Publisher (15 percent), Paradox (15 percent), WordPerfect (15 percent), and 1-2-3 (10 percent). For more details on our benchmark and how we run it, see PC World Online (www.pcworld.com/testing).




## In the future, monitors will be compact, powerful, and flexible — like the new Hyundai DeluxScan® reduced-depth monitor.

The 17% reduction in depth offered by the Hyundai DeluxScan HL7870S makes the promise of a small footprint monitor a reality. This revolutionary new display has the viewing area of a standard 17" monitor in a smaller, lighter package. Yet, its state-of-the-art technology gives you uncompromising performance and features, including 1280 x 1024 resolution, .27 dot pitch, and Advanced Digital On-Screen Controls — all at prices comparable with today's classic 17" monitors.

**Experience the future with a new Hyundai DeluxScan reduced-depth monitor. *It's the shape of things to come.***

For more information on the DeluxScan reduced-depth monitor, or any of the products in the DeluxScan monitor family, visit the Hyundai Web site at www.hea.com or call 1-800-568-0060

A 17" monitor with the footprint of a 14" monitor.

| Model | CRT/Viewable | Max Resolution | Controls | Dot Pitch | ESP* |
|---|---|---|---|---|---|
| 14S | 14"/13.2" | 1024x768 | Digital | .28 | $189 |
| 15B | 15"/13.7" | 1D24x768 | Digital | .28 | $249 |
| 17MS | 17"/15.7" | 1024x768 | Digital | .39 | $389 |
| 15G+ | 15"/13.7" | 1280x1D24 | Digital On-Screen | .28 | $299 |
| 17B+ | 17"/15.7" | 1280x1024 | Digital On-Screen | .28 | $499 |
| 17S | 17"/15.7" | 1280x1024 | Digital On-Screen | .27 | $599 |

*Estimated street price 6/97. Dealer prices may vary. Does not include shipping and handling.

(800) 568-0060

www.hea.com

HYUNDAI

*DeluxScan® Monitors*

**Circle 110 on reader service card**

AMD's K6 strikes again, this time inside the multimedia-savvy CyberMax Power Max system. Game players and multimedia enthusiasts will want to take a long look at this bargain-price tower built around the 166-MHz version of AMD's MMX-capable K6 processor. With a PC WorldBench score of 223, the Power Max is a match for some Pentium MMX-200 PCs, but it sells for just $1649.

CyberMax Power Max

For realistic game play, the Power Max comes ready with a Matrox Mystique graphics card that has 4MB of SGRAM and 3-D acceleration. And though we've often complained about Princeton's 17-inch monitors, the EO50 15-inch model that came with our test system provided a superior picture. CyberMax even throws in a couple of 3-D game titles, as well as Corel WordPerfect Suite 7 for the business types among us.

Like several other systems in this month's review, the Power Max includes Ensoniq's Audio PCI sound system, which uses the system's memory to play wavetable MIDI sounds. This can slow PC performance by forcing Windows 95 to use virtual memory. (Keep in mind that games requiring a dedicated DOS session can't access the Audio PCI card's wavetable talents.) A pair of Altec Lansing ACS 45 speakers and a subwoofer supply punch to your audio experience.

The rugged chassis leaves lots of room for expansion, but we found the audio cables to the CD-ROM drive and modem hanging loose. This isn't a major concern, but they should have been tied off. For adding RAM, there are four free SIMM sockets and one empty DIMM socket.

The user guide provides little information about the hardware, leaving you to work from the component manuals. CyberMax's support policies are strong, however, with a three-year warranty on parts and one-year coverage on labor, round-the-clock technical support, Internet help pages, and one year of free on-site service. However, we lack enough data from our fax-back surveys to assess the quality of CyberMax's service and system reliability.

CyberMax delivers a lot of bang for the buck. If you like your games fast and loud, take a close look at the Power Max.

## 12 MICRO EXPRESS MICROFLEX-PR/233

**PRO:** Fastest budget desktop, low price

**CON:** No software bundle

With a PC WorldBench score of 246, the Micro Express MicroFlex-PR/233 is the fastest PC—by far—on our Budget Desktops chart. In fact, only five PCs on our Power Desktops chart topped it. So what's this blazing tower doing on the budget list? Ask the folks at Micro Express—they're the ones selling it for only $1899.

An AMD K6-PR233 processor helped this system nearly match the average 249 PC WorldBench score for Pentium II-233 desktops. The MicroFlex-PR/233 comes with an ample 64MB of EDO DRAM and 512K of secondary cache. A sharp 17-inch Princeton E017 monitor is matched with a 4MB STB Velocity 3D Video card, and the 12X Toshiba XM-5702B CD-ROM drive rated well in our July roundup (see "12X, 16X, 18X: Fastest Drives Alive"). The 2GB EIDE hard disk is a bit small, however. The Ensoniq Audio PCI card provides wavetable MIDI playback but won't work for games running in a dedicated DOS session.

The MicroFlex-PR/233's interior design is entirely free of clutter, but the PC has only three externally accessible bays. Software is sparse, too—just Windows 95 and a few utilities. Micro Express boasts a strong support package, including a four-year warranty on parts and labor. We lack sufficient survey data to rate the company's system reliability.

MicroFlex-PR/233

No, the MicroFlex-PR/233 is not perfect, but you won't find another system on our charts that can match both the low price and hot performance of this AMD-powered tower.

## 19 QUANTEX QP5/233 SM-3

**PRO:** First budget Pentium MMX-233, good expandability, fast

**CON:** System reliability rated just fair, pricey

The QP5/233 SM-3 is the first PMMX-233 PC to make the Budget Desktops chart. This $2449 machine is well appointed and fast, but Quantex's system reliability record is a concern.

With a PC WorldBench score of 236, the QP5 is the fastest Intel-based budget system on the chart, and second to the Micro Express MicroFlex-PR/233. The rangy QP5 provides five free drive bays for expansion—three externally accessible 5.25-inch and two internal 3.5-inch. The 32MB of SDRAM can be upgraded to as much as 256MB. The system also features a full range of multimedia components, including a 16X CD-ROM drive, speakers, and an Ensoniq Audio PCI sound card.

Quantex QP5/233 SM-3

Color-coded I/O ports help ease the setup of external peripherals, while a neat interior invites upgrades.

Quantex's documentation includes helpful start-up tips, and you get separate manuals for each major component (though we would prefer seeing these guides packaged together). The software bundle includes MMX-enhanced titles such as Pod and Third Dimension, as well as Quicken and Corel Printhouse.

Sturdy as the QP5 seems, its reliability may be a question: Our readers rate Quantex system reliability as only fair in our monthly fax-back surveys. But the company scores highly for service, and its support policies are very strong. ▶

## Beyond the Top 20

**We evaluated these systems along with the others, but they didn't score high enough to reach the Top 20 Budget Desktops chart. For write-ups, see PC World Online (www.pcworld.com/t20pcsnaps).**

- **AST Advantage 9402**
- **Hertz P200Me**
- **Kingdom Pentium 200 MMX Value**
- **LEK Professional**
- **Royal Computer Synergy Best Buy**
- **Tangent Zephyr**
- **Toshiba Equium 5160D**

# NOW YOU SEE IT BETTER.

## TeleVideo WebOptimized Monitors

**Introducing TeleVideo's SuperView Series™ and Super-View Pro Series™. A complete line of feature rich color monitors – WebOptimized for your comfort and reliability. Our finely crafted monitors have the highest horizontal frequency up to 107KHz, a dot pitch as fine as 0.26mm, flicker-free refresh rates, digitized on-screen controls with memory recall and more. The spectacular specifications of our monitors allow you to comfortably enjoy razor-sharp images and exquisite shapes with optimum brilliance and vivid detail. As a leader in display technology for over two decades, we know how to optimize our monitors to make them ideal for the Web. Now you can enjoy the ever-evolving digital world of the Internet, DVD,desk-top publishing, high-end CAD and more. Break through all your conceptual horizons with TeleVideo.**

TeleVideo®

Over 20 years of display technology working for you.

Call your favorite reseller today or call us at 1-800-835-3228 x 474 or 408-954-8333. Or, visit our website: www.televideoinc.com.

| 15" Models | Dot Pitch (mm) | Max. Res. (HxV) | H-Scan (KHz) | ERP ($) |
|---|---|---|---|---|
| **TeleVideo SV100** | **0.28** | **1280x1024** | **30-70** | **349** |
| PanaSync E15 | 0.27 | 1024x768 | 30-61 | 399 |
| Mag InnoVision DX1595 | 0.28 | 1280x1024 | 30-65 | 429 |
| Viewsonic 15GS | 0.28 | 1280x1024 | 30-69 | 429 |

| 17" Models | Dot Pitch (mm) | Max. Res. (HxV) | H-Scan (KHz) | ERP ($) |
|---|---|---|---|---|
| **TeleVideo SV210** | **0.26** | **1280x1024** | **30-70** | **568** |
| NEC XV17+ | 0.28 | 1280x1024 | 31-65 | 850 |
| PanaSync S17 | 0.27 | 1280x1024 | 30-69 | 799 |
| ViewSonic 17GS | 0.27 | 1280x1024 | 30-69 | 699 |

| 21" Models | Dot Pitch (mm) | Max. Res. (HxV) | H-Scan (KHz) | ERP ($) |
|---|---|---|---|---|
| **TeleVideo SVP350** | **0.28AG** | **1600x1200** | **30-107** | **1889** |
| NEC P1150 | 0.28AG | 1600x1200 | 31-94 | 2079 |
| Sony CPD300SF | 0.30AG | 1600x1200 | 30-85 | 1999 |
| ViewSonic PT810 | 0.30AG | 1600x1200 | 30-96 | 1899 |

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PC WORLD

# TOP 20 NOTEBOOK PCs

| | POWER NOTEBOOKS | Last month | Month tested | Street price (6/11/97) | CPU | Comments |
|---|---|---|---|---|---|---|
| 1 | WinBook FX<br>800/965-9349 www.winbookcorp.com | – | NEW | $3999 | Pentium MMX-166 | Hot multimedia performer under $4000; large hard disk, comfy keyboard. |
| 2 | Micron Transport XKE P166 A<br>800/393-8935 www.micronpc.com | – | NEW | $5150 | Pentium MMX-166 | Superfast, fully loaded, priced to match; 6-hour battery, fastest CD-ROM drive. |
| 3 | CTX EzBook 764MT<br>800/765-1767 www.ctxintl.com | – | NEW | $3249 | Pentium MMX-166 | Least expensive PMMX-166 on the chart is a terrific performance value. |
| 4 | Dell Latitude LM M166ST<br>800/388-8542 www.dell.com | 1 | June 97 | $3899 | Pentium MMX-166 | Last month's number one has long battery life, large hard drive, lots of RAM. |
| 5 | Transmonde Vibrant 166Tmx<br>888/988-2882 www.transmonde.com | – | NEW | $3699 | Pentium MMX-166 | Sturdy, very fast, comes with 48MB of RAM; heavy, limited support policies. |
| 6 | ArmNote TS97MX<br>408/935-9800 www.armcomputer.com | – | NEW | $2999 | Pentium MMX-200 | Cheap, really flies, video-savvy, light; desktop CPU may invite heat damage. |
| 7 | WinBook LM<br>800/965-9349 www.winbookcorp.com | 2 | May 97 | $3199 | Pentium-133 | Fast for a P-133, very long battery life; small hard disk, so-so keyboard. |
| 8 | Gateway Solo 9100-XL<br>800/846-2000 www.gw2K.com | – | NEW | $5999 | Pentium MMX-166 | Tied for fastest notebook; 64MB of RAM, 3GB hard disk; service is flagging. |
| 9 | Gateway Solo 2100 S5-150<br>800/846-2000 www.gw2K.com | 6 | Apr 97 | $3749 | Pentium MMX-150 | Fast and loaded, but weighs almost 9 pounds. |
| 10 | Gateway Solo 2200 S5-166<br>800/846-2000 www.gw2K.com | 7 | May 97 | $4439 | Pentium MMX-166 | Speedy desktop replacement; flagging reliability and service ratings. |
| | **BUDGET NOTEBOOKS** | | | | | |
| 1 | Compaq Armada 1520DM<br>800/345-1518 www.compaq.com | 1 | Aug 97 | $2199 | Pentium-133 | Trim; fair-size dual-scan screen; great first notebook for the budget-conscious. |
| 2 | Toshiba Satellite Pro 430CDS<br>800/457-7777 www.computers.toshiba.com | 3 | July 97 | $1699 | Pentium-120 | Hefty; excellent keyboard and CD-ROM drive; parts warranty now three years. |
| 3 | WinBook XP5 Pro P150<br>800/965-9349 www.winbookcorp.com | 5 | June 97 | $2599 | Pentium-150 | Swift notebook includes vivid display, modem, CD-ROM drive. |
| 4 | AMS TravelPro 105CS<br>800/886-2671 www.amstech.com | – | NEW | $1995 | Pentium-150 | Speediest notebook under $2000; quick CD-ROM drive; display lacks clarity. |
| 5 | Toshiba Satellite 200CDS<br>800/457-7777 www.computers.toshiba.com | 6 | July 97 | $1299 | Pentium-100 | Entry-level corporate notebook, three-year warranty, lowest price on chart. |
| 6 | CTX EzBook 750MS<br>800/888-9052 www.ctxintl.com | 4 | Aug 97 | $2199 | Pentium MMX-150 | Fastest budget notebook is well designed; big screen; short on support. |
| 7 | Fujitsu LifeBook 420D<br>888/466-8434 www.fujitsu-pc.com | – | NEW | $1798 | Pentium-120 | Long-lasting battery, beautiful dual-scan display, good ergonomics. |
| 8 | Mega Image MegaBook 911<br>800/250-1876 www.megai.com | 7 | Mar 97 | $2199 | Pentium-133 | Very fast multimedia notebook for the money, but support policies are weak. |
| 9 | Hitachi E133T<br>800/555-6820 www.hitachipc.com | – | June 97 | $1999 | Pentium-133 | Big $400 price drop, very nice screen and modem; no CD-ROM drive. |
| 10 | Gateway Solo 2100 S5-120<br>800/846-2000 www.gw2K.com | 8 | Jan 97 | $2099 | Pentium-120 | Third-fastest notebook on budget chart; short battery life. |

Best Buy See features chart, page 260; performance chart, page 262.

[1] Includes computer, adapter, power cord, floppy drive, and CD-ROM drive if notebook has one. [2] Insufficient data.

IT'S MMX MAYHEM on the Power Notebooks chart. Sizzling new Pentium MMX-166 systems make up half the chart and lay claim to the three top spots. The $2999 ArmNote TS97MX, meanwhile, uses a desktop-style PMMX-200 to combine heady performance with the lowest price on the power chart. Bargain hunters will have to wait a little longer for MMX: The CTX EzBook 750MS is the only MMX-enhanced notebook on the budget chart. But expect that to change once Intel's Pentium MMX-133 chip for notebooks hits the streets. In the meantime, check out newcomers AMS and Fujitsu.

## SCORECARD

| ★ Overall rating | PC WorldBench score/ rating | Price | Vendor's system reliability | Features and design | Vendor's support quality/policies | Battery life (hours:min)/ rating | Traveling weight [1] | Reader service number |
|---|---|---|---|---|---|---|---|---|
| 87 | 218/outstanding | average | average | outstanding | average/poor | 4:26/good | heavy | 670 |
| 86 | 221/outstanding | very expensive | above average | outstanding | [2]/fair | 6:17/outstanding | heavy | 671 |
| 85 | 217/outstanding | inexpensive | [2] | very good | [2]/poor | 4:40/good | heavy | 672 |
| 85 | 212/outstanding | average | average | very good | average/fair | 5:52/very good | heavy | 673 |
| 84 | 218/outstanding | average | average | outstanding | below average/poor | 4:08/good | heavy | 674 |
| 84 | 220/outstanding | inexpensive | [2] | good | [2]/good | 3:25/good | average | 675 |
| 83 | 182/good | inexpensive | average | good | average/poor | 5:46/very good | average | 676 |
| 83 | 221/outstanding | very expensive | average | outstanding | below average/fair | 5:30/very good | very heavy | 677 |
| 82 | 199/very good | average | average | outstanding | below average/fair | 3:12/good | average | 678 |
| 82 | 218/outstanding | expensive | average | very good | below average/fair | 3:46/good | average | 679 |
| Power scorecard weightings ▶ | Performance 22 percent | Price 14 percent | Reliability 22 percent | Features 16 percent | Support 10 percent | Battery life 8 percent | Weight 8 percent | |
| 80 | 151/good | average | average | good | above average/fair | 3:39/good | average | 680 |
| 79 | 141/good | inexpensive | average | satisfactory | below average/good | 4:10/good | average | 681 |
| 79 | 183/very good | expensive | average | very good | average/poor | 3:24/good | average | 682 |
| 79 | 168/very good | average | [2] | good | [2]/fair | 3:44/good | heavy | 683 |
| 79 | 91/poor | very inexpensive | average | satisfactory | below average/good | 3:51/good | heavy | 684 |
| 79 | 198/outstanding | average | [2] | satisfactory | [2]/poor | 4:21/good | average | 685 |
| 78 | 145/good | average | [2] | satisfactory | [2]/fair | 4:50/very good | heavy | 686 |
| 78 | 165/very good | average | [2] | good | [2]/fair | 4:38/good | heavy | 687 |
| 77 | 126/satisfactory | average | [2] | satisfactory | [2]/good | 3:55/good | average | 688 |
| 77 | 171/very good | average | average | satisfactory | below average/fair | 2:15/satisfactory | average | 689 |
| Budget scorecard weightings ▶ | Performance 14 percent | Price 22 percent | Reliability 22 percent | Features 16 percent | Support 10 percent | Battery life 8 percent | Weight 8 percent | All products: 906 |

POWER NOTEBOOKS

# This Month's Best Buys

## 1 WINBOOK FX

**PRO:** Very fast, great display and documentation

**CON:** Pointing device had problems, weighty

You want speed, you crave power, but you can't imagine dropping $5000 for something you stuff into an airplane's overhead bin. Well, check out the new WinBook FX, a fully loaded multimedia notebook that delivers breathtaking performance at a competitive price.

WinBook FX

The brilliant 12.1-inch active-matrix display is well protected by a sturdy screen casing. The keyboard provides comfortable tactile feedback.

We encountered problems with the eraserhead pointing device: Its tip came off when we tried to move the cursor around the screen, and it pushed down the keys next to it when pressed hard to one side. The flaw may be an aberration with our test unit, but ▶

## TOP 20 NOTEBOOK PCs

### STANDARD FEATURES

| | POWER NOTEBOOKS | CPU | Traveling weight (pounds)[1] | RAM (MB) | Hard drive (MB) | Color screen type | Screen diagonal (inches) | Screen resolution | Maximum screen colors | Battery type | Pointing device |
|---|---|---|---|---|---|---|---|---|---|---|---|
| 1 | WinBook FX* | Pentium MMX-166 | 9 | 48 | 3000 | active | 12.1 | 800 x 600 | 16.8 million | lithium ion | eraserhead |
| 2 | Micron Transport XKE P166 A* | Pentium MMX-166 | 10 | 32 | 3080 | active | 13.3 | 1024 x 768 | 65,536 | lithium ion | touchpad, eraserhead |
| 3 | CTX EzBook 764MT | Pentium MMX-166 | 9.4 | 40 | 1358 | active | 12.1 | 800 x 600 | 16.8 million | NiMH | touchpad |
| 4 | Dell Latitude LM M166ST | Pentium MMX-166 | 9.2 | 40 | 2160 | active | 12.1 | 800 x 600 | 65,536 | lithium ion | touchpad |
| 5 | Transmonde Vibrant 166Tmx | Pentium MMX-166 | 10.4 | 48 | 3080 | active | 12.1 | 800 x 600 | 65,536 | NiMH | touchpad |
| 6 | ArmNote TS97MX | Pentium MMX-200 | 8.4 | 32 | 2101 | active | 12.1 | 800 x 600 | 65,536 | lithium ion | touchpad |
| 7 | WinBook LM | Pentium-133 | 8.6 | 16 | 1083 | active | 12.1 | 800 x 600 | 65,536 | lithium ion | touchpad |
| 8 | Gateway Solo 9100-XL | Pentium MMX-166 | 11 | 64 | 3000 | active | 13.3 | 1024 x 768 | 16.8 million | lithium ion | touchpad |
| 9 | Gateway Solo 2100 S5-150 | Pentium MMX-150 | 8.8 | 40 | 1300 | active | 12.1 | 800 x 600 | 65,536 | lithium ion | touchpad |
| 10 | Gateway Solo 2200 S5-166 | Pentium MMX-166 | 8.2 | 40 | 2160 | active | 12.1 | 800 x 600 | 65,536 | lithium ion | touchpad |
| | **BUDGET NOTEBOOKS** | | | | | | | | | | |
| 1 | Compaq Armada 1520DM* | Pentium-133 | 7.8 | 16 | 1083 | dual-scan | 11.3 | 800 x 600 | 65,536 | lithium ion | touchpad |
| 2 | Toshiba Satellite Pro 430CDS* | Pentium-120 | 8.8 | 16 | 1358 | dual-scan | 11.3 | 800 x 600 | 65,536 | lithium ion | eraserhead |
| 3 | WinBook XP5 Pro P150 | Pentium-150 | 8.4 | 16 | 1083 | active | 11.3 | 800 x 600 | 256 | lithium ion | eraserhead |
| 4 | AMS TravelPro 105CS | Pentium-150 | 9.2 | 16 | 1300 | dual-scan | 12.1 | 800 x 600 | 256 | NiMH | touchpad |
| 5 | Toshiba Satellite 200CDS | Pentium-100 | 9.2 | 8 | 810 | dual-scan | 11.3 | 800 x 600 | 65,536 | NiMH | eraserhead |
| 6 | CTX EzBook 750MS | Pentium MMX-150 | 8.6 | 16 | 1080 | dual-scan | 12.1 | 800 x 600 | 65,536 | NiMH | touchpad |
| 7 | Fujitsu LifeBook 420D | Pentium-120 | 9.2 | 16 | 1000 | dual-scan | 11.3 | 800 x 600 | 256 | NiMH | touchpad |
| 8 | Mega Image MegaBook 911 | Pentium-133 | 9.2 | 16 | 1374 | active | 12.1 | 800 x 600 | 65,536 | NiMH | touchpad |
| 9 | Hitachi E133T | Pentium-133 | 7.6 | 16 | 1083 | active | 11.3 | 800 x 600 | 256 | NiMH | touchpad |
| 10 | Gateway Solo 2100 S5-120 | Pentium-120 | 8.2 | 16 | 1080 | dual-scan | 11.3 | 800 x 600 | 65,536 | NiMH | touchpad |

*Best Buy ● Yes ○ No [1] Includes computer, adapter, power cord, floppy drive, and CD-ROM drive if notebook has one.

we advise potential buyers to try out the pointer before purchase if possible.

Otherwise, the WinBook FX rushed through our PC WorldBench suite with a score of 218. The FX comes equipped with an ample 48MB of EDO DRAM and a large 3GB hard disk, and you also get a fast 10X CD-ROM drive and an internal 33.6-kbps modem.

The 9-pound FX is no lightweight, but the lithium ion battery ran nearly 4.5 hours, despite the bright active-matrix display.

WinBook provides well-illustrated manuals, but the company skimps on support. The one-year warranty it offers is too short, and there is no guaranteed turnaround time for repair from the factory.

## 2 MICRON TRANSPORT XKE P166 A

**PRO:** One of two fastest notebooks we've tested, 12X/20X CD-ROM drive, great 13.3-inch display

**CON:** Heavy, expensive

Three words describe the new Micron Transport XKE P166 A: speed, speed, and speed. With a PC WorldBench score of 221, this loaded system shares the title of fastest notebook with the number eight Gateway Solo 9100-XL. No surprise that Intel's Pentium MMX-166 processor is behind both systems' fast performance.

Micron Transport

The Transport XKE P166 boasts a brilliant 13.3-inch active-matrix display with a viewable area approaching that of a 15-inch CRT. The 1024-by-768 maximum resolution looks great, but the screen helps push the Transport's price to $5150—putting it among the most expensive on the chart.

The Micron Transport's sleek black chassis contains a generous 3GB hard disk and a 12X/20X variable-speed CD-ROM drive—faster than you'll find even in most desktop PCs. You get your choice of pointing devices, too: The Transport comes with both an eraserhead mounted in the keyboard and

| | | EXPANDABILITY | | | | | CUSTOMER SUPPORT | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| CD-ROM drive speed | Modem speed (kbps) | Maximum RAM (MB) | Modular expansion bays | Bay for second battery | Optional docking station | Infrared port | Warranty for parts/labor (years) | Weekday toll-free support (hours) | Weekend support | Online support |
| 10X | 33.6 | 80 | 1 | ● | ● | ● | 1/1 | 13 | Sat. | BBS, WWW |
| 20X | 33.6 | 128 | 2 | ● | ○ | ● | 3/1 | 24 | Sat., Sun. | CIS, WWW |
| 6X | 33.6 | 72 | 2 | ● | ● | ● | 1/1 | 10 | – | WWW |
| 10X | – | 72 | 1 | ● | ○ | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |
| 8X | 33.6 | 64 | 0 | ○ | ● | ● | 1/1 | 11 | – | WWW |
| 8X | 33.6 | 80 | 0 | ○ | ● | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, WWW |
| 6X | 28.8 | 40 | 1 | ● | ● | ● | 1/1 | 13 | Sat. | BBS, WWW |
| 10X | 33.6 | 192 | 2 | ○ | ● | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |
| 10X | 33.6 | 40 | 1 | ● | ● | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |
| 10X | 33.6 | 80 | 0 | ○ | ○ | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |
| 10X | 33.6 | 64 | 1 | ● | ○ | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |
| 10X | – | 48 | 1 | ○ | ● | ● | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 8X | 28.8 | 40 | 1 | ● | ● | ● | 1/1 | 13 | Sat. | BBS, WWW |
| 10X | 33.6 | 80 | 1 | ● | ● | ● | 3/3 | 12 | – | BBS, CIS, WWW |
| 6X | – | 40 | 1 | ○ | ● | ● | 3/1 | 24 | Sat., Sun. | BBS, CIS, WWW |
| 6X | – | 72 | 2 | ● | ● | ● | 1/1 | 10 | – | WWW |
| 10X | – | 72 | 1 | ○ | ● | ● | 1/1 | 24 | Sat., Sun. | WWW |
| 6X | – | 72 | 0 | ○ | ● | ● | 1/1 | 24 | Sat. | BBS, WWW |
| – | 28.8 | 40 | 1 | ● | ● | ● | 1/1 | 24 | Sat., Sun. | BBS, WWW |
| 10X | – | 40 | 1 | ● | ● | ● | 1/1 | 24 | Sat., Sun. | AOL, BBS, CIS, WWW |

a flat touchpad that's set in the wrist rest.

Be prepared for a stiff workout—the Transport weighs a formidable 10 pounds. Its battery life, however, is outstanding: In our tests, the Transport lasted over 6 hours—impressive given the screen's size and the speed of the CPU.

Unlike most companies, Micron does not offer a guaranteed turnaround time on repairs. Fortunately, *PC World* readers responding to our fax-back survey report that Micron's notebooks are highly reliable. Probably more important, the company provides plenty of help for run-of-the-mill problems. Its technical support phone lines, which readers also praise, are open around the clock.

## New This Month

The following PCs made our Power Notebooks chart for the first time this month. For original reviews of previously tested PCs on the chart, visit our Web page (www.pcworld.com/t20pcs).

### 3 CTX EZBOOK 764MT

**PRO:** Fast, inexpensive; nice display

**CON:** Heavy; slow CD-ROM drive; short warranty

Fast, sturdy, and good to look at, the $3249 EzBook 764MT from CTX is the least expensive Pentium MMX-166 on the chart. Its PC WorldBench score of 217 is just four points off the record set this month.

The 6X CD-ROM drive is among the slowest on the power chart. On the positive side, CTX offers a crisp 12.1-inch display and provides a generous 40MB of EDO DRAM. However, the full-size headphones on the EzBook seem clumsy compared with inconspicuous Walkman-style devices.

CTX EzBook 764MT

The 764MT can take two nickel–metal-hydride batteries at once, but you must remove both the internal floppy and CD-ROM drives to do that—there is no dedicated battery bay. The 764MT lasted almost 4.75 hours on one battery in our rundown tests.

The keyboard is comfortable, and ▶

the touchpad is adjusted nicely. The whole package weighs a hefty 9.4 pounds.

The EzBook manual is thorough and well written, but CTX's service and support are a question. Toll-free tech support is limited to 10 hours on weekdays. We lack data to rate CTX's service or system reliability. However, our phone calls to technical support indicate fairly accurate and timely problem resolution.

## 5 TRANSMONDE VIBRANT 166TMX

**PRO:** Fast machine, guaranteed one-day factory repair turnaround

**CON:** Heavy, no weekend technical support

When it rains it pours. Like the four other new Pentium MMX-166–based systems to make this month's Power Notebooks chart, the Transmonde Vibrant 166Tmx delivers outstanding performance. The $3699 Vibrant rang up a PC WorldBench score of 218 on its way to a number five finish on our Power Notebooks Top 10. Transmonde's below-average support policies hold it back.

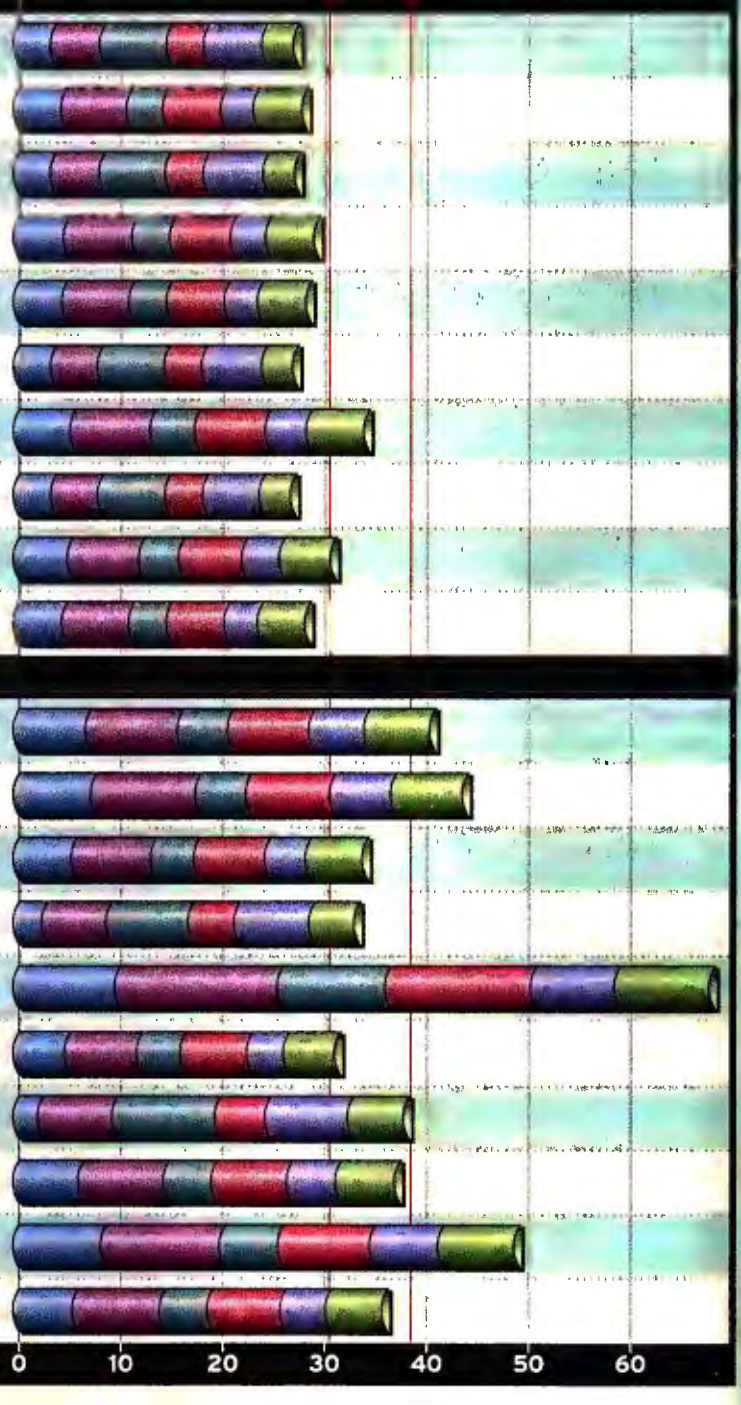
Transmonde Vibrant

The Vibrant doesn't lack for multimedia power, with its PMMX-166 processor, ▶

## TOP 20 NOTEBOOK PCs

PERFORMANCE

| | POWER NOTEBOOKS | CPU | RAM (MB) | Secondary cache (K) | PC WorldBench score |
|---|---|---|---|---|---|
| 1 | WinBook FX* | Pentium MMX-166 | 48 | 256 | 218 |
| 2 | Micron Transport XKE P166 A* | Pentium MMX-166 | 32 | 512 | 221 |
| 3 | CTX EzBook 764MT | Pentium MMX-166 | 40 | 256 | 217 |
| 4 | Dell Latitude LM M166ST | Pentium MMX-166 | 40 | 256 | 212 |
| 5 | Transmonde Vibrant 166Tmx | Pentium MMX-166 | 48 | 256 | 218 |
| 6 | ArmNote TS97MX | Pentium MMX-200 | 32 | 256 | 220 |
| 7 | WinBook LM | Pentium-133 | 16 | 256 | 182 |
| 8 | Gateway Solo 9100-XL | Pentium MMX-166 | 64 | 256 | 221 |
| 9 | Gateway Solo 2100 S5-150 | Pentium MMX-150 | 40 | 256 | 199 |
| 10 | Gateway Solo 2200 S5-166 | Pentium MMX-166 | 40 | 256 | 218 |
| | **BUDGET NOTEBOOKS** | | | | |
| 1 | Compaq Armada 1520DM* | Pentium-133 | 16 | 256 | 151 |
| 2 | Toshiba Satellite Pro 430CDS* | Pentium-120 | 16 | – | 141 |
| 3 | WinBook XP5 Pro P150 | Pentium-150 | 16 | 256 | 183 |
| 4 | AMS TravelPro 105CS | Pentium-150 | 16 | 256 | 168 |
| 5 | Toshiba Satellite 200CDS | Pentium-100 | 8 | – | 91 |
| 6 | CTX EzBook 750MS | Pentium MMX-150 | 16 | 256 | 198 |
| 7 | Fujitsu LifeBook 420D | Pentium-120 | 16 | – | 145 |
| 8 | Mega Image MegaBook 911 | Pentium-133 | 16 | 256 | 165 |
| 9 | Hitachi E133T | Pentium-133 | 16 | – | 126 |
| 10 | Gateway Solo 2100 S5-120 | Pentium-120 | 16 | 256 | 171 |




*Best Buy

Word 7.0 for Windows 95 · Excel 7.0 for Windows 95 · Picture Publisher 6.0 for Windows 95 · Paradox 5.0 for Windows · WordPerfect 6.1 for Windows · 1-2-3 release 5 for Windows

**HOW WE TEST** All systems are tested with PC WorldBench, PC World's application-based benchmark. A higher PC World8ench score is better. All PCs have Windows 95, and video resolution is set to 800 by 600 in 256 colors. We run automated scripts on six popular business applications, performing common tasks such as spelling checks, scrolls, saves, sorts, and recalculations. The PC WorldBench score is a sum of the weighted result of each script: Word (25 percent), Excel (20 percent), Picture Publisher (15 percent), Paradox (15 percent), WordPerfect (15 percent), and 1-2-3 (10 percent). For more details on our benchmark and how we run it, see PC World Online (www.pcworld.com/testing).

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generous 48MB of EDO DRAM, and hardware MPEG video playback capability. A bright, 12.1-inch active-matrix screen—standard issue for power notebooks these days—and 2MB of fast video RAM provide good graphics.

We liked the sturdiness of the Vibrant's case, and in particular the backbonelike strength of the display casing. Your own back may pay if you travel much, however: With the CD-ROM drive, floppy drive, and AC adapter, the well-built Vibrant weighs a leaden 10.4 pounds, which is heavy enough to strain even the strongest shoulders.

The nickel–metal-hydride battery fared respectably in our tests, lasting over 4 hours—slightly above average for its type, and commendable considering the size and brightness of the screen.

Transmonde deserves kudos for guaranteeing a one-day factory turnaround on serviced notebooks. But the rest of its support policies are barely adequate: Parts and labor are covered for only one year, and the technical support lines close down on the weekend.

## 6 ARMNOTE TS97MX

**PRO:** Blazing performance, good price, multimedia ready

**CON:** Desktop-style CPU may cause damage to the system; short warranty

What price speed? ArmNote's TS97MX may force you to ask that question. While this multimedia notebook tore up the charts with a PC WorldBench score of 220, its Pentium MMX-200 CPU—designed for desktops—lacks the power-saving features, thermal handling, and slim-and-trim packaging found in Intel's mobile processors. The notebook may therefore suffer chronic overheating, resulting in damage or shortened operating life.

ArmNote TS97MX

You get a lot of performance for $2999—the two PMMX-166 notebooks that outpaced the ArmNote both cost over $5000. The lithium ion battery ran for almost 3.5 hours, and we saw no evidence of overheating in our tests.

The ArmNote features wavetable MIDI sound, plus a Zoom Video slot to capture video. However, the 12.1-inch display showed a difference in brightness between the bottom and the top of the screen.

The ArmNote includes bays for both floppy and CD-ROM drives, and still weighs just 8.4 pounds. Our test unit's touchpad provided fairly accurate pointing, but the keyboard's short-travel, low-profile keys and lack of forward tilt make this machine uncomfortable to type on.

A one-year warranty is too short for any PC, especially when the system in question may be prone to heat stroke. Consider the $260 warranty extension for three years of coverage. Toll-free technical support is available 24 hours a day, 7 days a week.

## 8 GATEWAY SOLO 9100-XL

**PRO:** Blazing performance, great display

**CON:** Expensive, very heavy; poor service score

Gateway's Solo line of notebooks has earned a reputation at *PC World* for being among the fastest you can buy. The new Solo 9100-XL, based on the Pentium MMX-166 processor, doesn't disappoint in that regard. This muscle-bound notebook tied with the number two Micron Transport XKE P166 A as the fastest portable we've tested, achieving the same PC WorldBench score of 221. But at $5999, it costs about $850 more than the Transport, which explains why the Solo hangs near the bottom of the chart while the Transport earns a Best Buy.

The Solo comes with a heady list of deluxe features, including an amazing 64MB of fast SDRAM and a spacious 3GB hard disk. Better yet, the gorgeous 13.3-inch active-matrix display provides some of sharpest, richest images we've seen. And its lithium ion battery lasted an excellent 5.5 hours in our tests. But at 11 pounds, the Solo weighs in as the heaviest notebook on the power chart.

It's no surprise that multimedia is part of the Solo package, with a 10X CD-ROM drive and built-in 16-bit audio and wavetable MIDI capability. The stereo speakers, however, sounded high-pitched. The software bundle includes LapLink for Windows 95, McAfee VirusScan 95, and Microsoft Encarta 97. Game players are certain to like the Solo's game port, which lets you hook up a joystick (which you'll have to supply yourself).

Gateway Solo 9100-XL

The Solo is sturdy and comfortable, with a keyboard that provides satisfying travel when its keys are pressed. The touchpad and mouse are responsive, too.

Users will appreciate the thorough documentation, complete with color illustrations. However, a one-year warranty is simply too short for a $6000 investment, particularly when *PC World* readers rate Gateway's system reliability as only average. The company's support record is even more of a concern: Readers rate Gateway's service as below average.

BUDGET NOTEBOOKS

# This Month's Best Buys

## 1 COMPAQ ARMADA 1520DM

**PRO:** Great all-in-one design requires no external power adapter

**CON:** Middling performance for a Pentium-133

With its Pentium-133 CPU and 11.3-inch dual-scan display, the $2199 Compaq Armada 1520DM is competitively priced. Compaq even includes a 10X CD-ROM drive, a 33.6-kbps modem, and great 16-bit stereo sound. Its PC WorldBench score of 151 makes it acceptable for most tasks.

The integrated, all-in-one design impressed us, with the CD-ROM drive, floppy drive, and power supply built into the main unit. All you have to remember is the power cord if you plan to work longer than 3.5 hours, which is about how long the battery lasted in our tests. The 1520DM weighs only 7.8 pounds.

Compaq Armada 1520DM

We found the keyboard and touchpad easy to ▶

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work with. The keyboard has a lively feel, and the touchpad is appropriately sensitive. The dual-scan display is typical—you get color, but next to an active-matrix screen it looks lifeless.

The Armada's warranty is for only one year, but Compaq guarantees a two-day turnaround on factory repairs and also provides round-the-clock toll-free support. Our readers rate the company above average in service and average in system reliability; however, recent reports indicate some reliability problems with Armada notebooks and components.

Toshiba Satellite Pro

## 2 TOSHIBA SATELLITE PRO 430CDS

**PRO:** Low price, very comfortable keyboard, good battery life

**CON:** Pale screen, bulky chassis; lacks software

Toshiba's Satellite Pro 430CDS joins the Best Buy ranks with a little help from Compaq, which discontinued last month's number one Armada 1130T. While the Satellite's PC WorldBench score of 141 doesn't excel among the budget competition, the 430CDS gets the job done. A low $1699 street price and strong 4-hour-plus battery life make it a compelling budget buy.

The 430CDS has a few drawbacks. The pointer on the 11.3-inch dual-scan display disappears briefly when moved quickly across the screen, and colors look pale compared with active-matrix displays. The screen can also make it difficult to work in varying light conditions, such as in a window seat on a flight. At just over 8.8 pounds, the Satellite is a little bulkier than most notebooks, and it measures almost a foot wide and well over 2 inches thick.

The system comes with a fast 10X CD-ROM drive, but you have to either run it as an external unit or swap out the floppy drive. (Swapping drives went very smoothly in our tests.) The system has only one speaker but comes with Koss earphones that produce rich sound. Other niceties include MPEG I support, which lets you watch smooth video on the screen, and a Zoom Video slot, which accepts a PC Card adapter that can capture full-motion video. However, the 1.4GB hard disk is small.

The Satellite doesn't come with much software: You get several utilities, including TransXit's file synchronization package, but no games or productivity programs. We were more pleased with the unit's battery life—this notebook chugged along for more than 4 hours in our rundown test.

We were also impressed with the documentation. The printed user guide is comprehensive and clearly written, with many diagrams, and the on-screen manual has lots of easily searchable information.

Technical support is available 24 hours a day, including weekends, and Toshiba backs its Satellite Pro systems with a long three-year warranty on parts (one year on labor). Readers responding to our ongoing fax-back survey say that Toshiba's notebooks continue to be reliable, but that its support is still a little deficient.

# New This Month

The following PCs made our Budget Notebooks chart for the first time this month. For original reviews of previously tested PCs on the chart, visit our Web page (www.pcworld.com/t20pcs).

## 4 AMS TRAVELPRO 105CS

**PRO:** Fast, comes with 33.6-kbps modem

**CON:** Hazy screen, lacks software

The Pentium-150–based AMS TravelPro 105CS ran up an attention-getting PC WorldBench score of 168, yet it costs a reasonable $1995.

AMS TravelPro 105CS

Its large 12.1-inch dual-scan display and 2MB graphics subsystem are marred by a slight haze that impairs readability. Likewise, the stereo speakers lack clarity.

AMS packs a 10X removable CD-ROM drive and an internal 33.6-kbps modem into the TravelPro. In our rundown tests, the system's nickel–metal-hydride battery lasted 3.75 hours.

We noticed a bit too much flex in the screen casing, and the keyboard was somewhat awkward to use. Fan noise may be a distraction, too. And at 9.2 pounds fully loaded, the 105CS is no lightweight.

Although AMS's user manual is basic, support policies include a strong three-year warranty on parts and labor and 12 hours of technical phone support on weekdays. We lack data to rate AMS's service and system reliability, but our calls to tech support went smoothly.

## 7 FUJITSU LIFEBOOK 420D

**PRO:** Good price, long battery life

**CON:** Flimsy construction, heavy

With its $1798 price and its sleek black matte casing, the Fujitsu LifeBook 420D cuts quite a profile. More impressive, it ran for nearly 5 hours in our battery life test, and its 11.3-inch dual-scan display is among the brightest we've seen.

Fujitsu LifeBook 420D

The 420D scored a respectable 145 on PC WorldBench and includes some nice features, but it has a few weaknesses. The case allows too much flex, and the flimsy port covers seem destined to snap off. The 420D (fully loaded with both floppy and 10X CD-ROM drives) weighs a hefty 9.2 pounds.

Nevertheless, the LifeBook is a pleasure to use. Both the keyboard and touchpad pointing device are quite comfortable. The touchpad impressed us with its precision, exhibiting none of the "phantom clicks" common with many units.

We liked the LifeBook's polished, well-illustrated documentation. However, the four-day turnaround time on repairs can seem an eternity during breakdowns. ■

## Beyond the Top 20

We evaluated these systems along with the others, but they didn't score high enough to reach the Top 20 Notebook PCs chart. For write-ups, see PC World Online (www.pcworld.com/t20pcsnaps).

- **5D Technology 5D 6800A**
- **AcerNote Light 383**
- **Broadax 6200AT**
- **Digital HiNote VP 560**
- **Sharp PC-9300T**

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# Win a Polywell Poly 500 QX

Have you ever contacted your PC maker for service and support? Or has your PC been trouble-free? Tell us about it! Fill out and fax in the questionnaire below—even if you have no problems to report, and even if you have responded to this survey before—and we'll enter you in a drawing to win a Polywell Poly 500 QX, an AMD K5-PR166 PC in this month's Top 20. Send in a separate copy of the survey for each of your PCs.

**HOW TO ENTER:** FOR BEST RESULTS, PHOTOCOPY THIS PAGE. Fax your completed survey to 415/357-4522. Do NOT fax a cover page. Or mail it to *PC World*, Box 9-SS, c/o 800-SCAN, 543 Howard St., San Francisco, CA 94105-3013. Surveys must be received by September 30.
**PRIZE:** One entry per person. IDG employees and their families are not eligible. One prize will be awarded through a random drawing. *PC World* will make reasonable efforts to contact winners by telephone and fax. If *PC World* is unable to do so within 30 days of the drawing, a new winner will be selected. No purchase necessary. Void where prohibited by law.
**HOW TO FILL OUT THE FORM:** Print your name (block capital letters) and your fax number, and fill the circles for each digit of your daytime phone number. Then fill out the questionnaire. AVOID GOING OUTSIDE THE LINES!

LAST, FIRST NAME

FAX NUMBER

ZIP CODE

**Please fill in your daytime phone number below.**

| | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| 1 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 2 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 3 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 4 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 5 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 6 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 7 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 8 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 9 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| 0 | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ | ○ |

**How did you get this copy of *PC World*?**
○ By subscription ○ On the newsstand ○ From someone else

## ABOUT YOUR PC

**Who is the manufacturer of the PC you use most frequently?**

| | | | | |
|---|---|---|---|---|
| ○ Acer | ○ Diamond | ○ Hyundai | ○ Packard Bell | ○ Tangent |
| ○ Acma | ○ Digital (DEC) | ○ IBM | ○ Panasonic | ○ Texas Instruments |
| ○ ALR | ○ DTK | ○ Insight | ○ PerComp | ○ Toshiba |
| ○ Apple | ○ EPS | ○ Intelesys | ○ Pionex | ○ Twinhead |
| ○ AST | ○ Epson | ○ Leading Edge | ○ Polywell | ○ Unisys |
| ○ Austin (IPC) | ○ Everex | ○ Micro Express | ○ Quantex | ○ USA Flex |
| ○ Compaq | ○ Fujitsu | ○ Micron | ○ Robotech | ○ Vektron |
| ○ Compudyne | ○ Future Tech | ○ Midwest Micro | ○ Samsung | ○ Win8ook |
| ○ Comtrade | ○ Gateway 2000 | ○ MIS | ○ Sharp | ○ Xi |
| ○ CTX | ○ Hewlett-Packard | ○ Nat'l Micro | ○ Sony | ○ Zenith (ZDS) |
| ○ CyberMax | ○ HiO | ○ NCR | ○ Swan | ○ Zenon |
| ○ Dell | ○ Hitachi | ○ NEC | ○ Sys Tech. | ○ Other |

**What size is this PC?**
○ Desktop
○ Notebook/laptop

**What is the CPU?**

| | |
|---|---|
| ○ PowerPC | ○ 6x86 |
| ○ Pentium | ○ 6x86MX |
| ○ Pentium Pro | ○ MediaGX |
| ○ Pentium MMX | ○ K5 |
| ○ Pentium II | ○ K6 |
| ○ Other _____ | |

**Where did you buy this PC?**
○ Local dealer
○ Mail/phone order
○ Direct from field sales force
○ Membership discount store
○ Computer superstore
○ Home electronics store
○ Retail store
○ Value-added reseller
○ Other

**After ordering, how long did it take to get your PC?**
○ Less than 1 week
○ 1-2 weeks
○ 3-4 weeks
○ More than 4 weeks

**Who set up your PC?**
○ Dealer/retailer/VAR
○ Staff computer technician
○ Self or coworker

**Where do you use this PC?** ○ At home/home office ○ At work ○ Both

## WHEN YOU FIRST GOT YOUR PC

**When did you buy this PC? (Specify month and year.)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ Jan | ○ Mar | ○ May | ○ July | ○ Sept | ○ Nov | ○ 92 | ○ 94 | ○ 96 |
| ○ Feb | ○ Apr | ○ June | ○ Aug | ○ Oct | ○ Dec | ○ 93 | ○ 95 | ○ 97 |

**When you first set up your PC, were any components "dead on arrival" (DOA)?**
○ Yes ○ No ○ Don't know

**If so, which component was it? (Mark all that apply.)**

| | | | |
|---|---|---|---|
| ○ Battery | ○ Graphics/video board | ○ Modem/fax board | ○ Power supply |
| ○ CD-ROM | ○ Hard drive | ○ Monitor/screen | ○ Sound board |
| ○ CPU | ○ Keyboard | ○ Motherboard | ○ Other |
| ○ Floppy drive | ○ Memory | ○ Mouse | |

**Did your problem occur only after you added your own hardware or software?**
○ Yes ○ No ○ Don't know

**Would you buy this brand of PC again?**
○ Yes ○ No ○ Not sure

**How many times have you had a problem with this PC?**
○ No problem ever ○ One ○ Two ○ Three ○ Four ○ More than four

**If you have had a problem that you have not reported in a previous survey, please fill out the right column. If you are reporting a DOA for the first time, skip to the service section.**

## NEW PROBLEM REPORT

**Answer for the most recent problem—*other than DOA*—not reported in a prior survey.**

**When did this problem occur? (Specify month and year.)**

| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| ○ Jan | ○ Mar | ○ May | ○ July | ○ Sept | ○ Nov | ○ 92 | ○ 94 | ○ 96 |
| ○ Feb | ○ Apr | ○ June | ○ Aug | ○ Oct | ○ Dec | ○ 93 | ○ 95 | ○ 97 |

**How long after you purchased your PC did the problem occur?**
○ Less than 1 month ○ 1-3 months ○ 4-6 months ○ 7-12 months ○ More than 12 months ○ Not sure

**Did the problem occur as a result of adding new hardware or software?**
○ Yes ○ No ○ Don't know

**Did the problem occur under warranty?**
○ Yes ○ No ○ Don't know

**What was the problem finally identified as? (Mark all that apply.)**

| | | | |
|---|---|---|---|
| ○ Faulty component | ○ Wrong configuration | ○ Device conflicts | ○ Other |
| ○ Incorrectly installed software | ○ Faulty peripheral | ○ OS problem | ○ Don't know |

**If a component failed, which one was it? (Mark all that apply.)**

| | | | |
|---|---|---|---|
| ○ Battery | ○ Graphics/video board | ○ Modem/fax board | ○ Power supply |
| ○ CD-ROM | ○ Hard drive | ○ Monitor/screen | ○ Sound board |
| ○ CPU | ○ Keyboard | ○ Motherboard | ○ Other |
| ○ Floppy drive | ○ Memory | ○ Mouse | |

## SERVICE

**Please use this section to describe the service and support you received for the problem reported above or the DOA reported at left.**

**Who fixed your PC?**
○ Manufacturer
○ Dealer/store where purchased
○ Manufacturer's authorized repair technician
○ Self ○ Other

**What types of service and support did you receive? (Mark all that apply.)**
○ Phone ○ On site ○ In store ○ System swap ○ Component swap ○ Factory return

**If you received phone service, how long were you on hold?**
○ Not at all ○ Less than 1 minute ○ 1-2 minutes ○ 3-5 minutes ○ 6-10 minutes ○ 11-20 minutes ○ More than 20 minutes

**How long did it take before you talked to the person who finally helped you?**
○ Less than 15 minutes ○ 15 minutes-1 hour ○ 2-5 hours ○ 6-10 hours ○ 11-24 hours ○ 1½-2 days ○ 3-5 days ○ 1 week or more

**How long did it take to resolve the problem completely?**
○ 1-2 days ○ 3-7 days ○ 8-14 days ○ 15-30 days ○ More than 1 month ○ Never resolved ○ Awaiting resolution

**Was it resolved to your satisfaction?**
○ Yes ○ No

**How would you rate the person(s) who helped you?**

| | Poor | | Good | | Excellent |
|---|---|---|---|---|---|
| Courtesy | ○ | ○ | ○ | ○ | ○ |
| Knowledge | ○ | ○ | ○ | ○ | ○ |
| Follow-through | ○ | ○ | ○ | ○ | ○ |

**Based on the service and support you received, would you buy this brand of PC again?**
○ Yes ○ No

**On the whole, how satisfied are you with the service and support you received?**
○ Not at all ○ ○ ○ Satisfied ○ ○ Extremely satisfied

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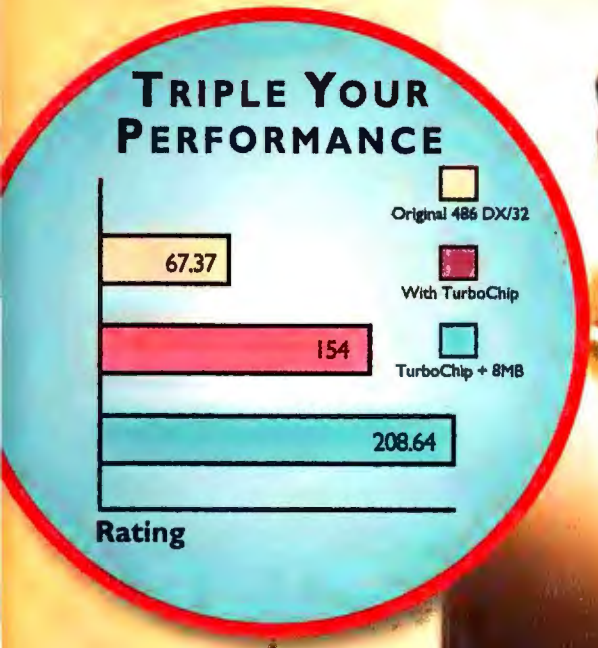


*For a baseline score, we used an NEC® Image 433ES equipped with an Intel® 486DX/33MHz with 8MB of RAM. The baseline machine was upgraded with Kingston's TurboChip 133 and later 8MB of RAM (totaling 16MB)*

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**Circle 128 on reader service card**

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PC WORLD

# TOP 10 PRINTERS

| | MONOCHROME WORKGROUP PRINTERS | Month tested | Street price (5/29/97) | Overall rating | Speed for plain text (ppm) | Speed for full-page graphics (ppm) | Comments | Reader service number |
|---|---|---|---|---|---|---|---|---|
| 1 | Lexmark Optra S 1650<br>800/539-6275<br>www.lexmark.com | July 97 | $1275 | 94 | 11.6 | 2.4 | **FEATURES:** 16-ppm laser. Standard 4MB of RAM; 600-by-600-dpi resolution (also true 1200-by-1200 dpi); 250 sheets input and output. **PRO/CON:** Extremely fast, easy to use, very good print quality; documentation sometimes confuses differences between Optra models. | 690 |
| 2 | HP LaserJet 5M<br>800/752-0900<br>www.hp.com | July 97 | $1539 | 92 | 9.6 | 1.9 | **FEATURES:** 12-ppm laser. Standard 6MB of RAM; 600-by-600-dpi resolution; 250 sheets input and output. **PRO/CON:** Price dropped $260, very good print quality and design; still expensive, but includes ethernet and LocalTalk, which few workgroup printers have. | 691 |
| 3 | IBM Network Printer 12<br>800/358-6661<br>www.ibm.com | Mar 97 | $999 | 91 | 8.9 | 2.4 | **FEATURES:** 12-ppm laser. Standard 4MB of RAM; 600-by-600-dpi resolution; 250 sheets input, 270 output. **PRO/CON:** Price dropped $251, very good print quality, easy-to-use control panel, 24-hour, seven-day technical support; numerous manuals can be confusing, slowest text printer on monochrome chart. | – |
| 4 | Lexmark Optra S 1250<br>800/539-6275<br>www.lexmark.com | July 97 | $1125 | 91 | 9.6 | 2.1 | **FEATURES:** 12-ppm laser. Standard 4MB of RAM; 600-by-600-dpi resolution (also true 1200-by-1200 dpi); 250 sheets input and output. **PRO/CON:** Fast, easy to use, very good print quality; fewer options than the Optra S 1650, and manual sometimes confuses differences between models. | 692 |
| 5 | Okidata OkiPage 16n<br>800/654-3282<br>www.okidata.com | July 97 | $999 | 88 | 12.4 | 1.9 | **FEATURES:** 16-ppm LED. Standard 2MB of RAM; 600-by-600-dpi resolution; 500 sheets input, 250 output. **PRO/CON:** Low price, fastest text speed overall; tricky installation and control panel, multilingual manual difficult to use, not good for graphics—gray-scale images are overly dark. | 693 |
| | **COLOR WORKGROUP PRINTERS** | | | | | | | |
| 1 | Epson Stylus Color 1520<br>800/463-7766<br>www.epson.com | NEW | $799 | 94 | 3.2 | 0.9 | **FEATURES:** 6-ppm monochrome/5-ppm color ink jet. Standard 64K of RAM; 1440-by-720-dpi resolution. **PRO/CON:** Extremely inexpensive, gorgeous color quality, can handle large paper sizes; very slow text speed, meager paper capacity for a workgroup printer, needs special paper for best print quality. | – |
| 2 | Xerox DocuPrint C55mp Color Laser Printer<br>800/349-3769<br>www.xerox.com | NEW | $4500 | 93 | 8.1 | 0.5 | **FEATURES:** 12-ppm monochrome/3-ppm color laser. Standard 30MB of RAM; 600-by-600-dpi monochrome and color resolutions; **PRO/CON:** Excellent print quality, fastest text speed of any color laser we've tested, includes PostScript and ethernet; power switch is inconveniently located on back of printer. | 694 |
| 3 | Tektronix Phaser 560<br>800/835-6100<br>www.tek.com | NEW | $3995 | 89 | 6.6 | 0.5 | **FEATURES:** 14-ppm monochrome/4-ppm color laser. Standard 8MB of RAM; 600-by-600-dpi monochrome and color resolutions; 250 sheets input, 500 output. **PRO/CON:** Least-expensive color laser on chart, great print quality, prints labels and envelopes in color; replacing fuser and drum is awkward. | 695 |
| 4 | IBM Network Color Printer<br>800/358-6661<br>www.ibm.com | Nov 96 | $4500 | 88 | 5 | 0.7 | **FEATURES:** 12-ppm monochrome/3-ppm color laser. Standard 16MB of RAM; 600-by-600-dpi monochrome and color resolutions. **PRO/CON:** Whopping $3149 price drop puts it on the chart for the first time since its debut last year, nice print quality; heavy (119.6 pounds), loud, tends to leak fuser oil when moved. | 696 |
| 5 | Tektronix Phaser 350<br>800/835-6100<br>www.tek.com | Jan 97 | $2995 | 88 | 3.4 | 0.9 | **FEATURES:** 6-ppm solid ink printer. Standard 8MB of RAM; 300-by-300-dpi monochrome and color resolutions. **PRO/CON:** Price dropped $425, stellar color quality, fast graphics speed, solid ink blocks easy to load, black ink is free for life of printer; slow text speed, takes only letter-size paper. | – |

Best Buy  www.pcworld.com/t10printers  Windows 95-certified Plug and Play  All products: 907

**HOW WE TEST** The overall rating for both monochrome and color personal printers is based on print quality (27 percent), price (20 percent), features and ease of use (20 percent), speed (15 percent), service and support (13 percent), and cost of consumables (5 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

COLOR LASER prices dropped to unprecedented lows this month, as aggressively priced newcomers entered the market. In July the average price of a color laser on our chart was $6077. This month, the new second-place $4500 Xerox DocuPrint C55mp and third-place $3995 Tektronix Phaser 560 help bring the average down to $4332. If that's not cheap enough for you, our new color Best Buy, the Epson Stylus Color 1520 ink jet, ▶

costs $799—the lowest price we've seen for a color workgroup printer.

Prices are dropping on older printers as well. IBM's Network Color Printer, introduced last year, makes our color chart for the first time since then—after IBM slashed its price from $7649 to $4500. Tektronix's Phaser 350 is $425 cheaper now, but the tougher competition forces it from second place to fifth.

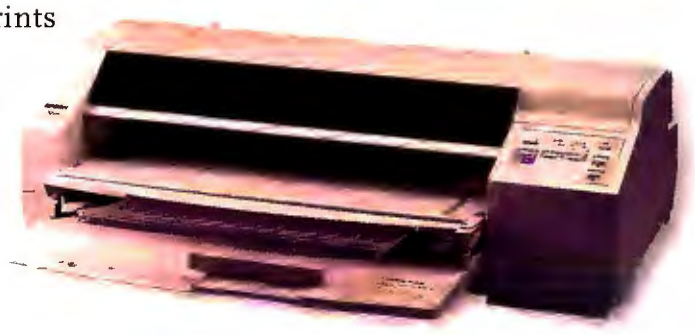
We tested another new color laser, the $5199 HP Enhanced Color LaserJet 5M, but it didn't make the chart. The HP DeskJet 1600CM, the color Best Buy in July, didn't stand a chance against Epson's Stylus Color 1520 even though we retested the HP this month with updated drivers. The $1999 DeskJet 1600CM is now too pricey, and its color quality looks coarse.

On the monochrome chart, the IBM Network Printer 12 dropped $251 to $999, and rose from fourth to third place. We tested the new Epson EPL-N1200 and NEC SuperScript 1260N lasers, and we retested the HP LaserJet 4MV laser with new drivers, but none made the chart.

### EPSON'S BARGAIN BEST BUY

THE EPSON STYLUS COLOR 1520 offers impeccable color quality and other unique features for an unbeatable $799 price. Its versatile wide-format design lets you print on paper up to 13.5 by 19 inches, continuous-form paper, or banners. Top resolution is 1440 by 720 dots per inch, but in our tests 720-by-720-dpi prints looked just as good.

The Stylus Color 1520 has a few drawbacks. Its 3.2-pages-per-minute text speed is the slowest on the chart, and that's printing at 360 dpi; it's even slower printing at 720 or 1440 dpi. Also, like most ink jets, the Stylus Color 1520 needs special papers to print its best. Finally, its paper capacities (100 sheets input and 30 output) are very low for a workgroup printer.



**THE EPSON STYLUS COLOR 1520, our new color Best Buy, costs only $799 and is uncompromising in its color quality.**

### ALL-IN-ONE COLOR LASER

OUR NEW NUMBER TWO color printer, Xerox's $4500 DocuPrint C55mp, is the first color laser we've tested that's fast and versatile enough to be your office's only printer. Its text speed of 8.1 ppm leaves other color lasers behind in a cloud of toner. Black text quality is flawless. The C55mp's 0.5-ppm graphics speed is typical, but photographs look smooth and realistic. It can adjust color graphics such as pie charts into monochrome patterns that fax or copy well, and reduce graphics to two colors for quick proofs.

The "mp" version we tested includes PostScript and an ethernet card. The plain DocuPrint C55—no PostScript or ethernet—costs just $3500 (we didn't test this version). With the DocuPrint C55mp's introduction, Xerox retired its XPrint 4920 Plus color laser, which had been on our chart for ten months.

Tektronix's new Phaser 560 color laser ranks third. Like the Phaser 550 it replaces, it's versatile enough to handle labels, envelopes, even double-sided printing. Yet it costs $2537 less, and its 6.6-ppm text speed is 1 ppm faster. Replacing the fuser and the drum is difficult, but you only have to do it every 30,000 pages.

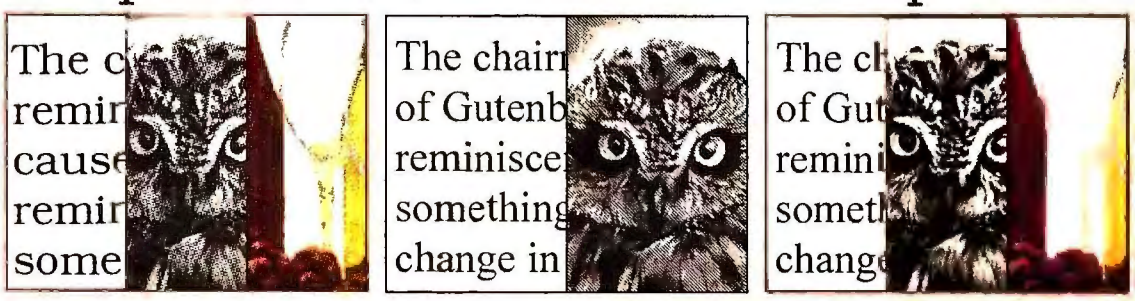
NEC's $1079 monochrome SuperScript 1260N is one of two new monochrome laser printers that failed to make the chart this month. We admired its smooth graphics quality, and unlike most workgroup printers, it includes ethernet. Unfortunately, its 8.8-ppm text speed and 2-ppm graphics speed are pedestrian, and text looks slightly jagged. (The SuperScript 1260 is identical to the SuperScript 1260N, except that it lacks ethernet—and costs a bargain $799.) The Epson EPL-N1200's $1099 street price and fast 10.1-ppm text speed impressed us, but its 0.5-ppm graphics speed and overly dark graphics print quality did not.

We retested the HP LaserJet 4MV with its Windows 95 drivers, which weren't ready when we first reviewed it. Its 11.3-ppm text and 2-ppm graphics speeds are both about a half-page faster than before, but unless you need to print on tabloid-size paper, at $2619 it's too pricey. HP's $5199 Enhanced Color LaserJet 5M is identical to the Color LaserJet 5M that was third on the color chart in July, except for a firmware upgrade that was supposed to improve graphics speed in PCL mode. Its 6.8-ppm text speed and 0.7-ppm graphics speed in our PCL tests were actually a tad slower than before. What's more, it's expensive, and its print quality is coarse.

*—Dan Littman and Melissa Riofrio* ■

PRINT QUALITY SAMPLES

## Epson, Xerox, NEC Show Off Graphics



**XEROX DOCUPRINT C55MP**

**Xerox's newest color laser has a low $4500 price, but it doesn't skimp on print quality. Plain text is sharp, and complex graphics show subtle gradations of color.**

**NEC SUPERSCRIPT 1260N**

**The NEC's slightly jagged text disappointed us. To its credit, its gray-scale graphics were better than those of most monochrome lasers we've tested.**

**EPSON STYLUS COLOR 1520**

**Our new color Best Buy's graphics are better than some color lasers'. But it needs coated paper for the best print quality.**

# Breakthrough Price

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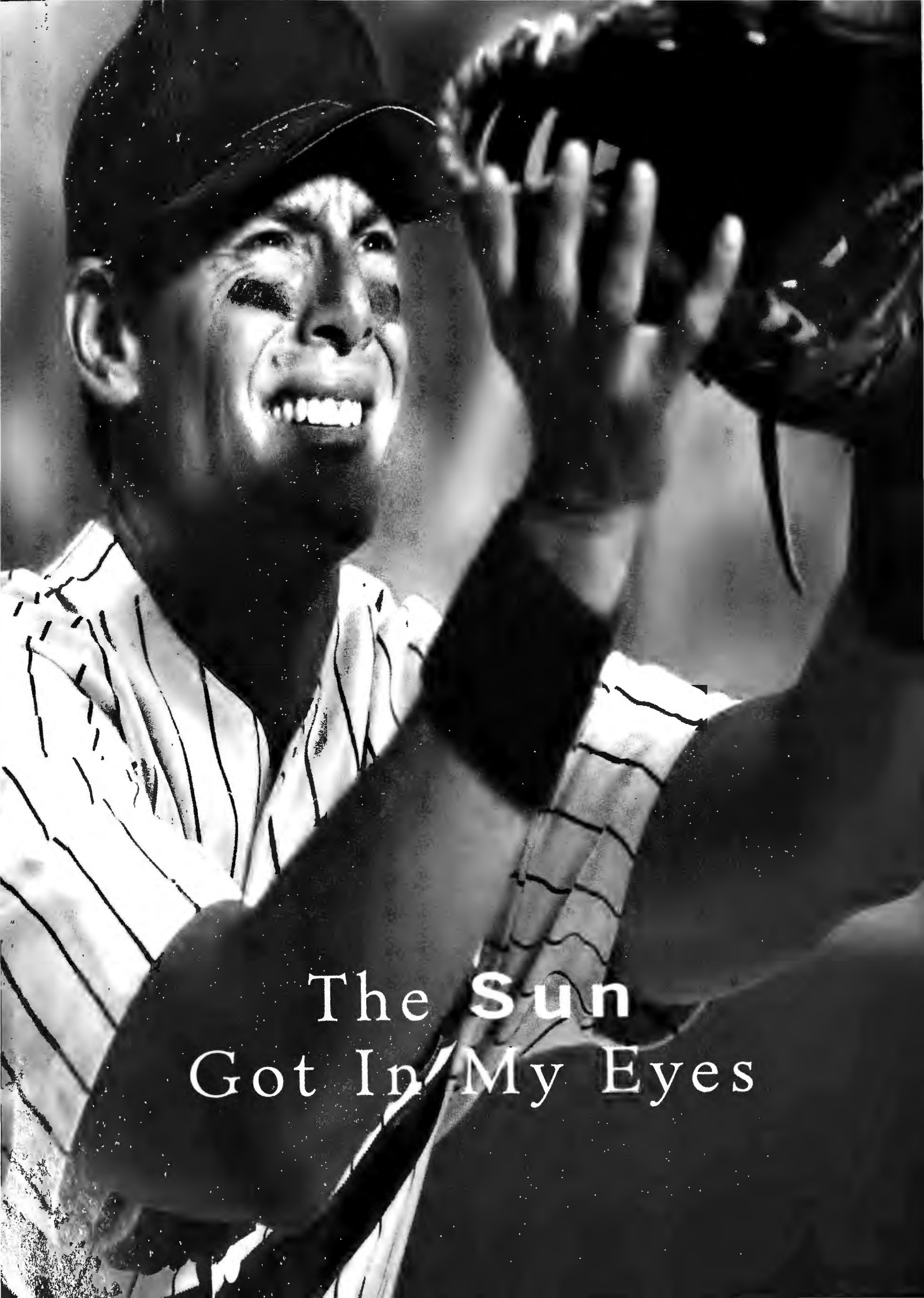
**Circle 247 on reader service card**



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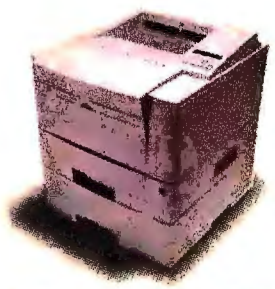

PrintPartner 14AV*

PrintPartner 10V

*Here's where the No Excuses℠ part comes in. Fujitsu backs each printer with an industry leading one-year warranty, so in the unlikely event of a breakdown, your printer will be replaced within two business days.*

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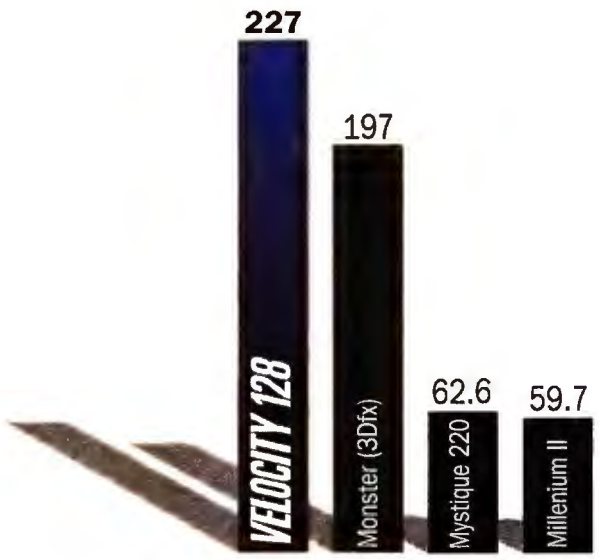


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PC WORLD

# TOP 10 MONITORS

| | 17-INCH MONITORS | Month tested | Street price (6/20/97) | Overall rating | Quality of text/graphics | Comments | Reader service number |
|---|---|---|---|---|---|---|---|
| 1 | **Iiyama VisionMaster Pro 17**<br>800/394-4335<br>www.iiyama.com | retested this month | $698 | 87 | very good/ excellent | **FEATURES:** 15.9-inch viewable area, .25mm stripe pitch Diamondtron tube, up to 85-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 12-hour weekday toll-free support. **PRO/CON:** Great graphics, superb text clarity, easy-to-adjust on-screen menus, large viewable area; two faint lines visible across screen. | 601 |
| 2 | **Mitsubishi Diamond Pro 87TXM**<br>800/843-2515<br>www.mitsubishi-display.com | retested this month | $749 | 86 | very good/ very good | **FEATURES:** 15.7-inch viewable area, .25mm stripe pitch Diamondtron tube, up to 107-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 12-hour weekday toll-free support. **PRO/CON:** Crisp text, accurate color, easy on-screen controls, TCO'95 compliant, color correction utility; two faint lines visible across screen. | 602 |
| 3 | ViewSonic PT775<br>800/888-8583<br>www.viewsonic.com | retested this month | $849 | 85 | very good/ excellent | **FEATURES:** 15.9-inch viewable area, .25mm stripe pitch Diamondtron tube, up to 119-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 11-hour weekday toll-free support. **PRO/CON:** Great text and graphics, large viewable area, easy to adjust, TCO'92 compliant, color correction; expensive, two faint lines across screen. | 603 |
| 4 | Samsung SyncMaster 700b<br>800/933-4110<br>www.sosimple.com | NEW | $699 | 82 | very good/ very good | **FEATURES:** 15.7-inch viewable area, .28mm dot pitch tube, up to 85-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 24-hour toll-free support. **PRO/CON:** Attractively styled case, fine balanced display of text and graphics, easy-to-adjust on-screen menus; fairly small viewable area, cryptic menu icons. | 604 |
| 5 | Princeton Graphics Systems E075<br>800/747-6249<br>www.prgr.com | retested this month | $638 | 81 | good/ very good | **FEATURES:** 15.8-inch viewable area, .26mm dot pitch tube, up to 120-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 24-hour toll-free support (automated after 5 p.m.). **PRO/CON:** Cheapest on chart, detailed graphics, now TCO'92 compliant; type is slightly ghosted, menu items hard to find. | 605 |
| 6 | IBM P70<br>800/426-7255<br>www.pc.ibm.com | retested this month | $849 | 79 | very good/ very good | **FEATURES:** 15.9-inch viewable area, .25mm stripe pitch Trinitron tube, up to 85-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 24-hour toll-free support. **PRO/CON:** Sharp text and graphics, easy-to-use on-screen menus, TCO'92 compliant; still expensive, two faint lines visible across screen. | 606 |
| 7 | Dell UltraScan 1000HS<br>800/289-3355<br>www.dell.com | retested this month | $749 | 79 | very good/ good | **FEATURES:** 15.9-inch viewable area, .25mm stripe pitch Trinitron tube, up to 105-Hz refresh rate,[1] Plug and Play ready,[2] 24-hour toll-free support. **PRO/CON:** Crisp text, TCO'92 compliant, ample controls, easy-to-adjust on-screen gauges; brief one-year warranty, two faint lines visible across screen. | – |
| 8 | Compaq V70<br>800/345-1518<br>www.compaq.com | retested this month | $659 | 78 | good/ good | **FEATURES:** 15.6-inch viewable area, .28mm dot pitch tube, up to 85-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 24-hour toll-free support. **PRO/CON:** $40 price drop, displays photographs well, controls easy to understand and adjust, small viewable area, adjusting brightness shrinks viewable area, slightly fuzzy text. | 607 |
| 9 | Hansol Multitech 17PX<br>888/426-7651<br>www.hansol-us.com | retested this month | $689 | 78 | good/ good | **FEATURES:** 15.7-inch viewable area, .28mm dot pitch tube, up to 85-Hz refresh rate,[1] Plug and Play ready,[2] three-year warranty, 8-hour weekday toll-free support. **PRO/CON:** Good-looking, TCO'92 compliant, good text, easy to adjust; fairly small viewable area, graphics look somewhat flat. | 608 |
| 10 | Sony CPD-220VS<br>800/476-6972<br>www.sony.com/pc | NEW | $899 | 78 | very good/ very good | **FEATURES:** 16-inch viewable area, .25mm stripe pitch Trinitron tube, up to 85-Hz refresh rate,[1] Plug and Play ready,[2] speakers, subwoofer, microphone, USB ports, 24-hour toll-free support. **PRO/CON:** Large viewable area, sharp text and graphics, good sound; expensive, brief one-year warranty, two faint lines across screen. | 609 |

Best Buy  online For expanded reviews, visit www.pcworld.com/t10monitors.  All products: 901

[1] Highest refresh rate at 1024 by 768 resolution.  [2] Plug and Play monitors and graphics cards can communicate bidirectionally. However, Windows 95 does not fully utilize monitor Plug and Play.

**HOW WE TEST** Ten judges rate a monitor's text and graphics quality. We evaluate each unit on how well it displays typical business letters, a newsletter, spreadsheets, Web pages, and scanned images. The overall rating is based on text and graphics quality (25 percent each), features and ease of use (25 percent), price (20 percent), and service and support (5 percent). The best possible overall rating is 100. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

THIS MONTH the Iiyama VisionMaster Pro 17 stood up to our toughened test suite and again proved itself the best. The Mitsubishi Diamond Pro 87TXM rose to Best Buy status, bumping the ViewSonic PT775 down a notch. Samsung's SyncMaster 700b replaces the discontinued SyncMaster 17Glsi at number four, and the new Sony CPD-220VS overcomes its high price to make number ten with the help of a fine picture and good sound. ■

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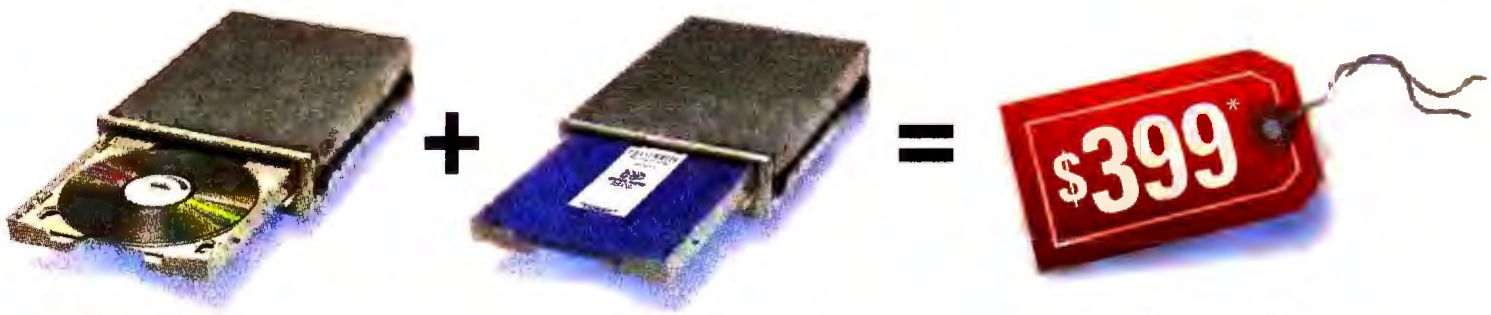


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PC WORLD

# TOP 10 GRAPHICS BOARDS

| | GRAPHICS BOARDS | Month tested | Street price (6/1/97) | Overall rating | PC WorldBench graphics score | Comments | Reader service number |
|---|---|---|---|---|---|---|---|
| 1 | **STB Nitro 3D**<br>888/234-8750<br>www.stb.com | July 97 | $149 | 104 | 189<br>very good | **FEATURES:** 4MB of EDO DRAM, 120-Hz refresh rate at 1024 by 768, 3-D acceleration, bilinear video interpolation, Active Movie MPEG player, S3 Virge/GX chip, optional TV tuner. **PRO/CON:** Fast 2-D and 3-D performance, excellent AVI and MPEG video playback, lifetime warranty; DirectX is not automatically installed. | 622 |
| 2 | **Hercules Terminator 3D/DX**<br>800/532-0600<br>www.hercules.com | June 97 | $149 | 104 | 189<br>very good | **FEATURES:** 4MB of EDO DRAM, 120-Hz refresh rate at 1024 by 768, 3-D acceleration, bilinear video interpolation, Xing MPEG software, S3 Virge/DX chip. **PRO/CON:** 2-D and 3-D graphics are improved over Terminator 3D, excellent MPEG video playback, good software; mediocre AVI video playback. | 623 |
| 3 | Matrox Mystique 220 Business<br>800/361-1408<br>www.matrox.com/mga | Aug 97 | $179 | 103 | 188<br>very good | **FEATURES:** 4MB of SGRAM, 140-Hz refresh rate at 1024 by 768, bilinear video interpolation, Compcore 2.2 MPEG software, Matrox MGA-1164SG chip, optional video editing card. **PRO/CON:** Easy installation, clear documentation, good MPEG and AVI video playback; no hardware filtering for smooth 3-D images. | 624 |
| 4 | ATI 3D Xpression+ PC2TV<br>905/882-2600<br>www.atitech.com | Jan 97 | $129 | 102 | 180<br>very good | **FEATURES:** 4MB of SDRAM, 150-Hz refresh rate at 1024 by 768, 3-D acceleration, bilinear video interpolation, ATI MPEG player, bundled games and 3-D graphics programs, ATI Rage II chip. **PRO/CON:** Connects to a TV, excellent AVI and MPEG video; 3-D quality merely okay, relatively slow 2-D. | 625 |
| 5 | Diamond Stealth 3D 3000XL<br>800/468-5846<br>www.diamondmm.com | Mar 97 | $200 | 102 | 184<br>very good | **FEATURES:** 4MB of VRAM, 120-Hz refresh rate at 1024 by 768, 3-D acceleration, bilinear video interpolation, Mediamatics MPEG software, bundled games, S3 Virge/VX chip. **PRO/CON:** Good for graphical apps, great software utilities, excellent AVI and video playback; expensive. | 626 |
| 6 | STB Velocity 3D<br>888/234-8750<br>www.stb.com | Feb 97 | $199 | 101 | 187<br>very good | **FEATURES:** 4MB of VRAM, 120-Hz refresh rate at 1024 by 768, 3-D acceleration, bilinear video interpolation, Mediamatics MPEG software, bundled games, S3 Virge/VX chip. **PRO/CON:** Good for graphically intense programs, memory upgradable, lifetime warranty; mediocre AVI and MPEG video playback, pricey. | 627 |
| 7 | STB Lightspeed 128<br>888/234-8750<br>www.stb.com | Aug 96 | $99 | 101 | 186<br>very good | **FEATURES:** 2.25MB of MDRAM, 120-Hz refresh rate at 1024 by 768, bilinear video interpolation, Xing MPEG software, Tseng Labs ET6000 chip. **PRO/CON:** Performs well with business and graphics programs, perfect AVI video playback, excellent MPEG, lifetime warranty, low price; no 3-D acceleration. | 628 |
| 8 | Diamond Stealth 3D 2000 Pro<br>800/468-5846<br>www.diamondmm.com | July 97 | $150 | 100 | 182<br>very good | **FEATURES:** 4MB of EDO DRAM, 100-Hz refresh rate at 1024 by 768, bilinear video interpolation, Mediamatics MPEG player, bundled games, S3 Virge/DX chip. **PRO/CON:** Excellent MPEG and AVI video playback; software difficult to install, performance could be better. | 629 |
| 9 | Matrox Millennium<br>800/361-1408<br>www.matrox.com/mga | Apr 97 | $219 | 100 | 187<br>very good | **FEATURES:** 4MB of WRAM, 120-Hz refresh rate at 1024 by 768, Compcore MPEG software, bundled game and 3-D graphics program, Matrox MGA-2064W chip. **PRO/CON:** Fast, superb AVI and MPEG video, great software utilities; pricey, no bilinear interpolation for sharp full-screen images. | 630 |
| 10 | VideoLogic GrafixStar 600<br>800/578-5644<br>www.videologic.com | Apr 97 | $149 | 99 | 189<br>very good | **FEATURES:** 4MB of MDRAM, 120-Hz refresh rate at 1024 by 768, bilinear video interpolation, Xing MPEG software, bundled multimedia apps, Tseng Labs ET6000 chip. **PRO/CON:** Very fast 2-D performance, excellent software utilities; no 3-D acceleration, average AVI and MPEG video performance. | 631 |

Best Buy | online For expanded reviews, visit www.pcworld.com/t10graphics. | Windows 95 Plug and Play | All products: 903

**HOW WE TEST** We tested PCI boards under Windows 95 with PC WorldBench 1.0 at 800 by 600 resolution and 16.8 million colors (reported here) and at 1024 by 768 and 65,536 colors. Boards were tested in a Dell Dimension XPS P133c with 16MB of EDO DRAM and 256K of pipeline-burst secondary cache. The overall rating is based on performance (40 percent), features (30 percent), price (20 percent), and support policies (10 percent). For all ratings, higher is better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

NONE OF THE FOUR new boards we tested this month have the combination of performance, price, features, and support needed to make our chart. The Matrox Millennium II came closest. This board did slightly better in our PC WorldBench tests and in video playback than the Millennium board that earned spot nine on the chart. However, the Millennium II's steep $319 price kept it from taking a place on our Top 10. ■

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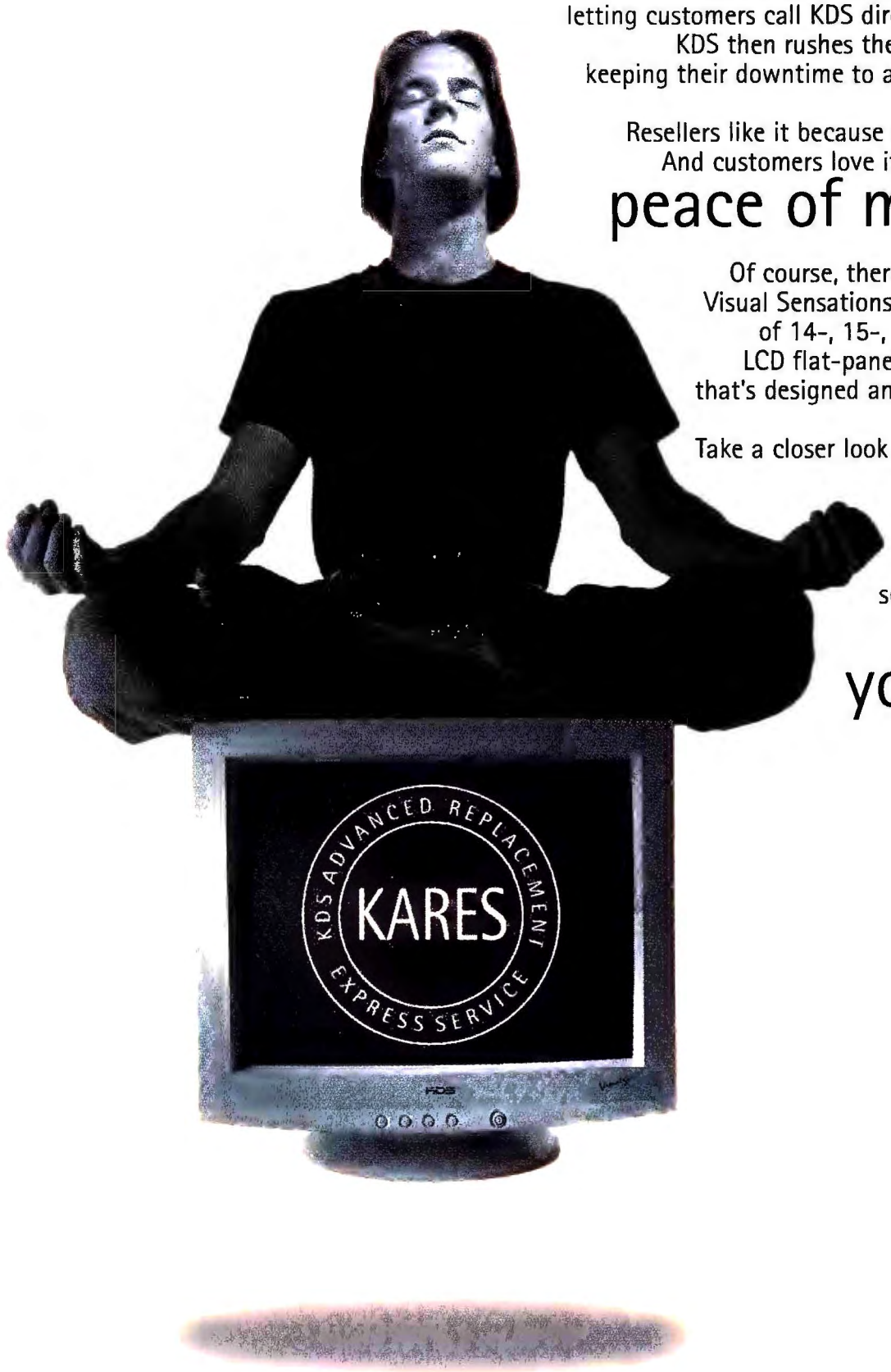


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**Circle 170 on reader service card**

PC WORLD

# TOP 10 MODEMS

| | 33.6-KBPS INTERNAL MODEMS | Month tested | Street price (6/15/97) | Overall rating | Average transfer time per MB (min:sec) | Comments | Reader service number |
|---|---|---|---|---|---|---|---|
| 1 | 3Com/U.S. Robotics Courier V.Everything<br>800/877-2677<br>www.3com.com | July 97 | $215 | 80 | 2:44 | **FEATURES:** 8-bit card, FlashROM, Caller ID, distinctive ring, QuickLink II fax/data software. **PRO/CON:** Thorough and accessible documentation, toll-free technical support, cross-ship replacement of modem; this corporate model isa little slow and the second most expensive 33.6k modem on the chart. | 712 |
| 2 | Zoom FaxModem V.34I Plus<br>800/631-3116<br>www.zoomtel.com | July 97 | $79 | 80 | 2:38 | **FEATURES:** 8-bit card, MNP10 and MNP10EC cellular protocols, distinctive ring, COMit and WinFax Lite fax/data software. **PRO/CON:** Flawless installation, good performer, very inexpensive, cross-ship replacement, fast, seven-year warranty; lacks security features such as password access to modem and Caller ID support. | 713 |
| 3 | Hayes Optima 336B Internal Business Modem<br>800/441-1617<br>www.hayes.com | July 97 | $249 | 79 | 2:31 | **FEATURES:** 16-bit card, FlashROM, Caller ID, voice mail, distinctive ring, SmartCom Message Center LE fax/data software. **PRO/CON:** Fastest modem tested, full security features, cross-ship replacement; most expensive 33.6k modem on the chart, long 8.5-inch card may conflict with other peripherals in the PC. | 714 |
| 4 | Diamond Multimedia SupraExpress 336i Sp<br>800/727-8772<br>www.diamondmm.com | July 97 | $100 | 79 | 2:45 | **FEATURES:** 8-bit card, distinctive ring, full-duplex speakerphone, ASVD, Caller ID, COMit, and FaxTalk Messenger fax/data software. **PRO/CON:** Great support package including tech support available 14 hours a day and on Saturday, price dropped $30 from our July roundup; performance is a little sluggish. | 715 |
| 5 | Wisecom Accelerator IV 33600 Internal Voice Modem<br>888/9473266<br>www.wisecominc.com | July 97 | $87 | 78 | 2:42 | **FEATURES:** 16-bit card, distinctive ring, voice mail, full-duplex speakerphone, allows a data and voice call to share a phone line using ASVD, Caller ID, SuperVoice voice/fax/data software. **PRO/CON:** Inexpensive, $12 drop from July, toll-free technical support; installation is a nightmare, not FlashROM upgradable. | 716 |
| 6 | Shark Multimedia Baby Tiger 336R<br>800/800-3321<br>www.sharkmm.com | July 97 | $110 | 78 | 2:38 | **FEATURES:** 16-bit card, MNP10 and MNP10EC cellular protocols, distinctive ring, voice mail, full-duplex speakerphone, DSVD, Caller ID, FaxWorks voice/fax/data software. **PRO/CON:** Great performer, inexpensive; minimal support policies, price up $15 due to vendor correction, 8-inch card may conflict with other PC peripherals. | 717 |
| 7 | Boca M336I Home Fax Modem<br>561/997-7202<br>www.bocaresearch.com | NEW | $50 | 78 | 2:36 | **FEATURES:** 16-bit card, Caller ID, choice of Plug and Play or manual setting, V80 video phone support, QuickLink III fax/data software. **PRO/CON:** Lowest price we've seen on a Top 10 modem, very fast; basic feature set, manual doesn't cover installation adequately—beginners may have to call technical support. | 718 |
| | **56-KBPS INTERNAL MODEMS** | | | | | | |
| 1 | Motorola ISG ModemSurfr 56K Internal Data/Fax Modem<br>800/566-3266<br>www.mot.com/modems | NEW | $159 | 76 | 2:33/3:07[1] | **FEATURES:** K56flex protocol, 16-bit ISA card supports V80 video conferencing protocol, distinctive ring, Caller ID, Trio Communications Suite 5.1 fax/data software. **PRO/CON:** Quick, company guarantees free upgrade to the final 56k standard, including swapping modem; documentation only on CD-ROM. | 719 |
| 2 | MaxTech NetPacer Pro XPVS56I<br>800/936-7629<br>www.maxcorp.com | NEW | $119 | 75 | 2:29/2:56[1] | **FEATURES:** x2 protocol, voice mail, full-duplex speakerphone, 8-bit ISA card, SuperVoice 2.2 fax/data/voice software. **PRO/CON:** Fastest and least expensive 56k modem we've tested; company guarantees free upgrade to final 56k standard only if it's a software upgrade, sparse documentation too technical. | 720 |
| 3 | 3Com/U.S. Robotics Sportster 56K Faxmodem Internal Model 1787<br>800/342-5877<br>www.3com.com | NEW | $199 | 72 | 2:31/3:17[1] | **FEATURES:** x2 protocol, 8-bit ISA card, choice of Plug and Play or manual installation, distinctive ring, Caller ID detection, RapidComm fax/data software. **PRO/CON:** Documentation is thorough and easy to read, company guarantees free upgrade to the final 56k standard including a modem swap; priciest on 56k chart. | 721 |

Best Buy  online For expanded reviews, visit www.pcworld.com/t10modems.  [1]V.34 TAS transfers/56 ISP downloads; see "How We Test."  All products: 909

**HOW WE TEST** We test 33.6k modem-to-modem performance using a pair of identical modems on a Telecomm Analysis Systems (TAS) simulated phone network. It sends a text file over 55 line conditions, and a mix of five files—graphics, text, program, and compressed files—over one line condition. For our 56k tests, we call a local ISP access number and transfer .jpg, .doc, and .zip files continuously over an 18-hour period. The times to transfer a megabyte of data are higher in the ISP test than in the TAS test because the files used in the former are different and less compressible. Results for the two tests are not comparable. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

THIS MONTH WE debut the 56k chart with tests based on live ISP connections. The top value: Motorola's ISG ModemSurfr, a quick, full-featured model with a great upgrade plan. Overall, the 56k units send data a little faster than the 33.6k ones (although none can send faster than 33.6k). The 56k models were up to 77 percent faster at downloading—but your ISP and phone line must support the same protocol for you to see such results. ■

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- Number Nine Revolution 3D, 4MB WRAM
- Altec ACS-45 Speakers/AWE32 Wavetable Audio
- Iomega Zip Drive
- U.S. Robotics 56Kbps* Data/Fax/Voice Modem
- NEC 17" Monitor (16" v.i.s.)
* Upgrade to 7.0GB Ultra DMA Hard Drive, add $109
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### Direction SPT233

- 233MHz Pentium processor with MMX technology/ 512KB L2 Pipeline Burst Cache
- 3.2GB Ultra DMA Hard Drive/32MB SDRAM
- Number Nine Revolution 3D, 4MB WRAM
- Altec ACS-45 Speakers/Integrated Yamaha Sound
- NEC 17" Monitor (16" v.i.s.)
* Upgrade to Altec ACS-410 Speakers with ACS-251 Subwoofer, add $69
* Upgrade to U.S. Robotics 56Kbps* Data/Fax/ Voice Modem, add $119

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Business Lease: $86/mo.

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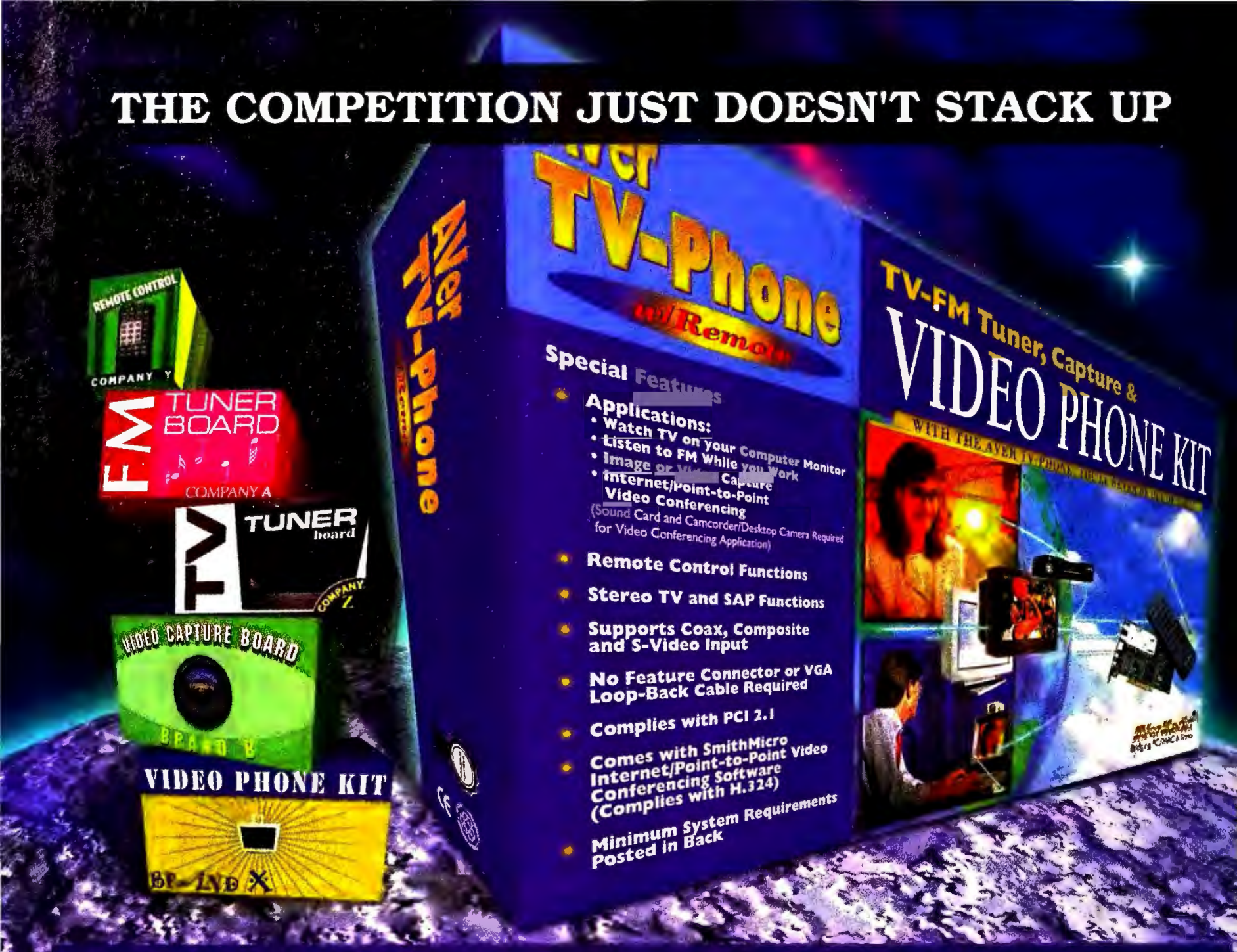


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**AVer TVGenie**
- Watch TV, CATV, or Video on a VGA or Multi-Sync Monitor Without Turning on your Computer
- No Software Driver Required
- Full Screen Display
- Full Remote Control
- Stereo Audio Input and Output

AVerMedia Technologies, Inc. 47923A Warm Springs Blvd., Fremont, CA 94539 Tel: (510) 770-9899 Fax: (510) 770-9901
AVer TV-Phone, AVerKey Plus and AVer TVGenie are registered trademarks of AVerMedia Technologies, Inc. All other trademarks belong to their respective companies. © Copyright 1997 AVerMedia Technologies, Inc.(Features subject to change without notice.)
*Estimated Street Price. Desktop camera/camcorder, sound card and modem required for video phone application.*

# All in the Family, Video E-Mail

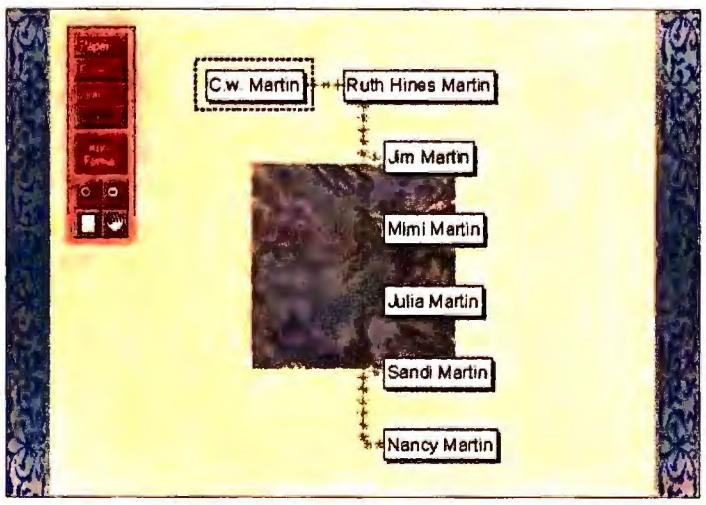
## TRACE YOUR ROOTS

PIECING TOGETHER AND designing a family tree can be a challenge, but with **Corel Family Tree Suite,** a four–CD-ROM set, at least your efforts will look nice. The best feature of Corel's genealogy software is its graphics capabilities. The program lets you choose from a variety of colorful backgrounds, borders, and chart and report styles to use in your family tree. With the included Photo House tool, you can scan, edit, and retouch images. But making your family tree look attractive is just one facet of the job—locating all those distant relatives is the hard part. While Family Tree Suite can help somewhat in this task, it doesn't make things exactly easy. Its Ancestry Genealogy Library includes 4 free database tools (such as the Social Security Death Index) that let you do a limited amount of research. But if you want to access the other 18 databases in the library, you'll have to pay a fee (which varies). And with the data spread over four CD-ROMs, you'll end up swapping discs frequently. —*James A. Martin*

**Corel Family Tree Suite**

GRADE: **B**; PRICE: $99 list; Corel Corp.; 613/772-6735; www.corel.com

READER SERVICE NO. 618




**TREE OF LIFE: Corel Family Tree Suite helps you assemble and organize your family's history.**

PHOTOGRAPH: ROBERT CARDIN

## LOCAL PRINT SHOP

I'VE GOT A to-do list the size of Texas. Somewhere on it is a reminder to get new envelopes printed with my home office address. Since I would have to leave the office to get it done, I thought I would never get around to it. But then I discovered **iPrint** at www.iprint.com. I surfed over to the design store page, picked a design from a group of templates, and I was off. I chose a typeface, typed in my return address, rearranged and resized all the elements, chose ink colors, and completed my design in about 30 minutes. And I did it without missing a single phone call. The iPrint site is basic: It offers only limited paper sizes and paper colors for basic envelopes, letterhead, and business cards (though it recently added rubber stamps and is introducing new features all the time). Nevertheless, I was impressed.

When I had to log out of iPrint to take care of something else, the site let me save my design (with password protection) so I could return and finish it later. My new envelopes arrived right on schedule, and they look pretty good. I guess that's one item off my to-do list. —*Christina Wood*

**iPrint**

GRADE: **A–**; PRICE: $84.70 for 500 two-color number 10 envelopes; iPrint; www.iprint.com

## ROCK YOUR WORLD

PATIENCE IS OF the essence when it comes to exploring our planet's physical development from your computer. After all, it may take more than 10 million ▶

## An Egg-cellent Camera

**WANT TO SHOW off your new haircut to your cousin in Florida? Chat with Junior at college? Then check out EggCam, a digital camera that mounts on your computer's monitor. With it, you can attach a compressed video file to an e-mail message (a 2-minute clip squeezes into 1MB). It comes with a video capture card and software that allows videoconferencing over the Internet, a local area network, or a standard phone. Installation is a snap, and the video quality is solid. Captures of still photos, though, are less than stellar without enhancement software. Even so, the low-price EggCam offers a nice solution for would-be videoconferencers. And it's low in cholesterol. –Shane Mooney**

**EggCam**

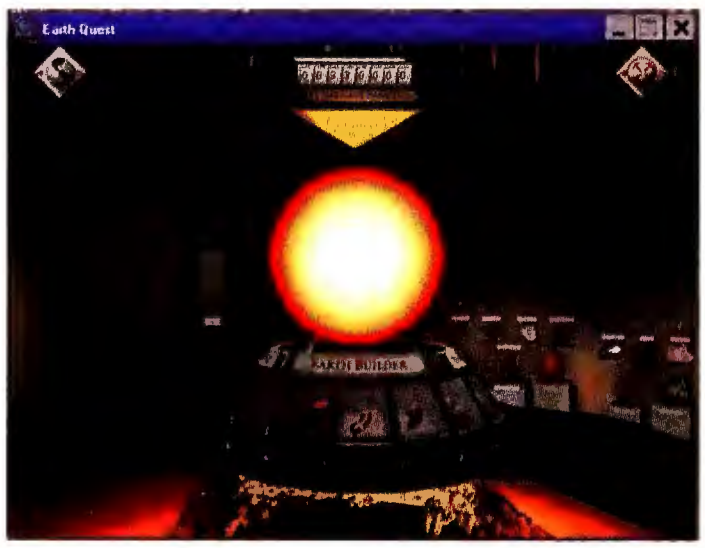
GRADE: **B**; PRICE: $199 list; Panasonic; 800/742-8086; www.panasonic.com/alive

READER SERVICE NO. 617

**VIDEO OVER EASY: The Panasonic EggCam makes it easy to attach video clips to e-mail.**

EDITED BY Christina Wood

years by **Earth Quest**'s ticking geological time clock for you to answer all the questions in just one round of the Earth Builder game (in which you put tectonic plates in place on the Earth's surface). As time races on and you click around the fascinating museum to gather rocks and minerals in your research, you absorb more information and gain more confidence and expertise, making the game easier. You might even stop off to trigger a few earthquakes and volcanic eruptions, or watch the mineral wulfenite evolve. A dozen videos; a lot of creative animations depicting such natural phenomena as quakes, lava flows, and crystal formation; and a built-in Internet link to Science Online, an informative reference site run by DK Multimedia, make Earth Quest both fun and educational for science buffs of any age. —*Derk Richardson*




**EXPLORE THE EARTH: Investigate rocks and minerals in the Earth Quest gallery or play the Earth Builder game.**

**Earth Quest**

GRADE: **A-**; PRICE: $29.95 list; DK Multimedia; 800/356-6575; www.dk.com

READER SERVICE NO. 619

### FYI

A RECENT STUDY shows that Internet appliances (like the WebTV) are unlikely to take over the world any time soon. PCs will be in 47 million households by the year 2002. Net appliances (including game consoles) will have landed in only 12.7 million households by then.

SOURCE: JUPITER COMMUNICATIONS

### GUILTY, GUILTY, GUILTY!

DID MARCIA CLARK completely blow it? Think you could have done better? Now you can find out with **D.A. Pursuit of Justice.** In this video-packed role-playing game, you're an assistant district attorney assigned to prosecute three cases: drunk driving, grand theft and—you guessed it—murder. Before you go to court, you'd better prepare your case well, because witness testimony, lab tests, and the press all matter. Make any mistake and the pit-bull defense attorney will decimate your case. The game is realistic though not fast-moving, and loading the video clips could get tedious on slower computers (a Pentium-133 is recommended). But if being at the center of a courtroom drama sounds like fun, check it out. Otherwise, *caveat emptor.* —*Kirk Steers*

**D.A. Pursuit of Justice**

GRADE: **B+**; PRICE: $59.95 list (for all three cases); Legacy Software; 800/532-7692; www.legacysoft.com

READER SERVICE NO. 620

### CRAFTY KIDS

KIDS ARE CONSTANTLY on the lookout for something new to do. Spending time in front of a computer may not be an activity you'd choose for them, but there's a new alternative to traditional PC games and art programs that'll keep kids entertained both on and off the computer. **Super CraftShop,** the latest do-it-yourself kit from PrintPaks, includes all the materials necessary to create stickers, bookmarks, "kid cards" (business cards for the young entrepreneur in your house), door hangers, and mouse pads. Super CraftShop comes with hundreds of graphics files, as well as a rudimentary paint program for creating your own design or modifying one included in the program. You can also import your own photos and artwork. The software is easy to use, and with the import and art tools it's also a fun and creative activity for older kids. —*Roberta Furger*

**Super CraftShop**

GRADE: **B+**; PRICE: $39.95 list; PrintPaks; 800/774-6860; www.printpaks.com

READER SERVICE NO. 621 ■

## KEEPING UP

### Leave Your Laptop at Home

DON'T YOU HATE hauling your laptop across the country when you just need it to check e-mail? If you're traveling to San Francisco or Washington, D.C., you might be able to get by without it. QuickATM Corporation (www.quick-aid.com) has kiosks in these cities' airports that let you browse the Web and download and send e-mail via America Online—all on a fractional T-1 line. More such kiosks are in the works and may be up and running by the time you read this. If you become a frequent user of the kiosks—which the company hopes to make ubiquitous—you can set up an account and obtain a personal address book. You won't want to browse your layover away, though. The service isn't cheap: Your credit card will be charged $2.50 for each 10-minute session online.

### Where Will You Be for the Millennium?

FEELING PARANOID ABOUT the year 2000? If you've read the hype, you might be wondering if you'll make it to the fancy gala you've got scheduled or if you'll be holding your PC's hand as it tries to make the transition. There's no real reason to worry—at worst, your computer's clock will reset itself, and that's pretty easy to fix. But if you are anxious, check out www.rightime.com. There you download a utility that will help your PC make it through the big New Year's party.

### Take the Pain out of Partying

YOU'RE PLANNING A wedding, baby shower, pool party, whatever. You need invitations. Should you fill them all out by hand? Have them printed? Design and print them on the computer? At www.babiesnbells.com, you can order real printed invitations, customized with the particulars of your event, and even with fancy RSVP cards. Get ready to spend though: 100 new baby announcements will set you back over $100, about the same as buying preprinted color cards one at a time. At least you won't get writer's cramp filling them out. —Christina Wood

ILLUSTRATIONS: MICHAEL BARTALOS

PC WORLD

# TOP 5 HOME PCs

| | SYSTEMS | Street price (6/1/97) | Overall rating | PC WorldBench score | Reliability/ service rating | Setup rating | Comments | Reader service number |
|---|---|---|---|---|---|---|---|---|
| 1 | **Dell Dimension XPS M233s**<br>800/388-8542<br>www.dell.com | $2379 | 89 | 242<br>outstanding | best/<br>best | fair | **FEATURES:** Pentium MMX-233, 32MB of SDRAM, 4.3GB hard drive, 16X CD-ROM drive, 33.6-kbps fax-modem, 17-inch monitor, Iomega Zip drive. Includes Microsoft Office 97 Small Business Edition and Encarta 97. **PRO/CON:** Reasonably priced, meaty hardware bundle, powerful home-office PC; limited software bundle, mail-order only. | 611 |
| 2 | Dell Dimension XPS M166s<br>800/388-8542<br>www.dell.com | $2199 | 88 | 223<br>outstanding | best/<br>best | fair | **FEATURES:** Pentium MMX-166, 32MB of SDRAM, 4GB hard drive, 12X CD-ROM drive, 33.6-kbps fax-modem, 15-inch monitor. Comes with Microsoft Office 97 Small Business Edition but no other software. **PRO/CON:** Reasonably priced, generous hardware perks, good foundation for home office; so-so setup, mail-order only. | 612 |
| 3 | Micron Home MPC<br>800/223-6571<br>www.micron.com | $2249 | 85 | 230<br>outstanding | good/<br>best | good | **FEATURES:** Pentium MMX-200, 32MB of RAM, 3.1GB hard drive, 12X CD-ROM drive, 33.6-kbps fax-modem, 17-inch monitor, Iomega Zip drive. Includes Microsoft Works, Quicken Deluxe, Encarta 97, and MechWarrior 2 for MMX. **PRO/CON:** Very fast PC, reasonable price, suitable for home office and family entertainment; mail-order only. | 613 |
| 4 | HP Pavilion 5320<br>800/724-6631<br>www.hp.com/Info/pchome1 | $1598 | 85 | 180<br>good | good/<br>good | outstanding | **FEATURES:** Pentium-150, 16MB of RAM, 1.6GB hard drive, 8X CD-ROM drive, 33.6-kbps fax-modem, 15-inch monitor. Includes Microsoft Works, Encarta 97, Quicken SE, Hansel and Gretel, and SimCity 2000. **PRO/CON:** HP's lowest-price entry-level machine, excellent setup; drop in service rating, lacks power for high-end gaming. | 614 |
| 5 | Quantex QP6/200 SM-2<br>800/760-9001<br>www.quantex.com | $2199 | 84 | 225<br>outstanding | fair/<br>good | fair | **FEATURES:** Pentium Pro-200, 32MB of RAM, 3.1GB hard drive, 12X CD-ROM drive, 33.6-kbps fax-modem, 17-inch monitor. Includes Corel WordPerfect Suite 7, and Compton's Interactive Encyclopedia. **PRO/CON:** Fast machine, suitable for home office tasks and family fun, great price, improved service rating; no MMX, mail-order only. | 615 |

Best Buy

All products: 902

**HOW WE TEST** The overall rating is based on reliability and service (30 percent), price (20 percent), PC WorldBench performance (20 percent), setup (10 percent), compatibility (10 percent), and extra features (10 percent). Reliability and service ratings are based on results of PC World's Reliability and Service survey.

THE BRAND NEW NUMBER ONE machine in our Top 5 this month—the Dimension XPS M233s from Dell—thundered through our PC WorldBench tests at a ferocious pace, posting the fastest score ever on this chart—and the sixth fastest among all systems tested for our Top 20 Power Desktops.

The XPS M233s's PC WorldBench score of 242 is 12 points ahead of the next fastest machine in the chart. It also has a meaty hardware package, including a 233-MHz Pentium MMX processor, 32MB of RAM, a 4.3GB hard drive, a 17-inch monitor, and a handy Iomega Zip drive.

Backed by top reliability and service ratings, this speed monster is reasonably priced at $2379. But its bundled software is limited to Microsoft Office 97 Small Business Edition and Encarta 97.

After three months at number one, Dell's Dimension XPS M166s is pushed down a notch to number two by its M233s sibling. Their overall ratings are neck-and-neck. The $2199 M166s also has excellent performance and a generous hardware bundle. In a home office, it would serve as well as the M233s, though it offers even less software—just one package, Microsoft Office 97 Small Business Edition.

Micron's third-place Home MPC is also a racehorse, with a PC WorldBench score of 230. For $2249, you get a 17-inch monitor and an Iomega Zip drive, plus Microsoft Works, Encarta 97, Dr. Seuss's ABC, Quicken Deluxe, and MechWarrior 2 for MMX.

Last month's Top 5 featured three Hewlett-Packard machines; this month's has only one, the Pavilion 5320—HP's service rating dropped from best to good. As a basic PC, the 5320 is a bargain at $1598 ($250 less this month). But with a low PC WorldBench score of 180, it won't suit high-end multimedia titles well.

Quantex makes its first appearance here with the QP6/200 SM-2, thanks to a vastly improved service rating—up from good to best this month. The $2199 QP6/200 has a Pentium Pro-200 CPU, 32MB of RAM, a 3.1GB hard drive, a 17-inch monitor, WordPerfect Suite 7, Body Works, and Compton's Interactive Encyclopedia. It gives you outstanding performance but is not an MMX machine. —*Kirk Steers*

**QUANTEX DEBUTS in the Top 5 with its speedy QP6/200 SM-2.**

*Kirk Steers is a contributing editor for* PC World. *Testing performed by Ulrike Diehlmann of the PC World Test Center.* ■

ILLUSTRATION: JEFFREY PELO

# Keyboard Fanatics and Other Sad Stories

IT WAS A COMPUTING first. My keyboard was sending me messages from Nostradamus. Keys would randomly stick, spelling out mysterious words and phrases. The last one was right on target: *"If you don't get this column in soon, Bass, you're in big trouble."*

Turns out it wasn't a mystical experience, though. My favorite keyboard, an ancient Northgate OmniKey, was on its last legs. A decade of dirt was gumming up the works. I ripped the keyboard apart and tried cleaning it.

Not a smart move. After sweeping all the keys into a plastic bag, I thanked the computing gods that I had two spare OmniKeys in the garage; I had bought them before Northgate went out of business. (Think that's strange? Check out the OmniKey fan club at www.gprep.pvt.k12.md.us/~fhalden/omnikey.)

You're probably thinking, "That Steve. What a loon. He's got an obsessive loyalty to a *keyboard.*" But when I polled about 650 members of the Pasadena IBM Users Group, I learned that more than 60 percent of those dedicated geeks were unhappy with their keyboards, but fewer than 30 percent have done anything about it.

## THE KEYBOARD TEST

THAT'S UNFORTUNATE, because a good keyboard can make typing a real pleasure. Intrepid journalist and keyboard kvetch that I am, I tried a few and came up with some recommendations. Even if you have no intention of springing for a new keyboard, you may find that the cool utilities I discovered can help take some of the work out of your hands (so to speak).

Surprisingly, the keyboard I found most comfortable is Acer's Future Keyboard. Granted, it looks like a cross between an art deco toaster and something Mr. Spock might have lying around his house. And believe me, it takes some getting used to. It's V-shaped and split in the middle, with large built-in palm rests that keep my wrists straight. And plunked dead center is a touchpad, one of those weird ersatz mice. But, hey, it feels good.

It **transformed** my otherwise useless **<Scroll Lock>** key into a Navigator **launcher.**

I like the way the Future's numeric keypad is separate from the keyboard. I can place it beside me on my desk, as an accountant would. And although I prefer the clickety-clack of a mechanical keyboard, Acer's membrane unit is crisp and gives me adequate tactile feedback. (And a quiet keyboard has its advantages: When I'm talking with my editor on the phone, she hasn't a clue that I'm busy lobbing grenades in my other obsession, Quake.)

I also tried Darwin Keyboards' LaunchBoard. It comes with nifty software to make 38 keys do double duty. For example, the software took only seconds to transform my otherwise useless <Scroll Lock> key into a Netscape Navigator launcher, and it made the <Pause> key open Windows Explorer. The LaunchBoard's software works with any keyboard using either Windows 95 or 3.*x*; a trial version is available from Darwin's Web site.

## NEW PC, NEW KEYBOARD

IF YOU'RE THINKING of buying a new system, pay attention. A trend afoot has manufacturers adding dramatic and exciting things to their keyboards. Hewlett-Packard's Pavilion PC, for example, comes with a multimedia keyboard that really revved me up. The extra buttons on the upper right side can program specific functions. I used one set of buttons to control the CD-ROM drive; another lets me quickly change any software's sound volume.

Want free software that lets you change a few keys on your existing keyboard? Download a copy of Microsoft's Kernel Toys. It's a Windows 95 utility that makes your keyboard act more civilized.

For example, I hate it when I accidentally press <Caps Lock> and then type *mY NAME IS sTEVE bASS.* Load the Kernel Toys' Remap tool, select *Keyboard* in Win 95's Control Panel, reprogram the <Caps Lock> key to become another <Shift>, and that particular annoyance goes away.

And listen, if you have a Northgate keyboard, I have a spot for it in my garage.

**Future Keyboard**

$99 list; Acer; 800/369-6736, 408/432-6200; www.acer.com/aac/products/periph

READER SERVICE NO. 697

**LaunchBoard**

Keyboard $60 list (with software), software only $30; Darwin Keyboards; 888/432-7946; www.darwinkeyboards.com

READER SERVICE NO. 698

**Kernel Toys**

Free; Microsoft; 206/882-8080; www.microsoft.com/windows/software/krnltoy.htm

*Contributing Editor Steve Bass, a licensed marriage and family therapist and president of the Pasadena IBM Users Group, can be reached at steve_bass@pcworld.com.* ■

ILLUSTRATION: MICHAEL BARTALOS

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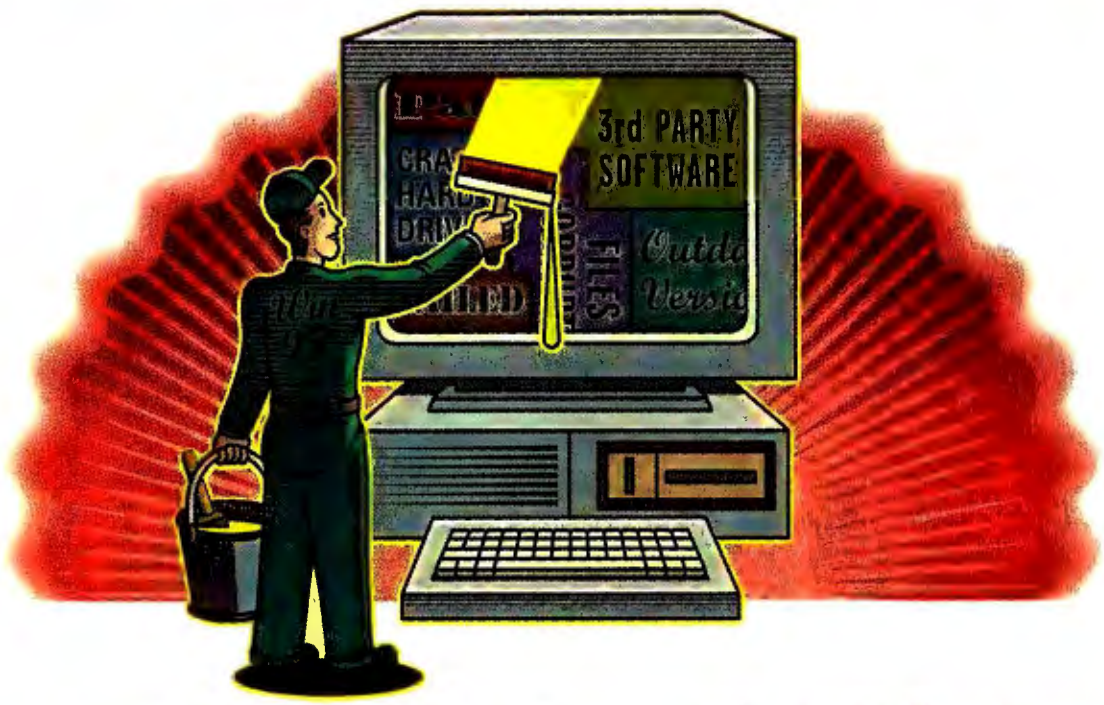
National Software Testing Laboratory, Inc. (NSTL) found the EPSON Stylus Color 600 outperforms avg. speeds of the HP DeskJet 694C by 31% and the Canon BJC 4200 by 38%. Print speeds tested with Windows 95 and Microsoft Word, Microsoft Excel, Microsoft PowerPoint, Adobe PageMaker and Adobe Photoshop. Prices may vary. EPSON and EPSON Stylus are registered trademarks of Seiko Epson Corp. Micro Piezo is a trademark of Epson America, Inc. © 1997 Epson America, Inc.

**Circle 95 on reader service card**

# HERE'S HOW




ANSWER LINE

## How Do I Reinstall Windows 95?

I'VE INSTALLED, UPGRADED, PATCHED, removed, deleted, backed up, and restored Microsoft Windows 95 once too often. It's time to start from scratch. What's the best procedure to format my computer's hard disk and reinstall the operating system? Could I do the whole job with just a floppy containing the MS-DOS system files, fdisk, format commands, and CD-ROM drivers?

*Roy Weiss, Fairfield, New Jersey*

I'M WITH YOU. With every new upgrade, patch, add-on, and "platform preview," Windows seems to get flakier. Worse, installing third-party hardware and software often results in conflicting .dll files that can cause the operating system to crash. Diagnostic programs like CyberMedia's First Aid and Helix's Nuts and Bolts attempt to resolve these conflicts, but sometimes removing and reinstalling Windows and all of your applications is the best cleanup solution.

The trick is to keep the process simple. Unless you have a problem with your drive's file system that neither chkdsk nor ScanDisk can resolve (or unless you plan to repartition the disk, which requires you to format afterward), don't bother formatting your hard disk. Instead, I recommend these steps:

1. Make a Win 95 startup disk: Select *Start•Settings•Control Panel*, double-click *Add/Remove Programs*, select the *Startup Disk* tab, and click *Create Disk*. If you want to dual-boot to an earlier version of MS-DOS, make sure you have a boot disk. To create one, boot to MS-DOS, format a floppy with the command **format a: /s**, and copy any necessary programs, drivers, and boot files that load the drivers (such as config.sys and autoexec.bat). Edit the boot files so that they reference the floppy, not the hard drive. Try booting with each floppy to make sure it works.

2. Back up all your crucial data.

3. Uninstall as many programs as you can, using the program's own uninstall utility or Windows 95's (select *Start•Settings•Control Panel*, double-click *Add/Remove Programs*, and click the *Install/Uninstall* tab). This would be a good time to make sure you have the original installation disks and any necessary passwords or serial numbers for reinstallation.

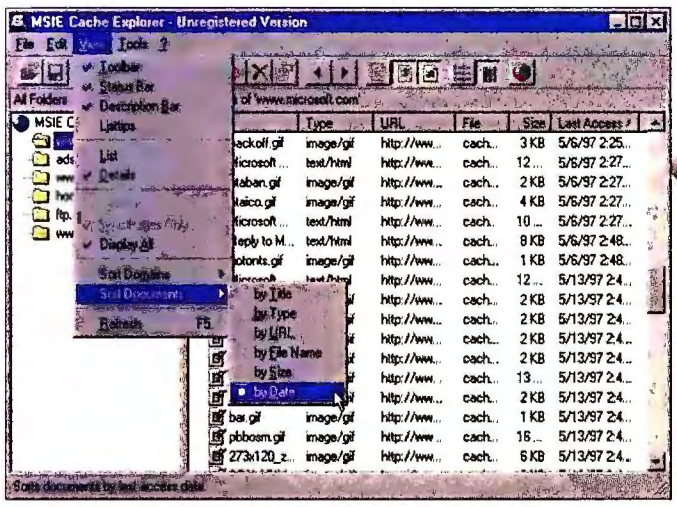
4. If your copy of Windows 95 came on a CD-ROM, create a temporary directory on your hard disk, insert the disc, and copy the contents of its /Win95 directory to the temporary directory. This requires about 30MB (slightly more for OEM Service Release 2), but it saves you from having to copy real-mode CD-ROM drivers to the boot floppy and set up the floppy's config.sys and autoexec.bat files to load them. You can delete the files after installation if you're short on disk space.

5. Make backup copies of any files in the Windows and root (C:\) directories that you want to keep. Such files might include customized config.sys and autoexec.bat files, Schedule Plus, custom wallpaper, and anything else (including directories) that you may have copied into the Windows or root directories.

6. Insert your Windows 95 startup floppy and reboot, then clear the decks: Delete the contents of the root directory by entering **attrib -s -r -h c:\ *.***, then **del c:\ *.***. Clear out Windows 95 by entering **deltree c:\windows**, where *\windows* is the path of the Win 95 directory. Delete any other files and directories you'd like to jettison.

By Scott Spanbauer

ILLUSTRATION: PETER HOEY

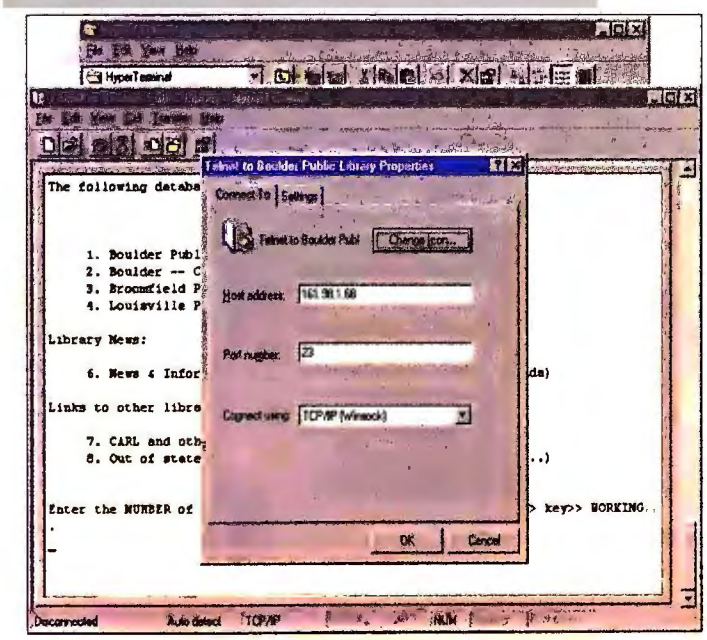



**MSIE CACHE EXPLORER sorts Internet Explorer's cache so you can delete pages you'll never access again.**

7. If you want to dual-boot between MS-DOS/Windows 3.1 and Windows 95, reinstall MS-DOS using the original setup disks. Next, reboot with either MS-DOS or your Windows 95 startup floppy, and—if Windows 95 came on CD-ROM—run **setup.exe** in the directory containing the Windows 95 installation files. When the process is complete, reinstall any applications you want to keep using.

## HyperTerminal PE 3.0 Adds Telnet

DO YOU LAMENT Windows 95's barebones Internet terminal (telnet) program, or wonder if you'll ever use the bundled copy of Hilgraeve's stripped-down HyperTerminal program? Hilgraeve now offers a free upgrade, HyperTerminal Private Edition 3.0, which enhances the original's features (including the ability to answer incoming calls) and makes it a telnet utility. Download it from Hilgraeve's site (www.hilgraeve.com/haf2.html) or from PC World Online.




## CUT DOWN ON YOUR BROWSER'S CACHE

BECAUSE I'M ON the Net a lot, my Web browser's cache gets pretty big. The cache helps me quickly load pages that I visit frequently, but it also fills up with pages I see once and never look at again. Is there a program that could keep tabs on the cache, knowing which files to save and which to delete based on how frequently they're used?

*Helen Adams, Columbia, Missouri*

I'M BETTING THAT the browser you're talking about is Microsoft's Internet Explorer, which caches Web pages as individual files. Unlike Netscape's Navigator, which caches all files efficiently inside a single container file (fat.db), Internet Explorer's cache sucks up disk space thanks to file system overhead. If your drive partition is between 512MB and 1024MB and uses the FAT file system, every file in the cache requires at least 16K of storage, even if it contains only a few hundred characters. Multiply this waste by the thousands of files in your cache, and you're squandering megabytes.

I don't know of a tool that offers the kind of automatic control you're looking for, although as soon as the cache reaches a specified size, Internet Explorer does delete the least recently accessed files before adding new ones to the cache. If you want to browse the cache yourself in search of deadwood, open IE and choose *View•Options*, click the *Advanced* tab, and click *View Files*. Click the *Last Accessed* column header to sort the cache contents in ascending date order, then select and delete files you don't anticipate viewing again.

If this kind of cache hygiene turns into a regular habit, I recommend using Matthias Wolf's shareware program, MSIE Cache Explorer (see the figure above). This $20 program lets you organize cache contents by domain (so you can delete, say, all the files from www.wasteoftime.com) or by almost any other criteria. You can download it from Wolf's site (ourworld.compuserve.com/homepages/M_Wolf/) or from PC World Online.

## NEED A .CAB?

WHILE USING Quarterdeck's CleanSweep 95 to determine what files and programs were eating up my hard disk space, I discovered a directory (\windows\options\cabs) containing a large number of 1.2MB .cab files. These files are like the .cab files on my Win 95 CD-ROM, except that the latter are larger (2MB) and ▶

## CONTENTS


**ANSWER LINE**
292 Reinstall Windows 95
293 Cache bloat, telnet upgrade
294 Piggybacking modems for faster speed

**WINDOWS TIPS**
296 Win 95's load time, a Win 3.x Send To folder
298 Windows Explorer display, style-linked fonts, Win 95's Safe Mode
300 DOS program defaults, moving NT's swap file

**SPREADSHEETS**
302 Automatic worksheet and graph titles, printing more than one range on a page

**WORD PROCESSING**
304 Global format changes, linking to graphics
306 Rotated text, faster file access

**DATABASE TIPS**
308 Lookup fields to speed data entry

**INTERNET TIPS**
310 Web auction sites
312 Password and privacy protection, annoying AOL ads, Internet Explorer's Mail and News

**HARDWARE TIPS**
314 Laser printer strategies

**MULTIMEDIA TIPS**
316 Catalog your multimedia files, cheap special effects, adjusting PC sound

**UPGRADE GUIDE**
318 Video camera installation


INTERNET

DON'T MISS ADDITIONAL HERE'S HOW information on **www.pcworld.com/hereshow.**

fewer. Do I need these files, or can I delete them and use the .cab files on the CD-ROM?

*Paul Dawson, Internet*

THOSE .CAB FILES are Windows 95 installation files—they're often on computers that come with Windows 95 preinstalled. If you have Win 95 floppy disks or a Win 95 CD-ROM, you can delete the files. However, it's convenient to have them on the hard disk because whenever you need to add a piece of hardware or an optional Windows 95 element, you won't have to search for your installation disks, and setup will be noticeably faster. But if hard disk space is more important than convenience, by all means, blow them away.

## DOUBLE YOUR MODEMS, DOUBLE YOUR FUN

RECENTLY, we installed a second phone line to connect to the Internet without tying up our voice line. However, I wonder if I could use both lines at once. My Internet service provider supports 56 kilobits per second; doubling that would give me a connection that's nearly as fast as an ISDN line. Is there any software that would allow this type of setup for Web browsing? I have a Pentium with a 56-kbps modem and an older 14.4-kbps modem, which I'll replace with a second 56-kbps modem if I can connect using both lines.

*Chris Humeniuk, Minot, North Dakota*

MICROSOFT HAS RELEASED an update to Windows 95's Dial-Up Networking software that offers just what you're looking for. Despite its name, ISDN Accelerator Pack 1.1 is actually a newer version of Dial-Up Networking that lets you combine up to four installed modems (including ISDN terminal adapters) into a single, faster connection. You won't see performance as fast as ISDN, though. That's because 56-kbps modem connections are, at best, limited to about 53 kbps. Most are slower than 50 kbps—and that's just for incoming data. The limit for outgoing data is about 33.6 kbps. ISDN speeds range from 56 kbps to 128 kbps.

To create a dual connection, download and install the ISDN Accelerator Pack from Microsoft's site (www.microsoft.com/kb/softlib/mslfiles/msisdn11.exe), choose *Start•Programs•Accessories•Dial-Up Networking*, right-click your Internet connection icon, choose *Properties•Multilink*, then select *Use additional devices*. Click *Add* to choose an additional modem and access phone number, then click *OK*. Now, when you access the Internet, Windows will make a second connection automatically and link it with the first.

*Find files from this article at www.pcworld.com/files and additional tips at www.pcworld.com/hereshow.* Answer Line *welcomes your questions and pays $50 for published items. Contributing Editor Scott Spanbauer is author of* The No B.S. Guide to Windows 95 *(No Starch Press, 1996, 800/420-7240).* *See page 14 for contact information.* ■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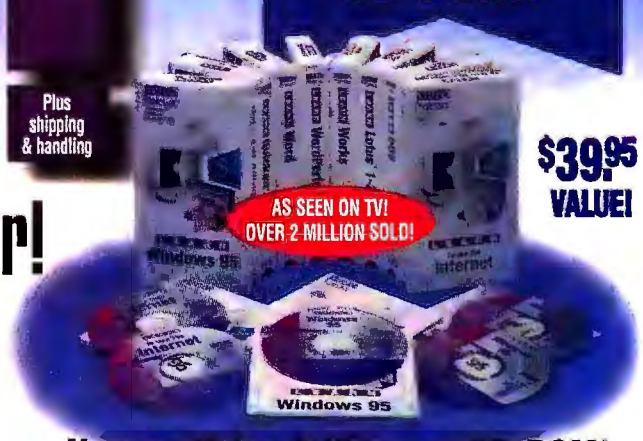


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## Unlock the Policy Editor ◆ Track time spent in programs ◆ Reclaim drive space

# Jump-Start Windows 95

EVERY TIME you start your computer, Windows 95 forces you to wait—and not just for drivers and other software to load. In fact, Windows is waiting for you. Each time the 'Starting Windows 95' message appears on your screen, Windows waits a few seconds to see if you're going to press a key to designate a different boot option. For example, you could press <F8> to display the Start-up menu. But Randy Steele of Apollo, Pennsylvania, points out that if you're sure you'll never need any other boot options, or if you're just plain fast with your fingers, you can shave some seconds off your wait time.

Here's how: In Windows Explorer, choose *View•Options*. With the View tab in front, make sure *Show all files* is selected and click *OK*. Next, go to the root directory of your start-up drive and find the file Msdos.sys. Right-click the file name and choose *Properties* from the menu. Uncheck *Read-only* and *Hidden* and click *OK*. Right-click *Msdos.sys* again and choose *Open With* (if you don't see this option, press **<Shift>** as you right-click). Select *Notepad* from the list and click *OK*. Under the [Options] heading, add the line **BootDelay=0**. Save the file.

The next time you start Windows, things should go a wee bit faster. If you need to strike a key during start-up, you can always repeat the above steps and change the 0 to a higher value. The numbers represent seconds; the default is 2.

### ADD A 'SEND TO' WINDOW TO WINDOWS 3.X

WINDOWS 95 ALLOWS you to right-click any object, click Send To, and then select from a customized list of frequently used locations such as printers, file viewers, folders, and floppy drives. Wouldn't it be great to have a similar feature in Windows 3.*x*? You can. All you need to do is create a custom window in File Manager into which you can drag and drop your files.

Here's how: Start File Manager and select a location for your SendTo folder: Choose *File•Create Directory*. Type **SendTo** (or another name of your choice) and click *OK*. Select the new directory and choose *Window•New Window*. To make sure this window shows only your drag-and-drop targets, choose *View•Directory Only*.

The next step is to fill this window with useful objects. These can be simple batch files for moving or copying files, or they can be applications.

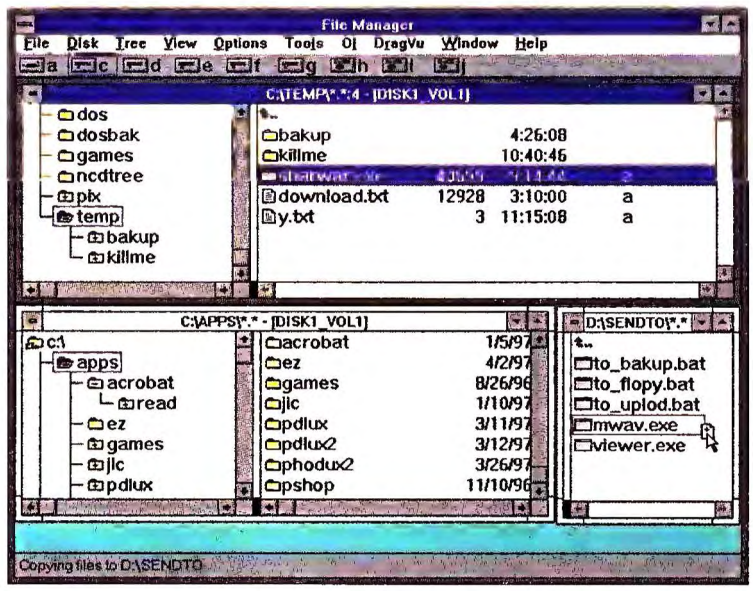


**FIGURE 1: IMITATE WIN 95'S Send To menu in Win 3.x, then drag files onto batch files or programs in the SendTo window.**

To create a batch file for moving files to your Backup directory, start Notepad and type this line: **move %1 c:\backup**. Save the batch file in your SendTo folder with a name like **to_bakup.bat**. To create a batch file for copying files to a floppy, type this: **copy %1 a:**. Save it in your SendTo folder as **to_flopy.bat**. Add as many batch files as you want. Just take care not to use a name like move.bat or copy.bat or they'll conflict with the DOS move and copy commands. Once done, you can drag any file onto the batch file's icon. DOS will flash on screen while the operation is performed, then disappear. (If the DOS window doesn't close, see "Setting DOS Defaults.")

Some applications work in the SendTo folder as well. For example, if you use Microsoft Anti-Virus for Windows (which came with DOS 6.22), copy its file, mwav.exe, to your SendTo directory. Then, to scan a file for viruses, just drag it from a File Manager window onto mwav.exe in the SendTo window (see **FIGURE 1**). Click *OK* to acknowledge the scan report.

Unfortunately, you can't be so cavalier about most program files—many of them need to be in the same directory as the files installed with them. But you may be able to get around this. First, copy just the .exe file to SendTo to see if it will work when you drag a file onto it. If it doesn't, copy the program's .dll files. (Always *copy* files rather than moving them: If you can't make the program work, you can just delete the copied files rather than trying to remember where they originally came from.) If it still doesn't work, copy more files from the program's home directory.

Once it's working, select all the files in SendTo (including any .ini files, such as mwav.ini) except the ones you want to see. Choose *File•Properties*, check the *Hidden* box, then click *OK*. If they don't disappear, choose *View•By File Type*, uncheck *Show Hidden/System Files*, and click *OK*. Then test again. Some applications can't tolerate having some of their files hidden; in that case, you'll have to live with a little extra clutter in your SendTo folder.

If File Manager prompts you for confirmation every time you drop a file on a SendTo item, you can turn off the prompt: Select *Options•Confirmation*, uncheck *Mouse Action*, and click *OK*.

The final step is to arrange your File Manager windows to your liking. You may want to reduce your SendTo window to a small box in the corner where you can easily drop files on its individual contents. When you've finished rearranging, hold down the **<Shift>** key as you choose *File•Exit*. This saves your File Manager window configuration so your SendTo window looks the same the next time you start File Manager. Happy dragging! ▶

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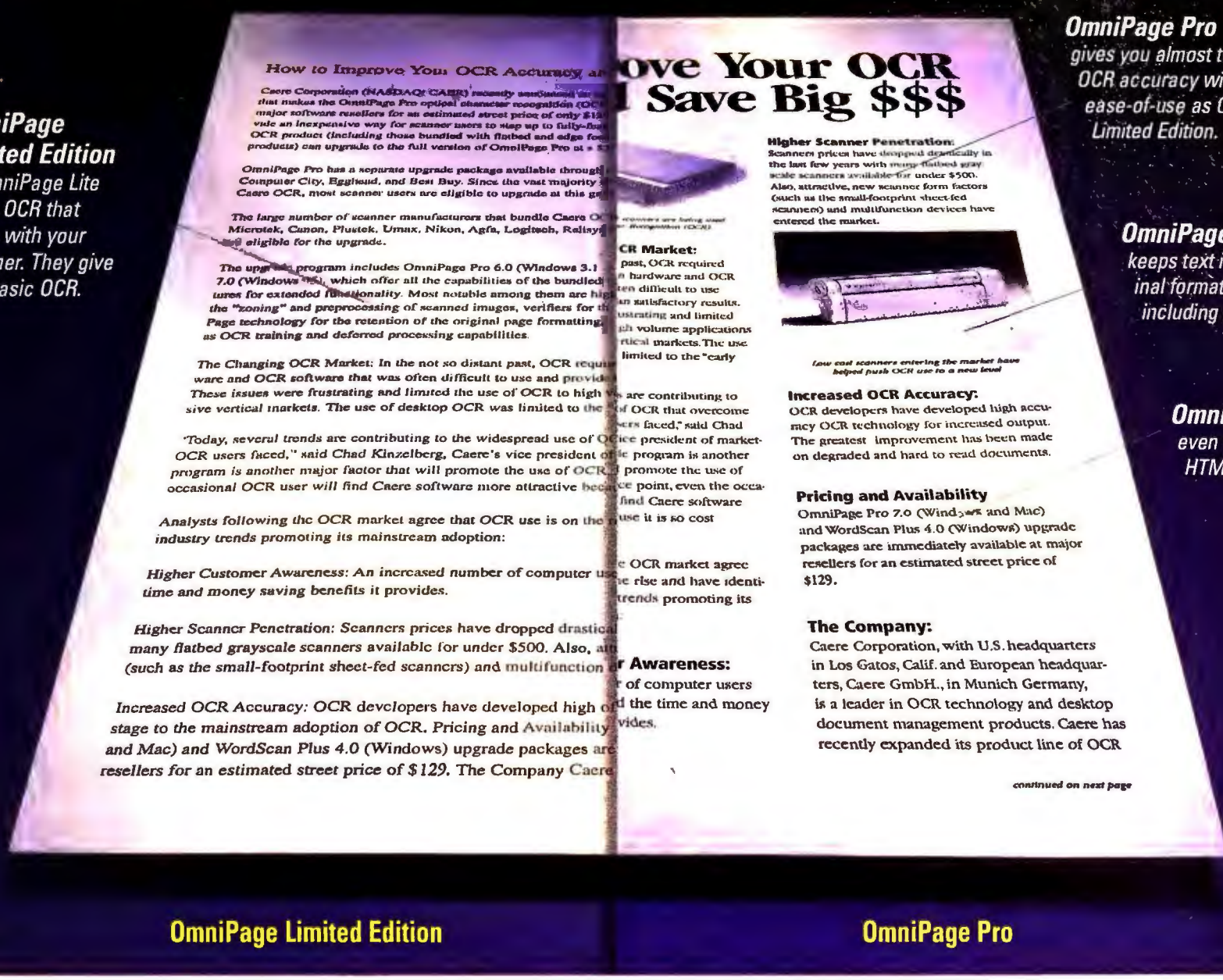

How to Improve Your OCR Accuracy a

Caere Corporation (NASDAQ: CAERE) recently announced the ... that makes the OmniPage Pro optical character recognition (OCR) ... major software resellers for an estimated street price of only $12... vide an inexpensive way for scanner users to step up to fully-fea... OCR product (including those bundled with flatbed and edge feed... products) can upgrade to the full version of OmniPage Pro at a $7...

OmniPage Pro has a separate upgrade package available through ... Computer City, Egghead, and Best Buy. Since the vast majority ... Caere OCR, most scanner users are eligible to upgrade at this ga...

The large number of scanner manufacturers that bundle Caere OC... Microtek, Canon, Plustek, Umax, Nikon, Agfa, Logitech, Relisys ... are eligible for the upgrade.

The upgrade program includes OmniPage Pro 6.0 (Windows 3.1 ... 7.0 (Windows 95), which offer all the capabilities of the bundled ... tures for extended functionality. Most notable among them are hig... the "zoning" and preprocessing of scanned images, verifiers for th... Page technology for the retention of the original page formatting, ... as OCR training and deferred processing capabilities.

The Changing OCR Market: In the not so distant past, OCR requir... ware and OCR software that was often difficult to use and provid... These issues were frustrating and limited the use of OCR to high v... sive vertical markets. The use of desktop OCR was limited to the ...

"Today, several trends are contributing to the widespread use of OC... OCR users faced," said Chad Kinzelberg, Caere's vice president of ... program is another major factor that will promote the use of OCR. ... occasional OCR user will find Caere software more attractive beca...

Analysts following the OCR market agree that OCR use is on the ... industry trends promoting its mainstream adoption:

Higher Customer Awareness: An increased number of computer use... time and money saving benefits it provides.

Higher Scanner Penetration: Scanners prices have dropped drastica... many flatbed grayscale scanners available for under $500. Also, att... (such as the small-footprint sheet-fed scanners) and multifunction ...

Increased OCR Accuracy: OCR developers have developed high o... stage to the mainstream adoption of OCR. Pricing and Availability ... and Mac) and WordScan Plus 4.0 (Windows) upgrade packages are ... resellers for an estimated street price of $129. The Company Caere ...

ove Your OCR
Save Big $$$

...canners are being used ... Recognition (OCR)

**Higher Scanner Penetration:**
Scanners prices have dropped drastically in the last few years with many flatbed gray scale scanners available for under $500. Also, attractive, new scanner form factors (such as the small-footprint sheet-fed scanners) and multifunction devices have entered the market.

**CR Market:**
past, OCR required ... hardware and OCR ...ten difficult to use ...an satisfactory results. ...ustrating and limited ...gh volume applications ...rtical markets. The use ... limited to the "early

*Low cost scanners entering the market have helped push OCR use to a new level*

...are contributing to ...f OCR that overcome ...ers faced," said Chad ...ice president of market- ...e program is another ... promote the use of ...ce point, even the occa- ...find Caere software ...use it is so cost

...e OCR market agree ...e rise and have identi- ...trends promoting its

**...r Awareness:**
...r of computer users ...d the time and money ...vides.

**Increased OCR Accuracy:**
OCR developers have developed high accuracy OCR technology for increased output. The greatest improvement has been made on degraded and hard to read documents.

**Pricing and Availability**
OmniPage Pro 7.0 (Windows and Mac) and WordScan Plus 4.0 (Windows) upgrade packages are immediately available at major resellers for an estimated street price of $129.

**The Company:**
Caere Corporation, with U.S. headquarters in Los Gatos, Calif. and European headquarters, Caere GmbH., in Munich Germany, is a leader in OCR technology and desktop document management products. Caere has recently expanded its product line of OCR

*continued on next page*

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| Key Feature Comparison | OmniPage Pro | OmniPage Limited Edition |
|---|---|---|
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| AutoOCR Toolbar™ for easy, one-button OCR processing | ✔ | |
| OCR Wizard to guide you through the process | ✔ | |
| Integrates with most image editors like Photoshop | ✔ | |
| OCR from within your favorite applications | ✔ | ✔ |
| Retains original layout | ✔ | |

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## INSTANTLY RESIZE COLUMNS IN EXPLORER AND MY COMPUTER

IF YOU SELECT View•Details in Windows Explorer or My Computer, you may find yourself futzing with the widths of the columns that display the file name, size, type, date modified, and so on. You can manually adjust the width of any column by positioning the pointer over the line between the column labels and dragging.

But Ronald H. J. Doeleman, from the Amersfoort in the Netherlands, points out a better way: Just double-click the border between the column labels, and Windows will automatically resize the column to the left to fit the column's widest item (see **FIGURE 2**). No more guesswork! This tip works in My Computer, Explorer, Microsoft Exchange, and Mijenix PowerDesk Explorer Plus.

| Name | Size | Type | Modified |
|---|---|---|---|
| Backup files | | File Folder | 08/27/95 2:41 PM |
| Apr reports completed | 104KB | Document for Word | 07/30/96 6:35 PM |
| E-mail comments from Mr. S. | 5KB | Text Document | 05/17/96 1:17 PM |
| Feb reports completed | 100KB | Document for Word | 07/04/95 11:34 AM |
| First quarter deadlines | 14KB | XLS or XLB - Excel Worksheet | 10/15/96 8:10 PM |

**FIGURE 2: RESIZE COLUMNS TO FIT wide entries by double-clicking the column border.**

## SELECT DETAILS COLUMNS IN MICROSOFT EXCHANGE

WHILE WE'RE ON the subject of columns, here's a bonus tip: Exchange gives you many customization options for details columns. Choose *View•Columns* and click the *Add* and *Remove* buttons to select the columns you want displayed. The *Move Up* and *Move Down* buttons let you determine the order of the columns. You can even set the widths of individual columns by typing in a value. Click *OK* when you're done. If you're not happy with the finished product, just open the dialog box at any time and click *Reset* and then *OK* to return to the default settings.

## THE CASE OF THE DISAPPEARING FONTS

YOU HAVE Adobe Type Manager and you just bought a bunch of PostScript fonts—Minion, Minion-Semibold, and Minion-Bold, as well as italic counterparts for each. But when you try to apply the fonts, you see only two of them listed: Minion and Minion Bold. What's going on?

The answer is that fonts are style-linked in Windows, meaning that four font variations (plain, italic, bold, and bold italic) are accessed via a single menu item (the font name). To get the bold and italic versions in a file, you select the font name from an application's font list or menu, then use the italics and bold formatting options. Windows figures out what you're up to and gives you the appropriate font—for example, Minion-Italic when you select Minion and apply italics.

But a wrinkle pops up when you select a font that has a semibold version. The font manufacturer can style-link only four versions. Consequently, some version gets left out in the cold. Usually, this is the bold font. That means when you select a font (Minion, for example) and apply bold, you're really getting Minion-Semibold. To get the genuine Minion-Bold, you have to choose Minion Bold.

To tell what fonts are style-linked to each other, open Adobe Type Manager's Control Panel. Style-linked fonts are represented with a comma in their name. That means that 'Minion, Bold' or 'Minion, BOLD' (note the comma) really indicates Minion-Semibold (its PostScript name). On the other hand, Minion-Bold appears in ATM (and in most font lists) as 'Minion Bold', with no comma (see **FIGURE 3**).

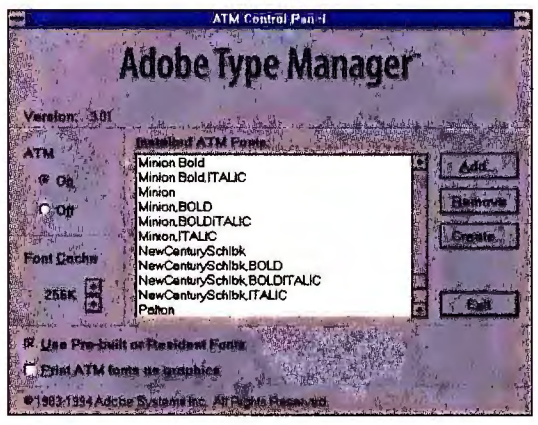
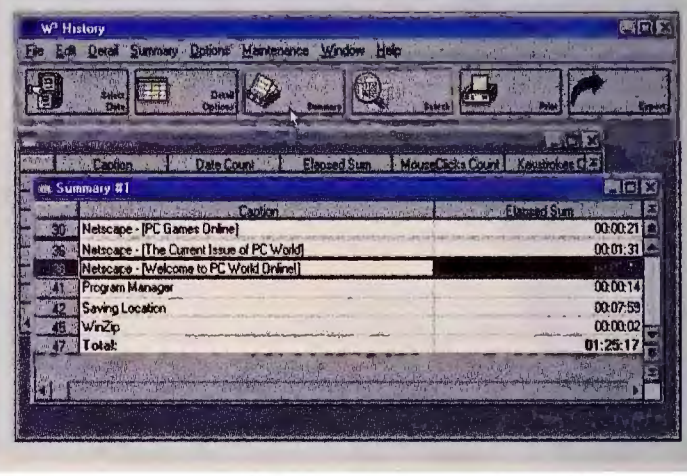



**FIGURE 3: STYLE-LINKED FONTS appear on an application's font list as one item.**

WINDOWS TOOLBOX

### A Secret Agent for Your System

ARE YOU LOSING TRACK of time—billable or otherwise? WinWhatWhere, for Windows 95 and Windows 3.*x*, reports on the time you spend in each application, so you know exactly how much to charge Project X's account. The network version tracks what everyone on the network is doing, including the Web sites they're visiting, so you know who's working and who's goofing off. A 30-day trial version is available on PC World Online or from the developer (www.winwhatwhere.com). A single-user copy costs $99; the ten-workstation network version goes for $495.




## ESCAPING YOUR OWN SECURITY TRAP

IN FEBRUARY'S *Windows Tips* I explained how to use Windows 95's System Policy Editor to restrict access to your PC (see "Restricting Access in Windows 95"). Unfortunately, a few unlucky readers, like Rajeev Sharan, overlooked the vital step of specifying Policy Editor's program file (poledit.exe) as one of the allowed applications. Without permission to run Policy Editor, you won't be able to change the restrictions in the future. And misspelling poledit.exe in the list of allowed applications can have the same disastrous effect.

Fortunately, Windows 95 gives you an easy way out through its ironically named Safe Mode. Here's what to do: Restart your computer. When you see the message 'Starting Windows 95', press **<F8>**. When you see the Startup menu, select *Safe Mode* and press **<Enter>**. If you moved Policy Editor to a floppy disk, copy it back to your Windows folder. Now start the Policy Editor, and choose *File•Open Registry*. Double-click *Local User*. Click the plus sign next to System and the plus sign next to Restrictions. To remove all restrictions, uncheck all the boxes under the ▶

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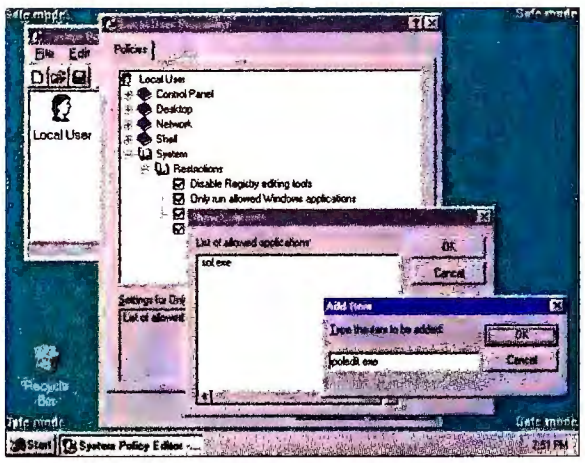


**FIGURE 4: TO MODIFY POLICY EDITOR'S restrictions, boot to Windows 95's Safe Mode.**

Restrictions branch (see **FIGURE 4**).

To change which applications are permitted, check *Only run allowed Windows applications* and click the *Show* button. Click *Add,* type **poledit.exe**, and click *OK*. Continue to click *Add* to add permitted applications. As you have no doubt guessed, you can also remove access to an application by selecting its name in the list and clicking *Remove*.

When you've set up the restrictions you want, click *OK* until you've closed all dialog boxes. Then choose *File•Exit* and click *Yes* when prompted to save your changes. You can now restart Windows to return to normal mode.

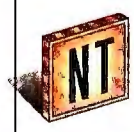
The downside, of course, is that Safe Mode can be used by anyone to alter your restrictions or just to wreak general havoc on your system. (Maybe Microsoft should have called it "Unsafe Mode.") If you have files that need special protection, store them on a secure server if you're on a network. If you're not on a network, your best bet is to upgrade to Windows NT.

## SETTING DOS DEFAULTS

WHEN YOU NEED to adjust how a DOS application works with Windows—give it more memory, make it run in a window, and so forth—you use the PIF Editor to adjust these settings in the application's program information file (PIF).

But what about DOS applications that don't have PIFs—for example, most batch files? The solution is to modify the _default.pif file. This is the file Windows refers to for all batch files and applications that don't have their own PIFs. For example, to make all PIF-less DOS programs run in a window, you start the PIF Editor and choose *File•Open*. Select *_default.pif* in the Windows directory, and click *OK*. Then change any settings you want—in this case, *Windowed* (see **FIGURE 5**). If your DOS windows aren't going away when you exit, make sure *Close Window on Exit* is checked. When you've got the settings you want, choose *File•Save*.

## MOVE NT'S SWAP FILE TO ANOTHER DRIVE



IS THE DRIVE on which you installed Windows NT getting a little too full? If you have another drive on your system with room to spare, you can regain a big chunk of your NT

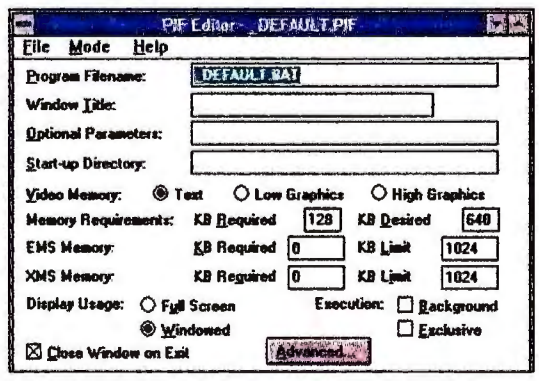



**FIGURE 5: CONTROL HOW A DOS app runs in Windows by modifying the _default.pif file.**

drive by moving its virtual memory paging file. This is the swap file Windows uses to supplement your system's memory and allow you to run more applications.

Just choose *Start•Settings•Control Panel* and double-click the *System* icon. Click the *Performance* tab in the System Properties

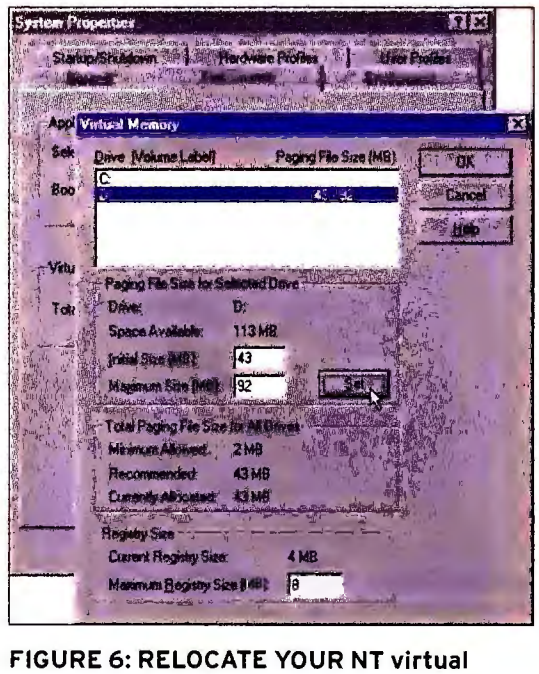



**FIGURE 6: RELOCATE YOUR NT virtual memory paging file to another drive.**

## All the Cache Icon Get

**There's a hidden file in my Windows directory called ShellIconCache. What is the purpose of this file? It's almost 1.3MB, and I'd like to get rid of it.**

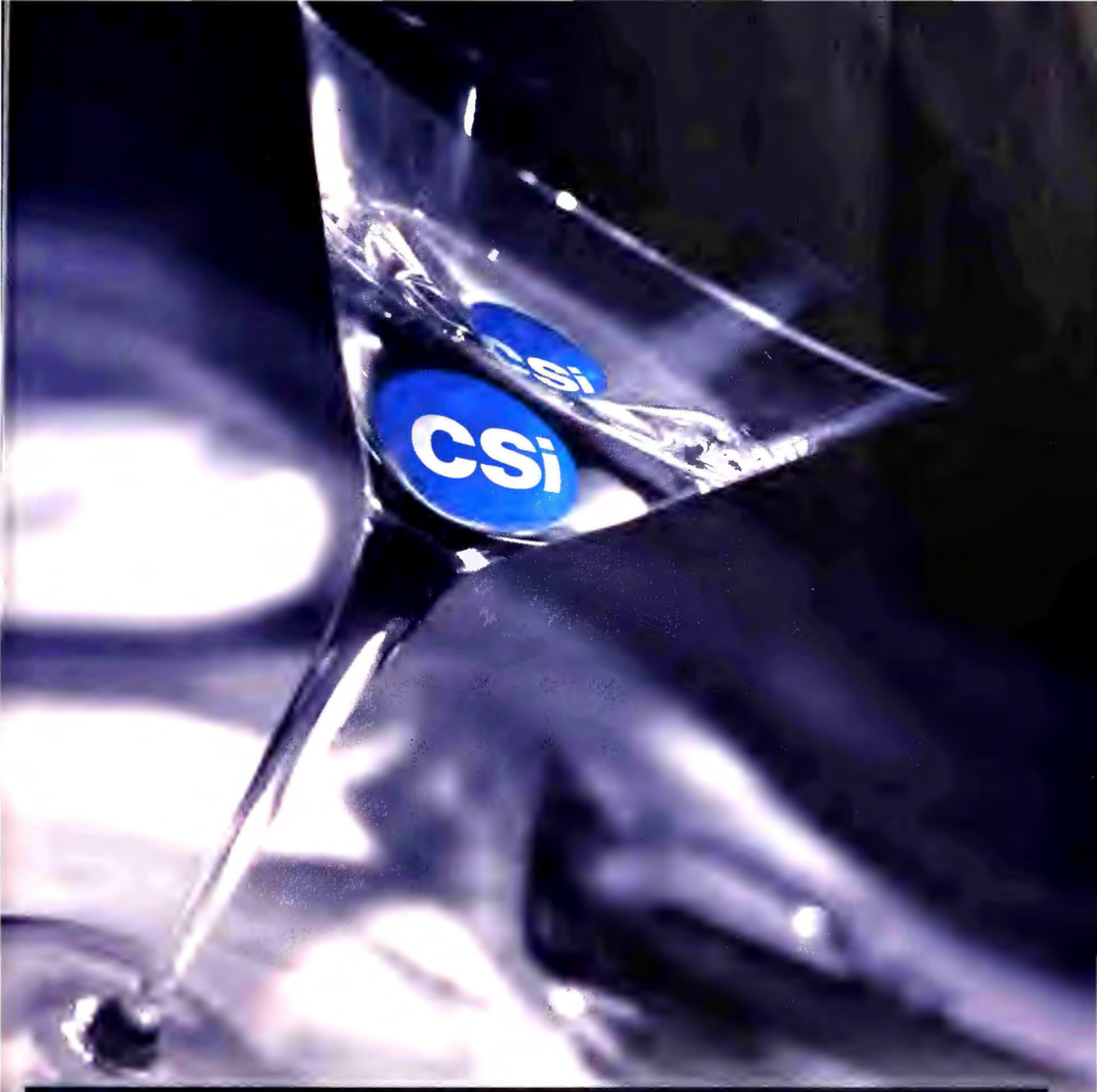
*Vale Nadar, Internet*

As you might have guessed from the name, this file is a cache—a storage place for recently used information that the operating system can access quickly. And as you might also have guessed, this particular cache stores information about all those fancy icons on your desktop—Control Panel, Explorer, and so forth. This file helps Windows 95 and Windows NT 4.0 display icons with the perkiest possible performance. In most cases, you should leave the ShellIconCache file alone.

Once in a while, however, you may notice a problem with your icons—they may be all black or display the wrong image. This is a sign that ShellIconCache is damaged. Here's a simple solution that should work for both Windows 95 and Windows NT: Right-click on the desktop and choose *Properties*. In the Display Properties dialog box, click the *Appearance* tab. From the Item drop-down list, choose *Icon*. Click the up arrow in the Size box to increase it by one pixel. Click *Apply*, click the down arrow in the Size box to return the icons to their previous dimensions, and click *OK*.

dialog box, then click the *Change* button. With the drive containing your current paging file selected, type **0** for Initial Size and **0** for Maximum Size and click *Set*. From the list at the top of the dialog box, select the new drive for the paging file. For Initial Size, type the Recommended amount listed in the middle of the dialog box. For Maximum Size, type in the amount of hard disk space you're willing to sacrifice to this endeavor. Then click *Set* (see **FIGURE 6**). Click *OK*, then *Close*, then *Yes* to restart your computer.

*Find files from this article at www.pcworld.com/files and additional tips at www.pcworld.com/hereshow.* Windows Tips *welcomes your questions and tips and pays $50 for published items. Contributing Editor Scott Dunn is a principal author of* The PC Bible, 2nd Edition *(Peachpit Press, 1995, 800/283-9444).* *See page 14 for contact information.* ■

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**Circle 43 on reader service card**

# Create Automatic Worksheet and Graph Titles

MY DAD USES a spreadsheet to track attendance in the classes he teaches. To add nice-looking titles to his attendance reports, I use the following Excel formula: **=concatenate("Attendance sheet for ", text(today(), "mmmm, yyyy"))**. The result is 'Attendance sheet for September, 1997'.

*Andrew Kooi*

*Selangor Darul Ehsan, Malaysia*

THANKS FOR the tip, Andrew. The concatenate function used in Excel and Quattro Pro supplants the old concatenation operator &, which works in any spreadsheet program. So you could have written your formula **="Attendance sheet for "&text(today(), "mmmm, yyyy")**, which to my eye is a little easier to read. 1-2-3's @datestring function can come close to this. The formula **+"Attendance sheet for "&@datestring(@now)** yields 'Attendance sheet for 9/1/97'.

But things get a bit trickier for 1-2-3 or Quattro Pro users who want to duplicate your results exactly:

**+"Attendance sheet for "&@choose(@month (@now)-1,"January","February","March", "April","May","June","July","August", "September","October","November", "December") &" 19"&@string(@year(@now),0)**

Incidentally, you can place such a formula on an Excel chart. After you've built your chart, enter the formula into any cell (say A1 on Sheet1), then double-click the chart if it's embedded, or select it if it's on a chart sheet. Click outside the chart area, enter **Sheet1!&A$1** on the formula bar, and press **<Enter>**. You'll get a text box that displays the contents of the cell. Drag it into position, and format it as you would any other chart text.

In 1-2-3 or Quattro Pro, you can make the label appear in report headers and footers by selecting *File•Page Setup* and then entering a backslash and the cell address in the Header or Footer box. For example, the command **\A:A1** displays the contents of cell A1 on Sheet A.

This also works for chart titles, except in 1-2-3 release 5.0, in which you need to select the chart and then select *Chart•Headings*. In the Title section of the dialog box, enter **A1** (or the address of the cell that contains the text you want to use), and click the *Cell* box. Then click *OK*.

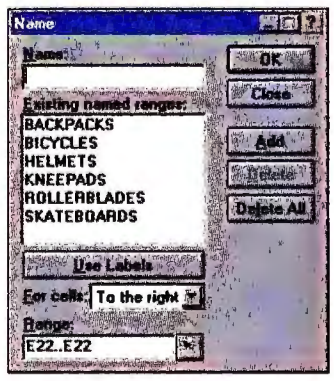


**FIGURE 1: Clearing range names is easy in 1-2-3.**

## CLOSE ALL EXCEL WORKBOOKS IN ONE STEP

CLOSING SEVERAL open Excel workbooks one by one before beginning a new project is a pain. To speed things up, hold down the **<Shift>** key when you click the *File* menu, and you'll see the *Close All* option in the menu.

## DELETING ALL RANGE NAMES IN ANY SPREADSHEET

A TIP OF THE HAT to Ahmad A. Elmi of Beaverton, Oregon, for this useful suggestion. Suppose you want to clear out all of the range names in your workbook and just start with a clean slate. It's simple: In 1-2-3, select *Range•Name* and click *Delete All* (**FIGURE 1**); in Quattro Pro, select *Insert•Block Names* and click *Delete All*.

But what about Excel? Its *Insert•Name•Define* dialog box lacks a *Delete All* option, so you'll need to do this: Select *Tools•Options*, click the *Transition* tab, select *Lotus 1-2-3 Help*, and click *OK*. Now, press slash (*/*). In the resulting Help for Lotus 1-2-3 Users dialog box, double-click *Range*, then *Name*, then *Reset*. Make sure the *Demo* button is selected. If it's not, you'll see the instructions, but the commands won't be executed (see **FIGURE 2**).

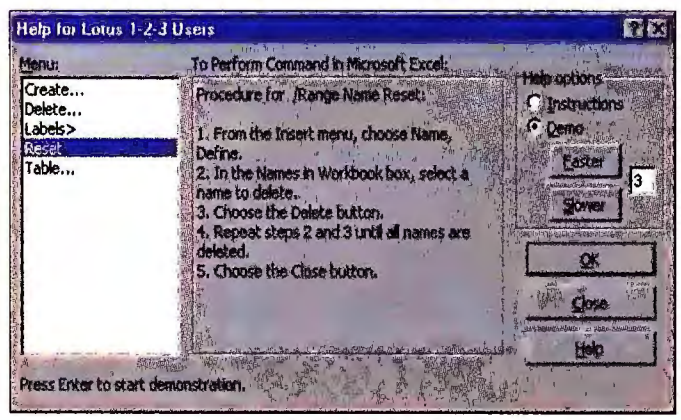


**FIGURE 2: TO DELETE ALL RANGE NAMES from an Excel worksheet, you must invoke Lotus Transition help.**

## PRINTING MORE THAN ONE RANGE ON A PAGE

WHEN WORKING IN 1-2-3 for Windows, how can I select two ranges for printing on the same page?

*David Jordan, Wantagh, New York*

BOTH 1-2-3 AND Quattro Pro (but not Excel) can print multiple ranges (called collections) on the same page. Select *File•Print* (or *Print Preview*) and click *Selected Range* (in Quattro Pro, *Block Selection*). Enter the addresses or names of the ranges you want to print, separated by a comma, as in **FIGURE 3**. Or you can select the collection on the worksheet before you execute the command: Select the first range of cells, then hold down **<Ctrl>** while you select the next range.

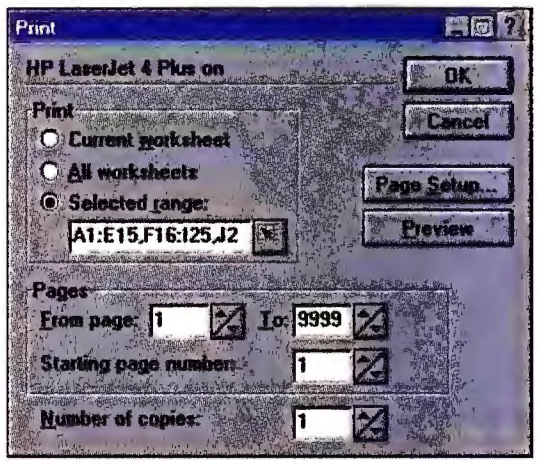


**FIGURE 3: PRINT MULTIPLE RANGES on a page in 1-2-3 (shown here) and Quattro Pro.**

*Find more tips at www.pcworld.com/hereshow.* Spreadsheets *welcomes your questions and tips and pays $50 for published items. Contributor Richard Scoville is a software training consultant in Chapel Hill, North Carolina. See page 14 for contact information.* ■

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**Rotate Word Pro text for special effects ◆ Delete formatted text ◆ Speed file access**

# Replace Word Formatting

HAVE YOU EVER needed to replace all the boldface in a document with italics, or change the font from Courier to Times New Roman? It's easy, once you know a few tricks. Here's how (see **STEP BY STEP** for an illustrated guide):

1. Place the cursor at the beginning of the document and select *Edit•Replace*. In Word 97, click *More* to expand the dialog box to include formatting options. If the No Formatting button is not grayed out, click it to remove any previous formatting information.

2. Using the formatting toolbar, select the formatting that you want to replace. For example, if you're replacing boldfacing, click the *Bold* button on the toolbar. To replace a font, pick the font from the font drop-down list. Your choices will appear below the 'Find what' box. You can select multiple options in this step. If you make a mistake, click the *No Formatting* button and start over.

3. After choosing all the formatting you want to replace, press **<Tab>** to jump to the 'Replace with' box. Again, click the *No Formatting* button if it's not grayed out.

Now, here's where it gets tricky: If you're replacing boldfacing, italics, or underlining, double-click the *Bold, Italic,* or *Underline* icon. The words 'Not Bold', 'Not Italic', or 'No underline' will appear under the 'Replace with' box. If you're replacing other formatting options, such as font or style, just select them once from the toolbar.

4. To make the actual replacement, click *Replace All*. Check your document, and if everything's okay, click *Cancel* to close the dialog box. If not, select *Edit• Undo Replace All*, check the dialog box for errors, and repeat the steps to make corrections.

This toolbar technique will handle most of your needs, but if you want to find and replace formatting that does not appear on the toolbar or that can't be accessed while the Find and Replace dialog box is open, click the *Format* button in the dialog box while the cursor is in the 'Find what' or 'Replace with' box.

## SLASH WORDPERFECT FILE SIZE

IF YOU HAVE a template that contains a graphic, such as your company's logo, odds are that documents you create from that template are larger than they need to be. By default, WordPerfect 6.1 and 7 save the graphic in each document. But you'll save tons of space if you link the graphic to the document instead. Here's how:

1. Close all documents and select *File•New*. In the New Document dialog box, click once on the name of the template you want to alter, click *Options*, then select *Edit Template* from the drop-down list.

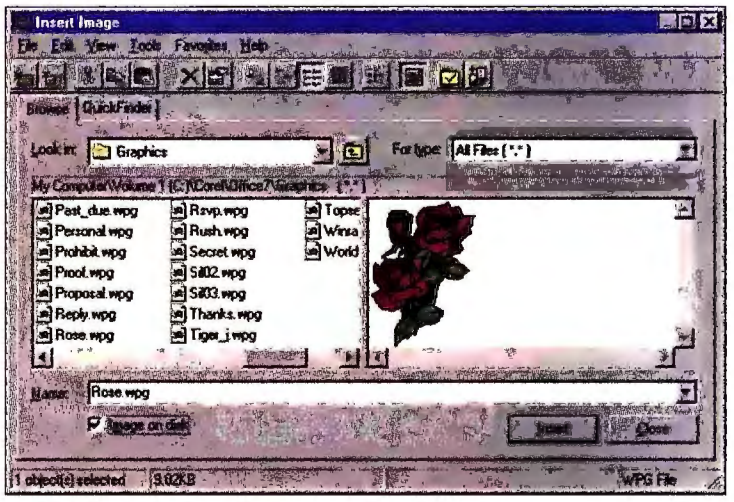



**FIGURE 1: INSTEAD OF SAVING a graphic in a template, save a link to it so the graphic isn't saved with every document.**

2. Click the graphic in the template, then press **<Delete>** to get rid of it.

3. Select *Graphics•Image*. Locate the graphic in the Insert Image dialog box, and click once on its file name. To avoid storing the graphic in each document, check the *Image on disk* box (see **FIGURE 1**), then click *Insert* (*OK* in version 6.1).

4. Move and resize the graphic if needed.

5. When you're finished, select *File•Save*, then *File•Close*.

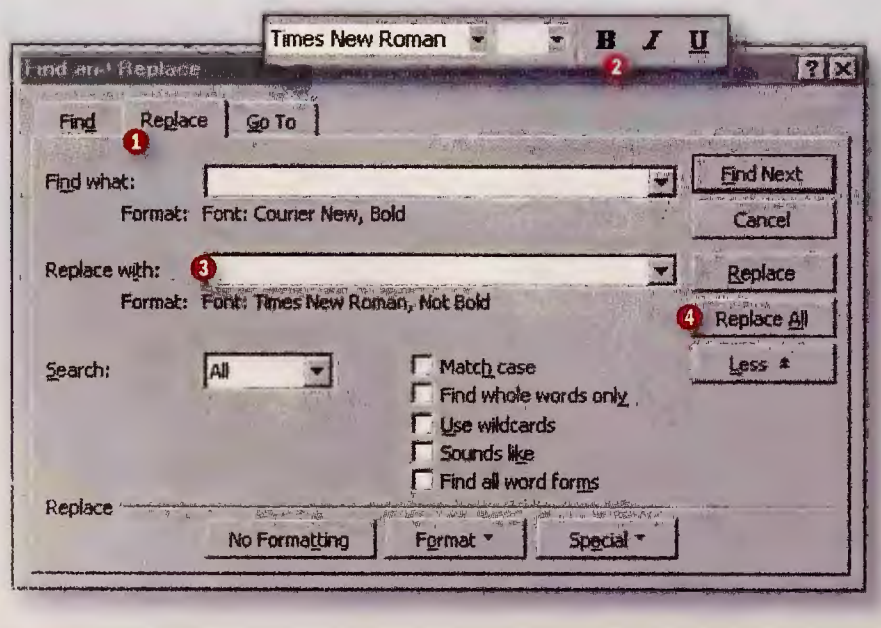
From now on, documents created with this template will store the location of the graphic file instead of the graphic itself.

## ROTATE TEXT IN WORD PRO

A VERTICAL LINE of text running up the left side of your letterhead or down the right side of a brochure can be striking, and it's easy to create in Word Pro 96 and 97. Here's a quick six-step guide to changing text direction in Word Pro: ▶

**STEP BY STEP**

## Replace Formatting and Text With Word's Find and Replace Feature




1. Select *Edit•Replace* and click the *More* button if available. Then click the *No Formatting* button if it's not grayed out.

2. On the formatting toolbar, select or click the option(s) you want to replace.

3. Tab to or click the 'Replace with' box, and click the *No Formatting* button. On the formatting toolbar, select or click the option(s) you want to apply.

4. Click *Replace All*, and then click *Close*.

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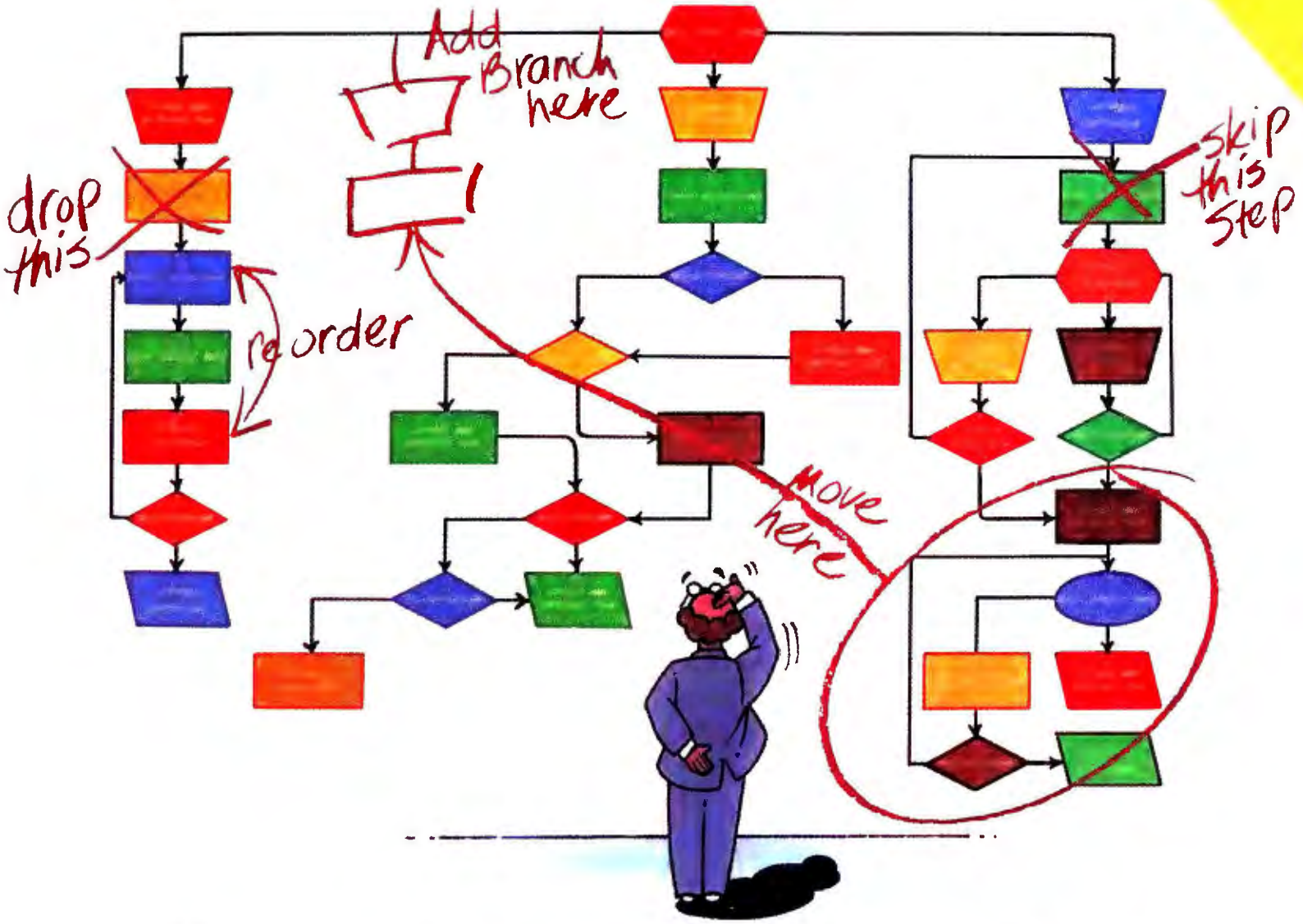


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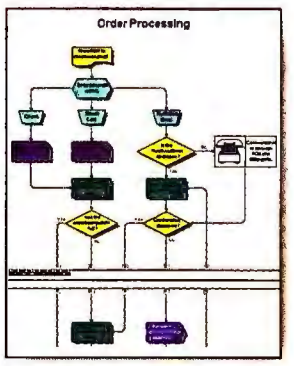


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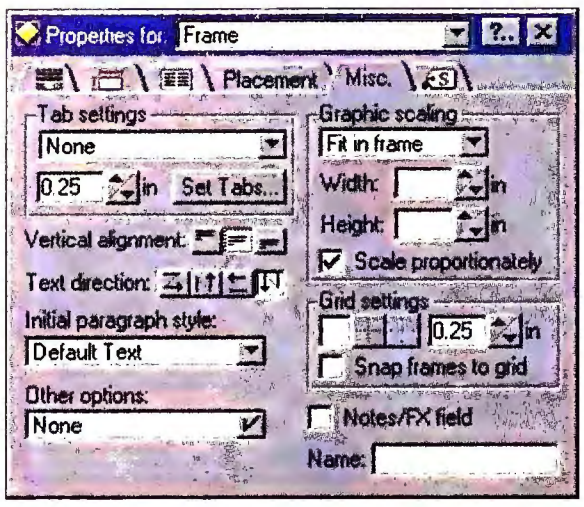



**FIGURE 2: CHANGE THE DIRECTION of text in a Word Pro frame by selecting from this InfoBox.**

1. Start by selecting *Create•Frame.* In the Create Frame dialog box, click *Size and Place Frame Manually.*
2. Drag a frame onto your document, then release the mouse button.
3. Type your text inside the frame, then select it and choose a font, size, and color using normal Word Pro formatting commands. If you've created a long vertical frame, much of the text you enter won't be visible until it's rotated to fit the frame.
4. Right-click the frame, then select *Frame Properties* from the resulting menu.
5. In the Properties for Frame InfoBox, click the *Misc.* tab, then click one of the four Text Direction icons to display text horizontally, from left to right; vertically, up the left side of the page; horizontally and upside down, from right to left; or vertically, down the right side of the page (see **FIGURE 2**). Click one of the Vertical Alignment icons to position the text at the top of the frame, in the center, or at the bottom. While the InfoBox is open, set other frame options such as borders and background colors and patterns.
6. Close the InfoBox, then adjust the frame's size and position if necessary.

## DELETE STRIKE-THROUGH TEXT IN WORD

I'M WORKING ON a document with an editor who's using strike-through formatting rather than Word's Revision Marking tools to mark text for deletion. Is there a way to quickly delete all of the words and sentences marked with strike-through without scrolling through the entire document?

*Sunny Grewal, San Pablo, California*

WORD'S FIND AND REPLACE tools will work. Here's how to proceed:

1. With the cursor at the beginning of your document, select *Edit•Replace.*
2. If you're using Word 97, click *More* to expand the dialog box to show additional commands.
3. Click the *Format* button and select *Font* from the pop-up menu.
4. Click the *Strikethrough* check box in the Effects area of the Find Font dialog box, and click *OK* (see **FIGURE 3**).
5. Click the *Replace All* button in the Replace dialog box, and every instance of text that was formatted with the strike-through attribute will disappear. If Revision Marking is on, the text will be marked for deletion.

If you make a mistake in this process, immediately select *Edit•Undo Replace All* to restore the formatting.

You can use the same technique to remove text with any formatting. Just make sure to select only the formatting that you want to replace and not to enter anything in either the 'Find what' or 'Replace with' boxes in the dialog box.

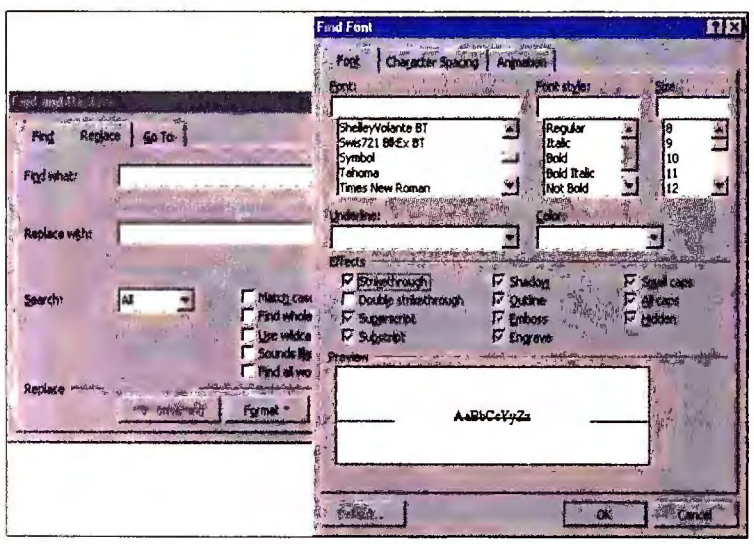



**FIGURE 3: DELETE TEXT WITH STRIKE-THROUGH formatting by using Word's Find and Replace feature.**

Word Processing *welcomes your questions and tips and pays $50 for published items. Contributing Editor George Campbell contributed to* The PC Bible *(Peachpit Press, 1995, 800/283-9444). See page 14 for contact information.* ■

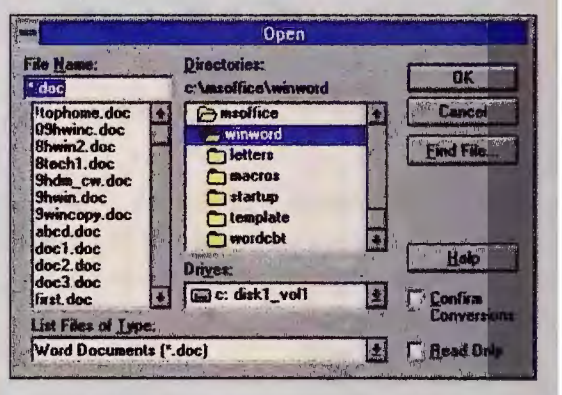
## Quick Tips for Fast File Access

IF YOU'RE LIKE most people, you have a long list of documents in your working directory, more than will fit in the Open dialog box. Scrolling through this list every time you want to open a file is time-consuming, especially if the file is near the end.

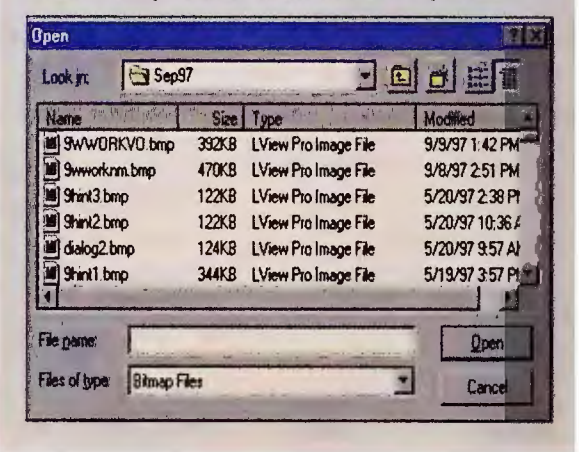
Here are three tips to speed file selection:

**1. Type the first letter.** In Windows 3.*x* or Windows 95, select *File•Open,* click once on any file name in the Open dialog box, then type the first letter of the file you want to open. The highlight will jump to the first file name that starts with that letter. If there's more than one file, continue pressing the letter until the file you want is highlighted. Press <Enter> to open the document.

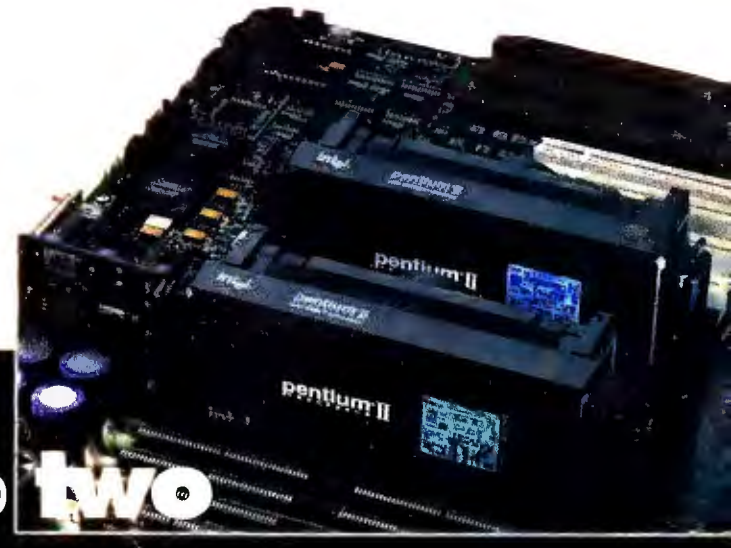
**2. Force often-used files to the top of the list.** If you have a document you load again and again, save it with a name that begins with an exclamation point, the character that appears first in any sorted list box. Your file will now top the Open dialog box, as in the figure below. This technique works in all Windows programs.




**3. Sort files by date.** In Windows 95, to find the file you most recently worked on in a folder, click the *Details* icon in the Open dialog box, then click the *Modified* column button to sort the files by date (see below). You may have to click twice to sort the files in descending, rather than ascending, order.



# It's a mini-tower, it's a rack drawer, it's...



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**Circle 9 on reader service card**

# Simplify Data Entry With Access Lookup Fields

YOU'RE ENTERING information into an employee database, quickly typing the first name, last name, and department. Then you land on the employee ID field. You have to stop, find the table where the number is stored, type it in, then double-check it. There's a better way: Create a lookup field to make Access find the ID for you.

The Expenses database included with Access has a good example of a lookup field. If you open the Expense Reports table and move the cursor to the EmployeeID field, you'll see a drop-down arrow on the right. Click the arrow, and you'll see a list of the employees whose ID numbers are valid entries for the field (see **FIGURE 1**). When you pick a name from the list, Access automatically stores the employee's ID number in the Employee ID field, but shows you the name instead of a cryptic number.

To see what's behind the EmployeeID lookup field in the Expense Reports table, switch to Design view, place your cursor in the EmployeeID row, and click the *Lookup* tab in the Field Properties pane (**FIGURE 2**). The controls on the Lookup tab determine, for example, whether a drop-down list appears at all, where the values come from, how many columns show up on the list, how wide they are, and whether the data you enter in the field must be a value on the drop-down list.

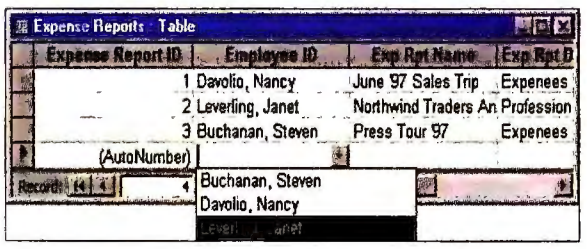


**FIGURE 1: A LOOKUP FIELD lets you see a drop-down list of possible values for the field.**

These controls probably don't make immediate sense to you. Fortunately, there's help, in the form of the Lookup Wizard. This wizard asks you a bunch of questions about the list you want to use to limit a field's values, then fills in the values on the Lookup tab for you.

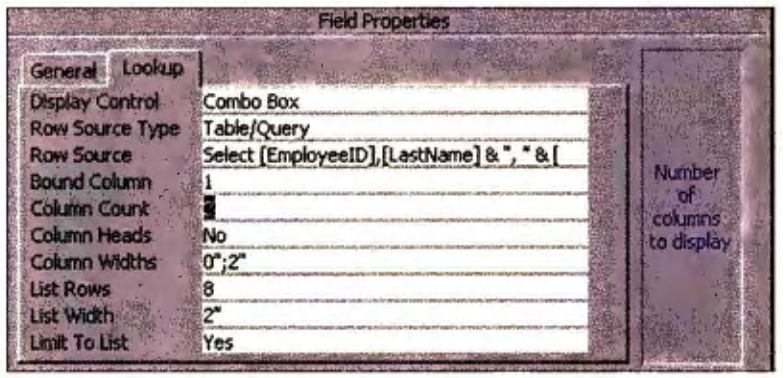


**FIGURE 2: THE CONTROLS BEHIND the lookup field may seem inscrutable, but the Lookup Wizard generates the settings for you.**

To start the Lookup Wizard, open the table with the field that you want to add a lookup to. Switch to Design view, enter a field name or select the field if it already exists, and choose *Lookup Wizard* from the Data Type column. Here's how to step through the wizard to create the EmployeeID lookup field:

1. The wizard asks where the lookup list should get its values, from a field in a table or query, or from a list of values you enter. We want the drop-down list for the EmployeeID field to draw its values from the Employees table, so leave the first option selected and click *Next*.
2. Select the *Employees* table and click *Next*.
3. The wizard will ask for the fields you want to appear in the list. Choose *FirstName* and *LastName*, and click *Next*.
4. Resize the columns by dragging their right borders, and uncheck *Hide key column* if you like (see **FIGURE 3**). When you uncheck this option, the key field (which contains the EmployeeID number from the Employees table) will appear in the drop-down list.
5. Enter a label for your lookup column and click *Finish*.

Save your table and switch from Design view to Datasheet view to try out the new drop-down list. Although both first name and last name appear in the drop-down list, notice that only the first name appears in the field. We'll fix that in a moment.

Go back to Design view and look at the Lookup tab for the field we just created. Notice the expression for Row Source: 'SELECT DISTINCTROW [Employees].[EmployeeID],[Employees].[FirstName], [Employees].[LastName] FROM [Employees]'. This string tells Access to show two columns in the drop-down list, one for the FirstName field and one for LastName. Compare this with the Row Source control in Figure 2: 'Select [EmployeeID], [LastName] & ", " & [FirstName] From [Employees] ORDER BY [LastName] & ", " & [FirstName];'. This produces a drop-down list with one column of values, like 'Davolio, Nancy'. To get this same effect, just edit the expression generated by the wizard. You may have to increase the column width for the EmployeeID field.

When you create a form with a lookup field, the drop-down arrow doesn't appear automatically. You have to attach a Combo Box to the field. First, open your form in Design view and make sure the Control Wizards button in the Toolbox is depressed (dimmed). Click the *Combo Box* tool in the Toolbox, then the name of the lookup field, and drag the mouse to create the box on the form and start the Combo Box Wizard.

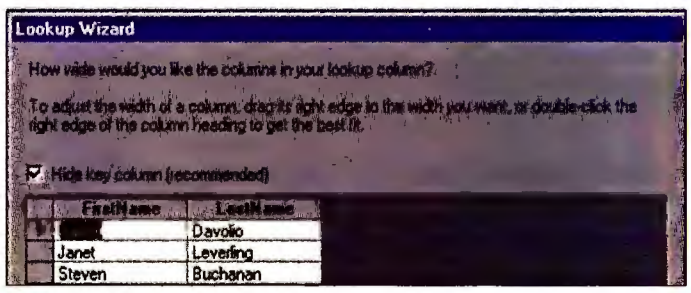


**FIGURE 3: DISPLAY A RECOGNIZABLE name instead of the employee ID number (the key column).**

*Contributing Editor Celeste Robinson is coauthor of* Mastering Paradox 7 for Windows 95 *(Sybex, 1996, 800/227-2346).* *See page 14 for contact information.* ■

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**Protect your privacy ◆ Turn off AOL pop-up menus ◆ Add buttons to Explorer's toolbar**

# How Safe Is It to Buy From a Web Auction Site?

**I'VE VISITED SOME Internet auction sites with great prices, but sometimes you have to submit your credit card number to bid. Just how safe is it to buy from these Web sites?**

*Jason Meinzer, Kailua, Hawaii*

BUSINESS IS BOOMING on Web auction sites, and new ones pop up weekly. Some of them auction only manufacturers' closeouts and excess inventory, while others are more like cyberspace flea markets, where anyone can sell their old 386, or grandpa's coin collection, for that matter.

All auction sites operate differently, so before bidding, it's important to know a site's rules, its warranties (if any), and who exactly you're doing business with. For example, at Onsale (www.onsale.com), a big auction site specializing in computer equipment and consumer electronics, roughly half the merchandise is auctioned by Onsale itself and the other half by businesses (see **FIGURE 1**). You bid by submitting your credit card number, and if your bid is accepted, the appropriate seller, either Onsale or the business, bills your card and ships the merchandise.

What protection do you have if the disk drive arrives in pieces or the monitor blinks? You have 30 days to return the item to the seller for exchange. If you have problems with a third-party vendor, Onsale will intervene, crediting your account if you have a good case and the vendor refuses. "We do keep tabs on our vendors and manufacturers," insists Michelle Pettigrew, director of marketing for Onsale. "We have terminated vendors, and we've terminated products because they weren't up to standards."

**FIGURE 1: WEB AUCTION SITES like Onsale are popular, but make sure prices are competitive.**

All sales are final. You can't return merchandise if you simply change your mind. Also, different vendors have different warranties, so check yours thoroughly.

Things are different on eBay (www.ebay.com), where it's mostly individuals who hawk garage sale fare ranging from used computers to old watches to Elvis dolls. Here, returned engagement rings are often up for sale, and the largest item ever sold was a mobile home trailer.

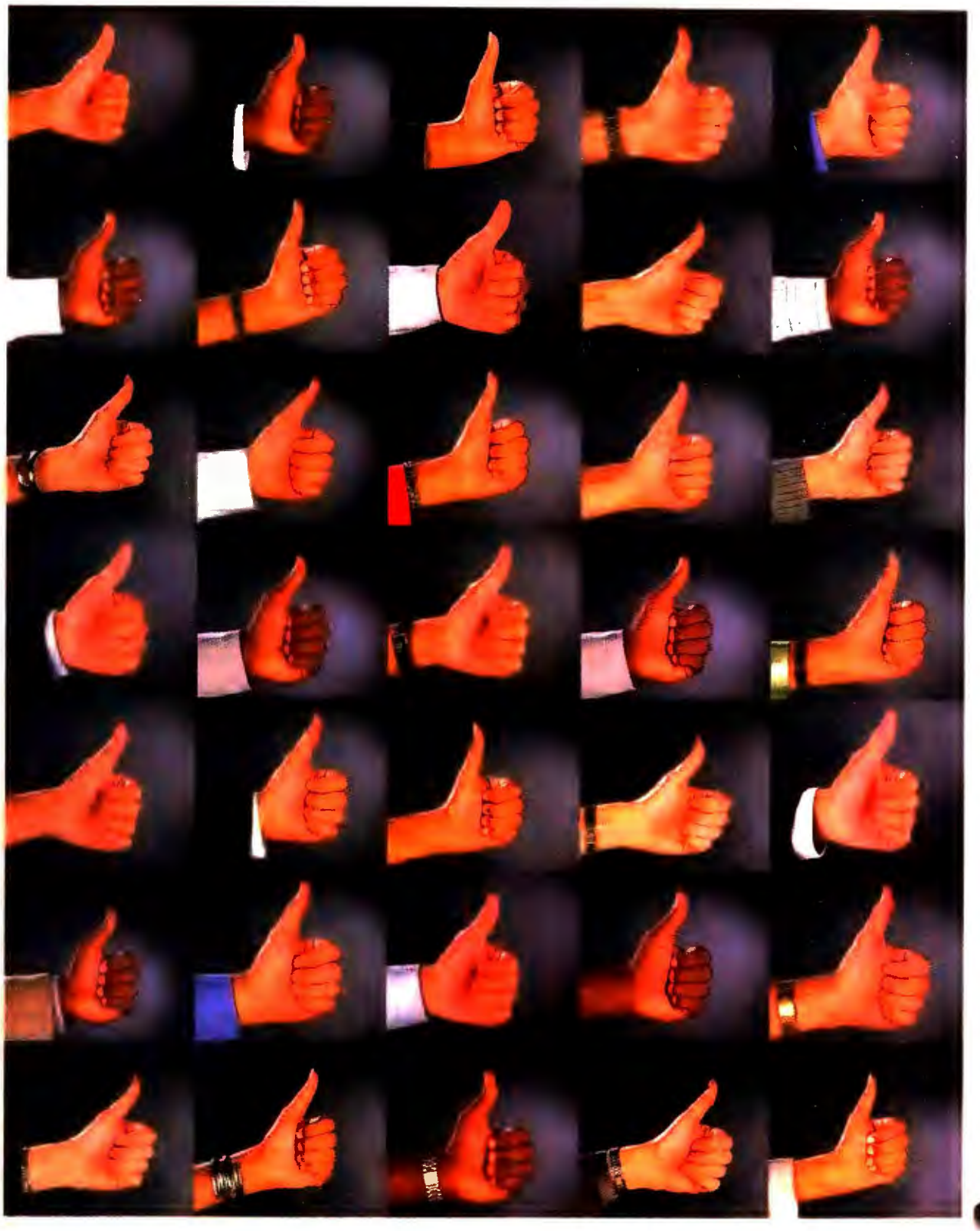
eBay does not act as a broker, nor does it offer any guarantees that buyers will get their purchases in working order. The service leaves it to buyers and sellers to handle the entire transaction and work out any problems. On occasion, eBay has banned a vendor from the service for unscrupulous behavior, but in general, caveat emptor is the rule.

Because most items are sold by individuals, you usually must pay by check. Some vendors of collectibles offer money-back guarantees, but in any case ask about sale terms before bidding.

eBay tries to promote integrity with its public message feature. Buyers can post ▶

## Twelve Tips for Buying and Selling on Web Auction Sites

| IF YOU'RE BUYING | IF YOU'RE SELLING |
|---|---|
| 1. Shop around before you bid. Similar items can often be purchased for less in a catalog or discount store, where you get a warranty and a better return policy. | 1. Find the best auction site for your item. Look for mailing lists and newsgroups devoted to your item, and find out where members like to buy and sell. |
| 2. Familiarize yourself with the site's policies. If you don't receive the merchandise, or if it's defective, will the auction site help you out? | 2. Learn about the site's fees. Sites usually charge a posting fee (from 25 cents to a few dollars) plus a gavel charge of about 5 percent. |
| 3. Find out who you're buying from. Who processes and ships the order? | 3. Include a link to your Web site in your item's description on the auction site. |
| 4. Ask lots of questions before you bid. What condition is the item in? What are the seller's return policies? | 4. Be honest in your description of the item, and include a picture. Respond promptly to e-mail questions. |
| 5. Does the item have a warranty? If so, who stands behind it? Who do you contact if you have problems? | 5. Offer a 30-day money-back guarantee. |
| 6. Don't get excited by low posted bid prices. Determine the highest price you'll pay for an item, and stick to it. | 6. Set a reserve price. If that price isn't met, you can take the item off the auction block. |
| 7. Nail down shipping and handling fees before you bid. | 7. Find out the "netiquette" for appropriate shipping and handling fees. |
| 8. Pay with a credit card, if possible, in case of a dispute. | 8. Insist on prepayment for both the item and shipping. If you can't process credit cards, ask for a money order. |
| 9. Keep good documentation, including a copy of your bid confirmation e-mail message and any correspondence with the seller. If you mail a check, include with it a copy of the message telling you of the winning bid. | 9. Notify the winner by e-mail. Ask the winner to verify that they will be purchasing the item. Send a return e-mail message when you receive a payment. |
| 10. Ask that items be insured when they're shipped. | 10. Ship promptly (but wait for the check to clear). Inform your customer via e-mail when you ship the item. Follow up to make sure they have received it. |
| 11. Check the site's "auctions ending today" page for the best buys. | 11. Don't compete against yourself. Don't auction, say, 12 bookcases at once. |
| 12. If you have a grievance with a vendor, contact the auction site. | 12. If you haven't been paid within three weeks, sell the item to the next highest bidder. |



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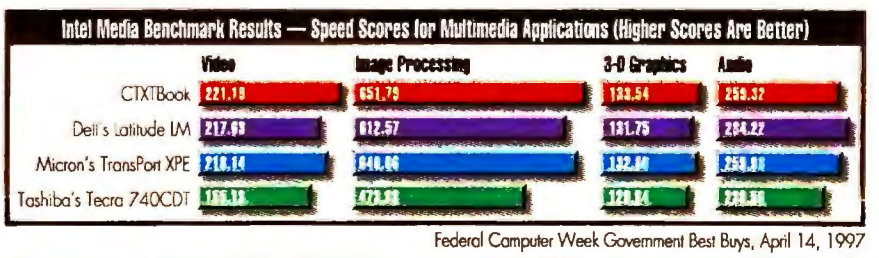


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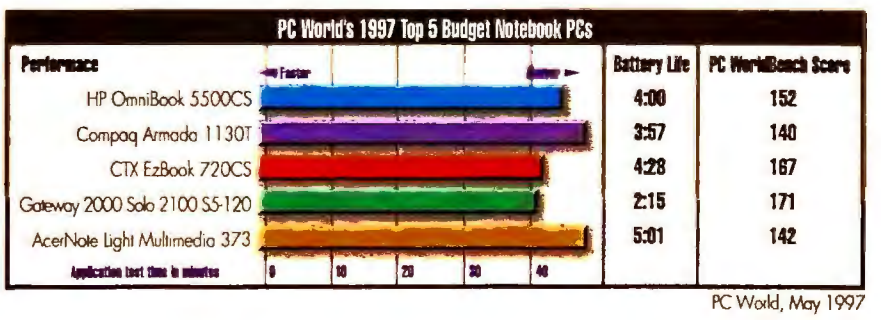


PC World, May 1997

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PC WORLD Top 20

Editor's Choice

Circle 64 on reader service card

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## Tips for the Internet Paranoid

**Delete Your Password From the Registry.** Worried that someone who uses your computer may have access to your ISP password? You have good reason: Internet Explorer tucks the password in the Windows Registry, where it can be found manually. To delete it, you'll have to open the Registry Editor. Before you do, back up these files: user.dat, user.da0, system .dat, system.da0. Now select *Start•Run*, type **regedit**, and click *OK*. Select *Edit•Find* and type in your password, then delete the password. If you're running Internet Explorer, and you've recently updated your Web site, you may also find your password stored as an FTP Web address in IE's TypedURLs folder. To get rid of it, highlight the entry, and select *Edit•Delete*.

**Keep Watch on (and Delete) Netscape's History File.** Daniel H. Isaacs of Pittsburgh writes that if you type **about:global** in Netscape's Location box, you get a list of all the Web sites you've visited in who-knows-how-long. What you're looking at is the contents of Netscape's history file. To keep your surfing private, delete the file netscape.hst in the Netscape directory.

comments about any seller, and sellers can post comments about customers. This feature can be utilized whenever a buyer's or seller's e-mail address is listed on an auction page. It doesn't satisfy everyone—customers worry that the threat of public disclosure is no safeguard against getting fleeced (a seller can change e-mail addresses), while sellers fear it's too easy for a good reputation to be smeared by one disgruntled customer.

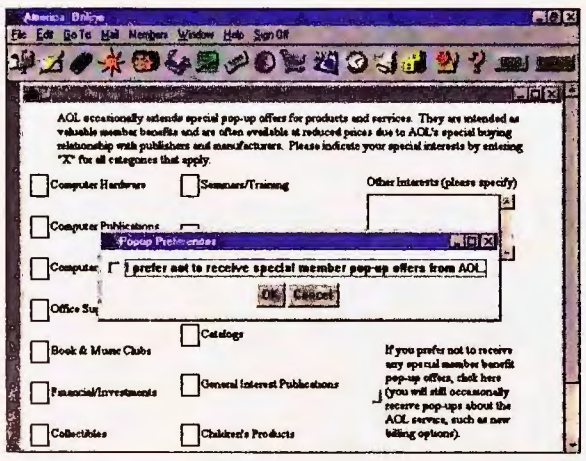


**FIGURE 2: GET AOL's pop-up ads out of your face by using the Mailing Preferences menu.**

You can snag some bargains from sites like Onsale and eBay—the trick is to have shopped around enough to know what a good price is. Although bidding for items often starts at an enticing $5, bids can rise quickly to the item's market value. And sellers may specify a reserve price, an undisclosed bottom line that bids must reach before the seller is willing to sell. Also, make sure that you're not missing a better deal (or better warranties and return policies) at catalog outlets or discount stores. Finally, as far as computer equipment goes, these sites are often the final stop for last year's video card before it hits the landfill.

You'll find more pointers for ensuring safe transactions in "Twelve Tips for Buying and Selling on Web Auction Sites," on the previous page.

## TURN OFF ANNOYING AOL ADS

TIRED OF CLICKING through ads for America Online credit cards and Wheel of Fortune CD-ROMs whenever you log on to AOL? Fortunately, you can turn them off with a feature hidden in AOL's Member Mailing Preferences menu.

To get there select *Members•My AOL*, click *Preferences*, select *Marketing Preferences*, and click *Set Up Now*. In the Marketing Preferences dialog box, select *Tell Us What Your Popup Preferences Are*. Beneath the doublespeak message "America Online occasionally extends valuable product and service offers that are specially selected for our members," you'll find, in the bottom right-hand corner, a little box that you can click on to turn off the pop-ups (see **FIGURE 2**). This doesn't guarantee that you'll never see another pop-up ad when you tap into AOL, but at least some of them will get out of your face.

## CUSTOMIZE INTERNET EXPLORER'S MAIL AND NEWS

DAVE BEAUCHEMIN, of Ste. Thérèse, Quebec, writes that you can get one-click access to your most common online tasks by adding new buttons to the Mail and News toolbars in Microsoft's Internet Explorer. Click the *Mail* button in Explorer, and select *Read Mail* or *Read News*. Right-click on a blank spot on the toolbar, and select *Customize Toolbar* from the resulting menu. In the Customize Toolbar dialog box (shown in **FIGURE 3**), you'll find several buttons you can add to the toolbar. The Find button, for example, lets you search mail messages by date, recipient, or subject. Other buttons speed you to different functions.

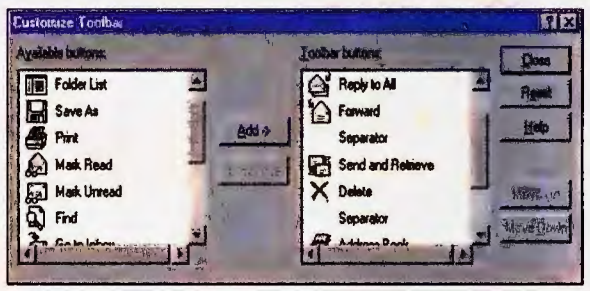


**FIGURE 3: SPEED TASKS in Internet Explorer's Mail and News readers by adding toolbar buttons.**

## Print Your Own T-Shirts

**WANT TO USE your ink jet printer to make T-shirt transfers? It's easy. Learn all the tricks for doing it right, plus download a demo of software for designing T-shirts, and buy special transfer papers and even T-shirts from Hanes' info-packed computer T-shirt Web site at www.hanes2u.com.**

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Circle 204 on reader service card

# Unleash Your Laser Printer

IMAGES ARE EVERYTHING. Well, maybe not everything, but in business, great-looking documents are essential, and they usually come from a laser printer. Here's how to get the most out of your laser.

## TONER TACTICS

LASER PRINTER manufacturers don't make that much on printer sales. Instead, the companies make money on consumables like toner cartridges. You can save money by purchasing recycled cartridges. But if you need consistent high-quality output, buy cartridges that have been rebuilt, not just refilled; this replaces key parts that are subject to wear. Recycled cartridges are sold both by third-party vendors and several printer manufacturers.

## TAKE CONTROL

TO TAKE FULL advantage of all your printer's capabilities, your first stop should be the printer's Properties menu in Windows 95. To open it, select *Start•Settings•Printers,* right-click the icon for your printer, and select *File•Properties.*

The properties dialog box you see depends on which options your printer supports—like paper size and resolution settings—as well as which printer driver is currently installed. The figure on the right shows a dialog box for the HP LaserJet 4 driver that came with Windows 95.

Make sure you're using the most current printer driver. If you're running a driver for an earlier model, you won't be able to exploit the printer's new features or achieve maximum speed. Manufacturers update their drivers regularly, and post them on their Web sites.

To install a new driver, click the *Details* tab in the Properties dialog box, click the *New Driver* button, click *Yes* in response to the warning, and click the *Have Disk* button in the Select Device dialog box.

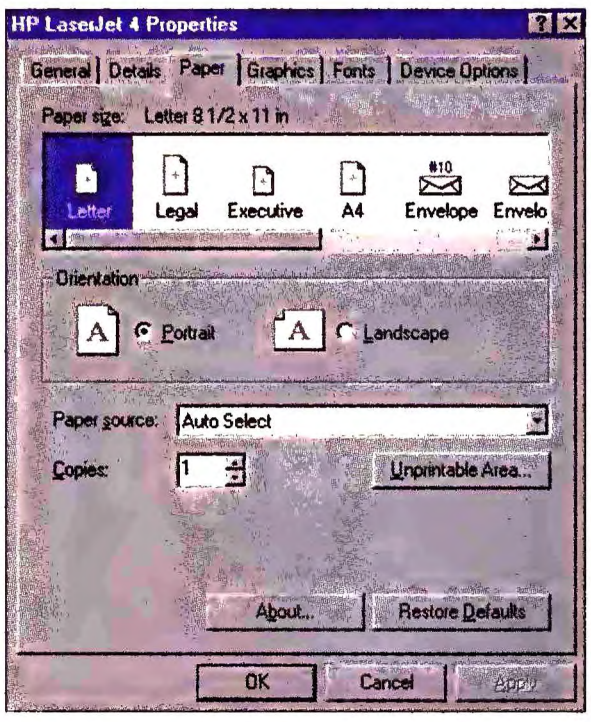
Finding the version number of your current driver is a little trickier; you may have to hunt for the About button.

If you want a great utility that increases printing speed and improves the quality of your images, take a look at Zenographics' SuperPrint 5.0. This program includes specially written drivers for more than 240 printers, its own spooling utility, and a handy filter that lets you print PostScript files on a non-PostScript printer.

## FASTER OUTPUT

HERE ARE A FEW TRICKS for speeding up your printer.

**Add memory.** Adding on-board memory to your printer can speed it up significantly—especially for graphics. In fact, if your printer doesn't have enough memory, you may not be able to print some graphics at all: Most laser printers need to store an entire page before printing. The bare minimums are 512K for printing at 300 dots per inch and 1MB for 600 dpi, but 2MB is preferable. For complex graphics or network use, you'll want 4MB.




**YOUR PRINTER'S PROPERTIES dialog box lets you make a host of adjustments.**

Many current printers use memory slots for standard SIMMs. Check with your vendor for SIMM configuration details, and make sure your warranty isn't invalidated if you use third-party SIMMs.

Always check the Device Options tab on the Properties menu for the correct memory settings. If Windows doesn't know about your extra memory, it can't use it.

**Enable your ECP.** An Extended Capabilities Port is a souped-up version of the standard parallel port, available in most computers purchased in the last couple of years. You'll see the biggest increases in printing speed when both the computer and the printer support ECP, but even non-ECP printers will benefit.

Enabling your ECP can take a bit of work. First, look in your CMOS system setup utility for any ECP settings that need enabling. Then go to the Device Manager (select *Start•Settings•Control Panel•System* and then click the *Device Manager* tab) to assign IRQs and such. For complete directions, open the help file Admin\Reskit\Helpfile\Win95rk.hlp on the Windows 95 CD-ROM. Type **extended**, not ECP, in the index.

**Set your spooling.** To tell your PC how you want it to hand off jobs to a printer, select the *Details* tab in the printer's Properties menu, and click the *Spooling Settings* button. If you're in a hurry to print, select *Print directly to the printer.* If you're more interested in getting back to work quickly, select *Spool print jobs so program finishes printing faster.*

## AVOID A PAPER CHASE

USING THE RIGHT paper is an easy way to improve image quality and prevent problems. Whiter paper provides sharper contrast, which is especially important for graphics. Laser printers usually work best with 24-pound photocopy paper. (Lighter or heavier papers tend to jam.)

Treat labels carefully, and avoid running label sheets through the printer more than once. Envelopes also get tricky; try to use only the kinds that your printer supplier recommends.

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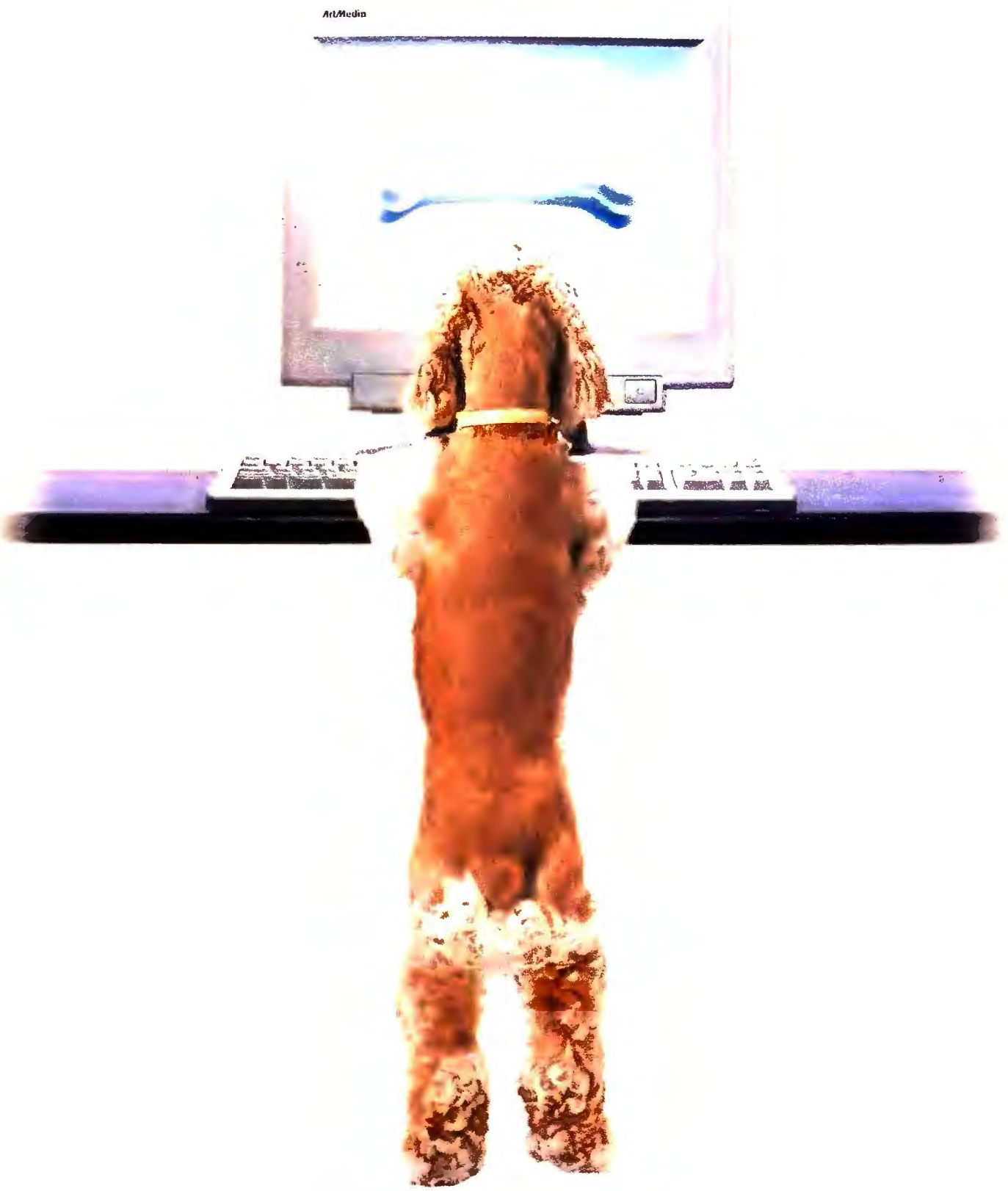


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# Manage Your Multimedia Madness

LOOKING FOR A SIMPLE TOOL to manage image, sound, and video files? Try Multimedia Xplorer, a $20 shareware utility from Moon Software. You can download it from PC World Online, from Dave Central Software Archive (www.davecentral.com/mediafile .html), or from Moon Software (www.moonsoftware.ee).

Multimedia Xplorer's file manager, viewers, batch converter, and slide-show player are all worthwhile. But its file finder, Multimedia Detective, takes the prize. Just tell it where you want it to search (hard disk, CD-ROM drive, or Zip drive), and Multimedia Detective compiles a complete list of files grouped by media category, including video clips, sounds, MIDI music, and images. Click any file in the list, and Multimedia Xplorer plays the media clip or displays the images (**FIGURE 1**).

**FIGURE 1: MULTIMEDIA XPLORER makes finding and playing any of your multimedia files a snap.**

## SPECIAL VIDEO EFFECTS FOR CHEAP?

I WANT TO rotate a live TV image 90 degrees, then use a video capture board to record it. Is this possible using an off-the-shelf TV tuner and video capture product, or does it require higher-end equipment?

*Timothy P. Hench, Internet*

MOST PC VIDEO CAPTURE BOARDS and TV tuners provide only a few basic image-manipulation features (such as color, tint, brightness, and contrast adjustment) when you record a video image. That's true regardless of the source—TV, videotape, camcorder, or videodisc. I don't know of any low-cost products that let you rotate an image 90 degrees and record it.

One alternative is to capture the image using the best video capture board and TV tuner you can afford; save the image as an .avi file; then use a top-notch video-editing program such as Adobe Premiere (www.adobe.com) or Ulead's MediaStudio Pro (www .ulead.com) to tilt the image and save the edited .avi file. This technique requires you to make a copy of the original—which may produce a lower-quality image—but the results may be good enough for your purposes.

Some video capture boards and TV tuner cards do offer their own special effects: For example, Alaris's QuickVideo (www.alaris.com) lets you flip a video image vertically or horizontally, and ATI's All-in-Wonder board (www.atitech.ca) allows you to view thumbnail images of multiple television channels (see **FIGURE 2**).

**FIGURE 2: VIEW MULTIPLE TV CHANNELS on your PC with ATI's All-in-Wonder multimedia board.**

## ADJUST VOLUME FASTER

I NEED TO QUICKLY ADJUST sound on my PC. I can't seem to add the Volume icon to my Win 95 Taskbar (the check box is grayed out), and there's no volume control on my speakers. I'm using an Orchid SoundWave 32 Multimedia sound card and Orchid SP-U2 speakers. Any ideas?

*Pauline Brazier*

*Salt Spring Island, British Columbia*

WINDOWS' VOLUME CONTROL software doesn't work with all sound cards, but you should be able to use it with your Orchid system. If the check box for activating it is unavailable, volume control may not be installed on your system.

To make sure it is, open Windows' Control Panel, click *Add/Remove Programs*, and select the *Windows Setup* tab. Double-click *Multimedia* in the Components box, check *Volume Control*, and click *OK*. Insert the Windows 95 installation floppy disk or CD-ROM into the drive selected, then click *OK* to copy the program to your hard disk.

Now return to the Control Panel and double-click *Multimedia*. On the Audio tab, make sure your sound card is listed as the preferred device in the Playback section. Check the *Show volume control on the taskbar* box and click *OK*. The Volume icon should now appear on the right side of the Taskbar. Click it once for fast access to the Volume slider tool, or double-click it to open the Volume Control dialog box.

You can also get a volume control cable from Cambridge SoundWorks (www.hifi.com). This $13 accessory has stereo mini-plug connectors (hook up one end to a sound card, the other to the speakers) and a built-in volume switch that you can attach to a keyboard, monitor, or other surface. With this device, you can forget about clicking your mouse and just adjust the volume manually.

*Find files from this article at www.pcworld.com/files and more tips at www.pcworld.com/hereshow.* Multimedia Tips *welcomes your questions and tips and pays $50 for published items. Richard Jantz is a computer consultant and freelance writer in Kensington, California.* *See page 14 for contact information.* ■

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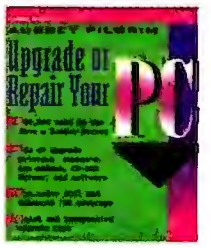


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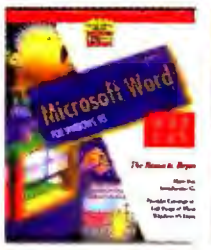


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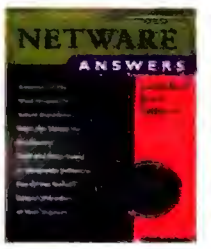


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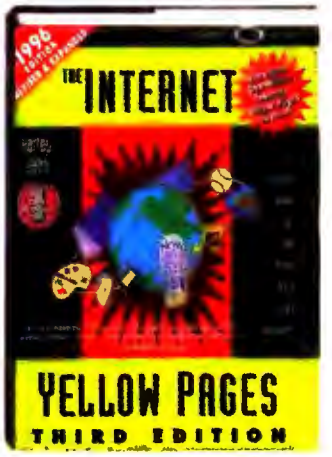


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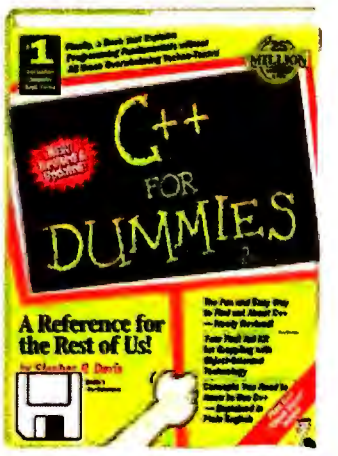


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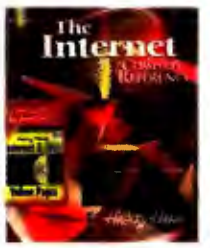


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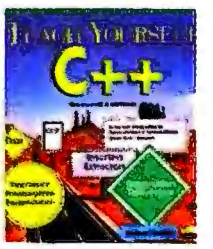


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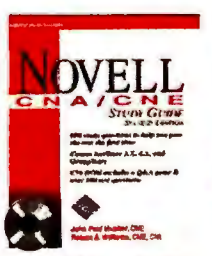


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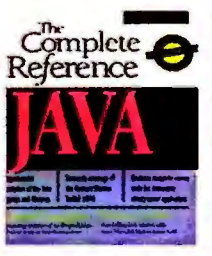


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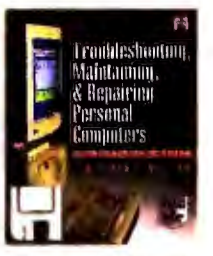


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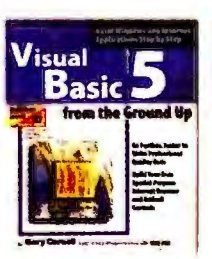


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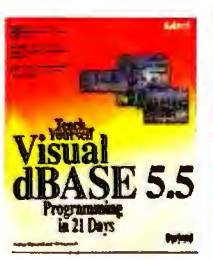


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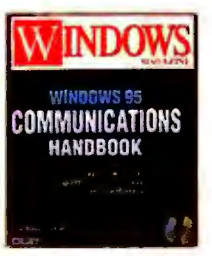


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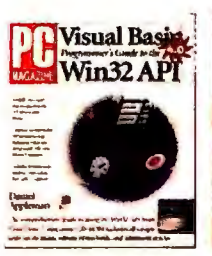


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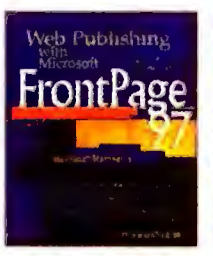


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# Installing a Video Camera

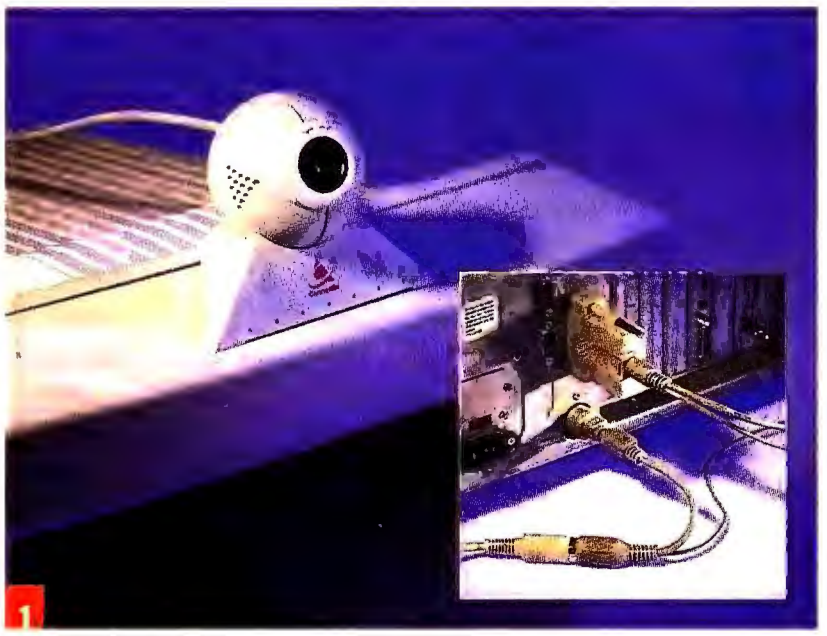
A MASTER OF ALL TRADES, the PC has become a video star as well, and now it can even handle videoconferences on the Internet. Of course, the person at the other end must be comparably equipped, and you both must have sound cards and microphones if you want to talk via PC.

Adding video hardware is relatively simple. You have three main options: a parallel-port video camera, such as the $200 Connectix Color QuickCam 2 (www.connectix.com); a package with camera, modem, and two cards, such as the Diamond Multimedia $300 Supra Video Phone Kit 3000 (www.diamondmm.com/products); or a video capture card for your camcorder, such as Intel's $199 Smart Video Recorder III (www.intel.com).

Note that a Pentium-133 with 16MB of memory is the minimum PC, and don't expect broadcast-quality video.

Here's a quick overview of installing video options. For more information, check out www.pcworld.com/hereshow/.

*Stan Miastkowski is a* PC World *contributing editor.*



**Add a parallel-port camera.** Turn off your PC, unplug your printer cable if necessary, and follow the camera's installation instructions. Most cameras get power from a keyboard connector. Make sure your parallel port is set for ECP mode. Restart your PC and skip to Step 4.

**Install an all-in-one video kit.** These kits come with two boards and can be tricky to install. Read the manuals very carefully before you begin. Turn off your PC, remove the cover, and install the boards according to instructions. If everything works, put the cover on and skip to Step 4.

**Add a video capture card.** If you own a camcorder, you can install a video capture card and hook the camera output to the card with a standard video-output cable. Read the manual, power off your PC, remove the cover, and install the card in a free slot.

**Install the software.** Installing the video hardware's bundled software is usually a straightforward job. If your video capture card lacks Internet video software, check out free options such as Intel's Internet Video Phone (www.connectedpc.com/iaweb/cpc/iivphone/). ■

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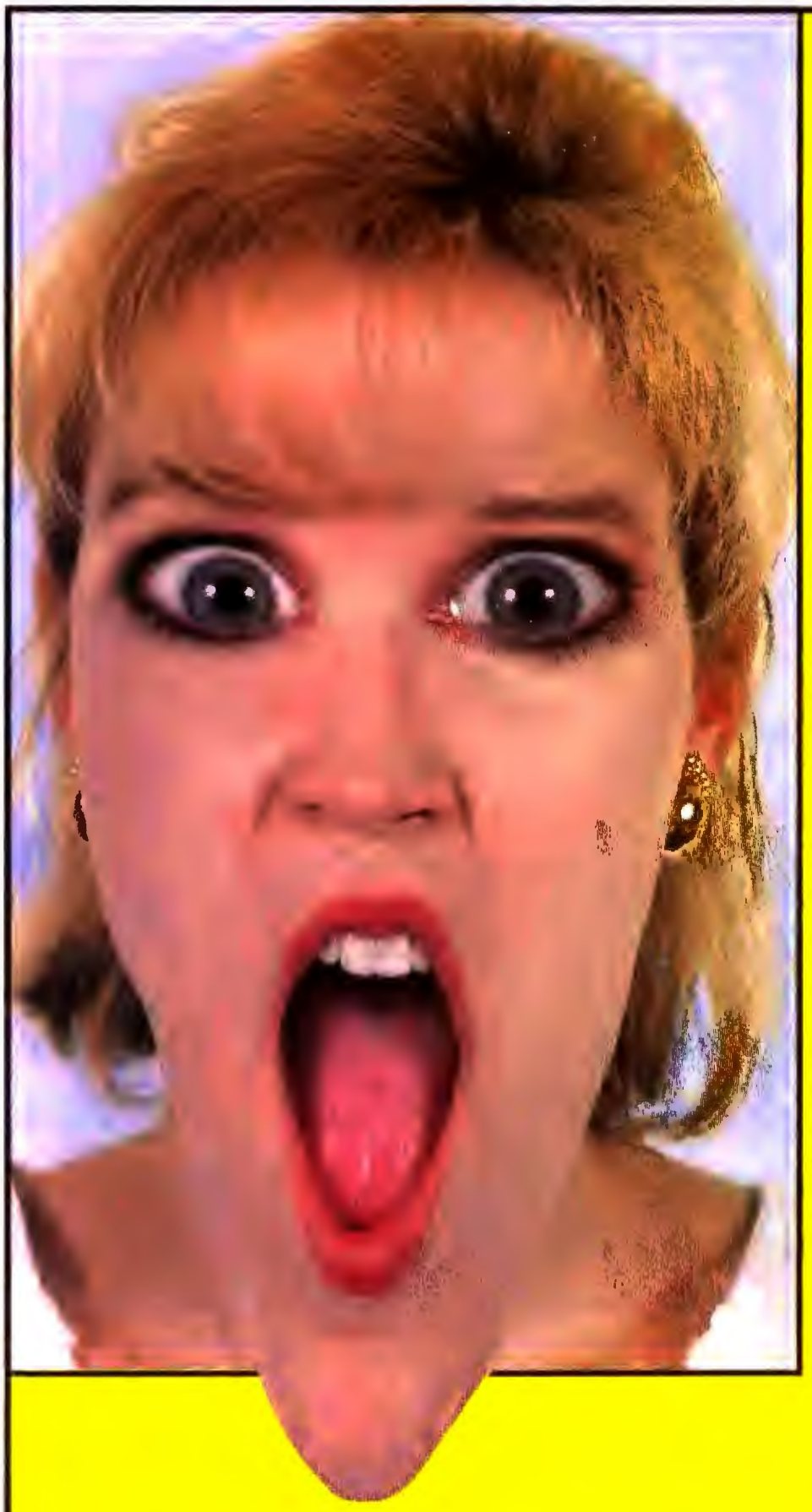

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| **Magebook 911**<br>**•Platinum**<br>**•Platinum Plus** | •P-133/150 (2.0V, Mobile Module) CPU<br>•12.1" Active Matrix Display<br>•16MB EDO RAM(144 Pins SODIMM) expandable upto 80MB<br>•16 Bit Stereo Sound<br>•6X/10X CD-ROM (Swapable with 3.5", 1.44 FDD)<br>•NiMH Battery (Optional Lithium Ion Battery)<br>•Optional Items: Port Replicator, External FDD Pack, AC Adapter, Car Adapter |

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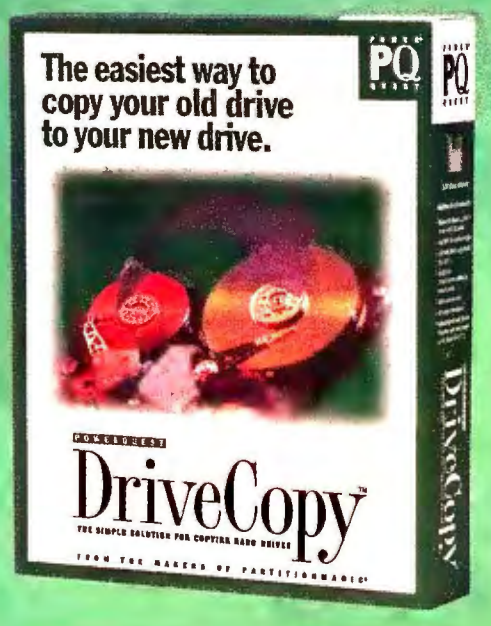


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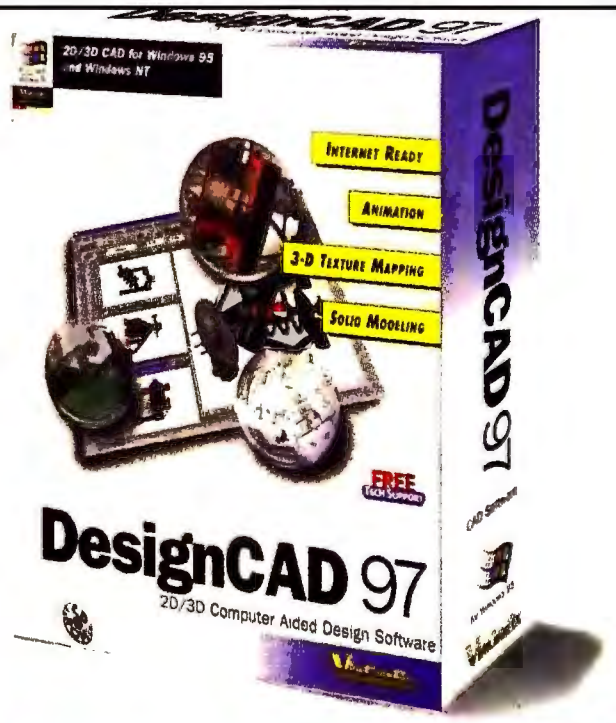


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| *Thinkpad 365X, 365XD, 765D* | *8Meg/16Meg/32Meg* | *60/130/289* |
| Thinkpad 500, 510CS | 4Meg/8Meg/16Meg | 59/89/149 |
| Thinkpad 560, 560E | 8Meg/16Meg/32Meg | 69/139/289 |
| *Thinkpad 700, 720, 750, CLS7SX* | *4Meg/8Meg/16Meg/32Meg* | *30/79/159/268* |
| *Thinkpad 701, 701C* | *4Meg/8Meg/16Meg/32Meg* | *49/60/130/369* |
| Thinkpad 730T, TE | 4Meg/8Meg/16Meg | 49/109/189 |
| *Thinkpad 755C, CE, CD, CS* | *4Meg/8Meg/16Meg/32Meg* | *30/69/129/259* |
| *Thinkpad 760C, CD, L, LD* | *4Meg/8Meg/16Meg/32Meg* | *49/70/129/319* |
| *Thinkpad 760E, ED, EL, ELD* | *8Meg/16Meg/32Meg/64Meg* | *70/120/279/659* |

## COMPAQ MEMORY MODULES

| | | |
|---|---|---|
| Deskpro 486/25, 33L, 50L | 2Meg/8Meg/32Meg | 29/79/199 |
| Deskpro 3/25i, 33i, 4/25i5, 66i | 2Meg/4Meg/8Meg | 39/69/89 |
| Deskpro 386, 486 M Series | 2Meg/4Meg/8Meg | 29/39/69 |
| Deskpro M Series Expansion Board | OK (no memory) | 119.00 |
| Deskpro 450, 4100, 575, 590, 5100, 5133 | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Deskpro 575, 5120, 5133, 5150, 5160 (EDD, pairs) | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Deskpro 2000, 4000, 6000 Series (EDD, pairs) | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Deskpro 5/60M, 5/66M, XE560 (quads) | 2Meg/4Meg/8Meg/16Meg/32Meg | 39/49/69/139/239 |
| Deskpro XL (pairs) | 4Meg/8Meg/16Meg/32Meg | 49/69/139/239 |
| Deskpro XL 6150, 6200 (ECC, pairs) | 8Meg/16Meg/32Meg/64Meg, 128Meg | Call |
| Deskpro 2000, Presario 4112, 4122, 4712, 4716, 5526, 5528 | 1Meg Video | 69 |
| Presario 5536, 9232, 9234, 9240, 9250, 9260, 9642, 9669 | 1Meg Video | 69 |
| Presario 510, 520, 524, 660, 720, 724, 860 | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Presario 920, 924, 954, 974, 978, 992 | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Presario 833, 850, 860, 866 | 4Meg/8Meg/16Meg/32Meg | 39/64/119/239 |
| Presario 5528, 7110, 7152 | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Presario 7170, 7180, 9536, 9546, 9548, 9564 (pairs) | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Presario 9232, 9234, 9240, 9250, 9642, 9660 (pairs) | 4Meg/8Meg/16Meg/32Meg | 24/42/79/159 |
| Prollant 1000 5/60, 5/66, 5/100, R, 4000, R (quads) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prollant 1500, 1500R (pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prollant 4500, 4500R (quads) | 4Meg/8Meg/16Meg/32Meg/64Meg | 39/64/119/239/599 |
| Prollant 5000, 5000R (pairs) | 32Meg/64Meg/128Meg/256Meg | Call |
| Prolinea 4/25S, 4/33, 4/66 | 2Meg/4Meg/8Meg | 29/39/69 |
| Prolinea (enhanced), MT | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prolinea 575, 590, 5100, 5120, 5133 (pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prolinea 5100, 5120, 5133, 5150, 5166 (EOD pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prolinea 575E, 1025, 120C, 575MX (pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prolinea 590MX, 5120MX (pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prolinea 6150E, 6180E (pairs) | 8Meg/16Meg/32Meg | 69/119/239 |
| Prosignia 300 5/75, 5/90, 5/120, 5/150 (pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |
| Prosignia 500 5/90, 5/120, 5/150 (pairs) | 4Meg/8Meg/16Meg/32Meg | 36/62/99/189 |

## COMPAQ NOTEBOOK/LAPTOP MEMORY

| | | |
|---|---|---|
| Armada 1120, 1, 1125, 1130, T, 1500 | 8Meg/16Meg/32Meg/64Meg | 69/129/239/689 |
| Armada 4100, 4110, 4120, 4130 (pairs) | 8Meg/16Meg/32Meg | 69/129/239 |
| *Concerto 4/2S, 433* | *4Meg/8Meg/16Meg* | *40/79/139* |
| *Contura 4/2S, C, CX* | *4Meg/8Meg/16Meg* | *40/70/139* |
| *Contura 400C, 400CX, 419C, 410CX* | *4Meg/8Meg/16Meg* | *40/79/139* |
| *Contura 420C, 420CX, 430C, 430CX* | *4Meg/8Meg/16Meg/24Meg* | *49/79/139/100* |
| *Contura Aero 4/25, 4/33* | *4Meg/8Meg/16Meg* | *39/79/139* |
| *LTE 5099, 5100, 5200, 5300, 5400* | *8Meg/16Meg/32Meg/64 Meg Kit* | *79/129/249/509* |
| *LTE Elite 440C, CX, 4/75CX* | *4Meg/8Meg/16Meg/24Meg* | *49/89/139/199* |
| *LTE Lite 4/25* | *4Meg/8Meg/16Meg* | *40/85/136* |
| *Presario 1000, 1010, 1020, 1030, 1070, 1080* | *8Meg/16Meg/32Meg* | *59/189/229* |

## DELL MEMORY

| | | |
|---|---|---|
| Dimension XPS M166S, M2090, P133s, 166s, 200s, P133v, 166v, 200v | 8Meg/16Meg/32Meg | 55/99/199 |
| Dimension XPS P60, P75, P90, P100 (pairs) | 4Meg/8Meg/16Meg/32Meg | 26/48/89/179 |
| Dimension XPS P100c, 120c, 133c, 166c, XPS P75T, 100T (pairs) FPM or EDD | 4Meg/8Meg/16Meg/32Meg | 26/48/89/179 |
| Dimension XPS Pro 150, Pro 200 (quads) | 4Meg/8Meg/16Meg/32Meg | 39/69/102/209 |
| Dimension XPS Pro 150n, 180n, 200n (Edo pairs) | 4Meg/8Meg/16Meg/32Meg | 26/49/89/179 |
| Optiplex GL, GM, GMT (Edo pairs) | 4Meg/8Meg/16Meg/32Meg | 25/48/89/179 |
| Optiplex GS, GXL, GXM, GXMT (Edo pairs) | 4Meg/8Meg/16Meg/32Meg | 25/48/89/179 |
| Optiplex GXI, GXpro, 6180, 6200 (Edo, Ecc) | 16Meg/32Meg/64Meg/128Meg | 119/234/539/1089 |
| PowerEdge 2100, 4100 (Edo, Ecc) | 16Meg/32Meg/64Meg/128Meg/256Meg | 119/234/499/1089/2499 |

## LASER PRINTER MEMORY UPGRADES

| AMOUNT UPGRADED | OK 8Q | 256k | 1 | 2 | 3 | 3.5 | 4 | 5 | 6 | 8 | 16 | 32 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Brother 630, 631, 641, 645 | – | – | 39 | 59 | – | – | – | – | – | – | – | – |
| Canon LBP 430 | – | – | 19 | – | – | – | 49 | – | – | – | – | – |
| Canon LBP 860, 1260 | – | – | – | 19 | – | – | 49 | – | – | 79 | 99 | 179 |
| Canon LBP4, 4Lite, 4plus | – | – | 129 | 179 | – | – | – | – | – | – | – | – |
| Epson Action Laser 1100, 1600 | – | – | 19 | 29 | – | – | 49 | – | – | 89 | 109 | – |
| Epson Action Laser II | – | – | 74 | – | 130 | – | – | 180 | – | – | – | – |
| Epson 8000, 1800, 4000, 4100, 4300 | – | – | 89 | – | 130 | – | – | 180 | – | – | – | – |
| Epson 1000, 1500, 5000, 5200 | – | – | – | 49 | – | – | 98 | – | – | – | – | – |
| HP 2, 2D– | – | – | – | 59 | – | – | 79 | – | – | – | – | – |
| *HP 3, 3D, 3P, 2P 2P+* | – | – | – | *59* | – | – | *79* | – | – | – | – | – |
| HP 4, 4M, 4SI, 4SIMX | – | – | – | 19 | – | – | 49 | – | – | 79 | – | – |
| HP 4P, 4PLUS, 4MPm 1600, 1600CM | – | – | 9 | 19 | – | – | 39 | – | – | 79 | – | – |
| HP 4L | – | – | 29 | – | – | – | – | – | – | – | – | – |
| HP 3SI | – | – | 9 | – | – | – | 39 | – | – | 79 | – | – |
| HP 5L, 6L, 6LXi | – | – | – | – | – | – | 49 | – | – | 99 | – | – |
| HP 5P, 5MP, 4V, 4MV, 6P, 6MP | – | – | 9 | 19 | – | – | 39 | – | – | 79 | 99 | – |
| HP Design Jet 600, 650, 200 | – | – | – | 19 | – | – | 39 | – | – | 79 | 109 | 169 |
| HP Design Jet 700, 750C Plus | – | – | – | – | – | – | 29 | – | – | 49 | 89 | 179 |
| *HP Deskjet 590, 509C, 510, 550,569* | – | *29* | – | – | – | – | – | – | – | – | – | – |
| HP Deskjet 1200C, 1200C/P | – | – | – | 39 | – | – | 49 | – | – | 89 | – | – |
| HP Paintjet XL300 | 54 | – | – | – | – | – | 69 | – | – | 144 | 299 | – |
| IBM Laser 4019, 4019E | – | – | – | – | – | 109 | – | – | – | – | – | – |
| IBM Laser 4029, 4037 | – | – | – | – | – | – | 49 | – | – | – | – | – |
| *IBM Laser 4039, 4079* | – | – | – | *39* | – | – | *69* | – | – | *99* | – | – |
| Lexmark Medley 4C, 4x, 4SX | – | – | Call | Call | Call | – | – | – | – | – | – | – |
| Lexmark, Optra L, LX, R, RX | – | – | – | – | – | – | 39 | – | – | 69 | 99 | 199 |
| Lexmark Valuwriter 300,600 | – | – | 29 | 39 | – | – | 89 | – | – | – | – | – |
| Lexmark Winwriter 200, 400, 600 | – | – | 29 | 39 | – | – | 89 | – | – | – | – | – |
| NEC 90, 290 | – | – | – | 89 | – | – | – | – | – | – | – | – |
| NEC 95, 97 | – | – | – | 99 | – | – | – | – | – | – | – | – |
| Okl 400 | – | – | – | 59 | – | – | – | – | – | – | – | – |
| Okl 400E, 400EX, 410E, 410EX | – | – | 67 | 89 | 169 | – | 189 | – | – | – | – | – |
| Okl 810E, EX, 600E, EX, 610E, EX | – | – | 29 | 79 | – | – | 119 | – | – | 149 | 229 | – |
| Okl 830, 840 | – | – | – | 59 | – | – | – | – | – | – | – | – |
| Panasonic 4429/4459 | – | – | – | 79 | – | – | 199 | – | – | – | – | – |
| *Panasonic 4410/4430* | – | – | – | *59* | – | – | *99* | – | – | – | – | – |
| Panasonic 4450 | – | – | 89 | – | – | – | – | – | – | – | – | – |
| Panasonic 4499/5400 | – | – | 49 | 69 | – | – | 109 | – | – | – | – | – |
| Panasonic 4440, 5410 | – | – | 69 | – | – | – | 69 | – | – | – | – | – |
| Panasonic 6500 | – | – | 14 | 29 | – | – | 69 | – | – | – | – | – |
| Sharp 9400, 9460, 9600, 9700E | – | – | 49 | 69 | – | – | 119 | – | – | – | – | – |
| Sharp 9500, E, H, 9700, H | – | – | 49 | – | – | – | 236 | – | – | – | – | – |

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| Canon Innova Book 350, 360, 475 | 134 | NEC Versa S | 99 |
| Compaq Contura 3/25, 4/25 | 109 | Sharp 3010, 3020, 3050, 3060, 3150 | 129 |
| Compaq Aero, 400, 410, 420, 430 | 109 | Sharp 8700, 8800, 8900 | 129 |
| Compaq LTe 5000 Series | 139 | TI Exstensa 450, 455, 510, 515 | 139 |
| Epson Action Note 650, 660 | 119 | TI Exstensa 550, 555, 560, 570 | 149 |
| Epson Action Note 800, 866, 880, 910 | 119 | TI Exstensa 600, 605, 650 | 169 |
| IBM Thinkpad 355, 360 | 119 | Toshiba 400, 405, 410, 415, 420, 425, 430 (NiMH) | 219 |
| IBM Thinkpad 365 C, ED, XD | 129 | Toshiba 100, 105, 110, 115, 200, 205 | 105 |
| IBM Thinkpad 701, | 109 | Toshiba 2100 Series | 99 |
| IBM Thinkpad 750, 755 | 179 | Toshiba 2400, 2450, 1900, 1950, 1960 | 109 |
| IBM Thinkpad 755 CD, CE, CV, CX | 179 | Toshiba 4700, 4800, 4850, 4900 | 109 |
| NEC Versa 2400, 2405, 2430, 2435 | 159 | Toshiba T4500, T4600 | 159 |

## TOSHIBA LAPTOP MEMORY

| MODEL | AMT. UPGRADED | PRICE |
|---|---|---|
| Toshiba Libretto 50CT | 8Meg/16Meg/32Meg/48Meg/128Meg | Call |
| Tecra 500/P650 | 8Meg/16Meg/32Meg/48Meg/128Meg | 79/118/249/369/599/1249 |
| Tecra 520/530 | 8Meg/16Meg/32Meg/48Meg/128Meg | Call |
| Tecra 700 (SDRAM) | 8Meg/16Meg/32Meg | 79/139/243 |
| Tecra 710, 720, 730 CDT | 8Meg/16Meg/32Meg/64Meg/128Meg | 79/139/249/649/1294 |
| Tecra 730X CDT, 740 CDT | 8Meg/16Meg/32Meg/64Meg/128Meg | 79/139/249/649/1294 |
| *T2000SX XE2200SX/T1600, 1850, C* | *8Meg* | *04.00* |
| *T2100, 2105, 2150, 2155, 2110, 2115* | *4Meg/8Meg/16Meg/24 Meg* | *30/59/120/189* |
| *T4500, C, T4600, T4700, T1000, C, T1010, T1950 (3.3 v)* | *4Meg* | *39.00* |
| *T4500, C, T4600, T4700, T1900, C, T1010, T1050 (3.3 v)* | *8Meg* | *79.00* |
| *T4500, C, T4600, T4700, T1900, C, T1010, T1050 (3.3 v)* | *16Meg/32Meg* | *139/243* |
| *T3400CT, T2400, T3600* | *4Meg/8Meg/16Meg/24Meg* | *50/79/149/199* |
| *T100, 105, 110, 115, 200S, 210, 220* | *8Meg/16Meg/32Meg* | *79/120/239* |
| *T400, 405, 410, 415, 420, 425, 430, 440,460* | *8Meg/16Meg/32Meg* | *70/120/239* |
| T400CS, 400CDT, T100, 105 Edo | 8Meg/16Meg/32Meg | 79/129/239 |
| T600, 610, CT Edo, 660 | 8Meg/16Meg/32Meg | 79/129/239 |
| Portege 300 | 8Meg/16Meg/32Meg | Call |

## NOTEBOOK, LAPTOP MEMORY

| MODEL | AMT. UPGRADED | PRICE |
|---|---|---|
| *ACERNote 730C, 73SC, 769C, 769CX, 780CX* | *2Meg/4Meg/8Meg* | *30/50/80* |
| ACERNote 763, 765, 782, 784, 786 | 4Meg/8Meg/16Meg | 49/69/129 |
| *ACERNote Light 350, 352, 355* | *4Meg/8Meg/16Meg* | *40/59/129* |
| *ACERNote Light 356, 358, 350, 361 (pairs) edo* | *4Meg/8Meg/16Meg* | *49/69/129* |
| ACERNote Nuovo 971, 972, 372, 373, 374 | 8Meg/16Meg/32Meg | 69/125/239 |
| ACERNote Pro 950, 954, 955, 957, 959 (pairs) | 4Meg/8Meg/16Meg | 59/79/139 |
| *Ambra SN Series* | *4Meg/16 Meg* | *69/149* |
| *Ambra N-75, N-100* | *4Meg/8/16* | *49/79/139* |
| *AST Ascentia A41, A42* | *8Meg/16Meg/32Meg/64Meg* | *79/130/269/629* |
| AST Ascentia P30, P50 | 8Meg/16Meg/32Meg | 79/149/269 |
| AST Ascentia J10, J50, J50 | 8Meg/16Meg/32Meg/40Meg Kit | 79/129/249/359 |
| *AST Ascentia 900N, 809N, 810, 910* | *8Meg/16Meg* | *79/129* |
| *AST Ascentia 950* | *8Meg/16Meg* | *79/139* |
| *AST Bravo & Explorer* | *4Meg/16Meg* | *70/149* |
| *AT&T Globalyst 130, 299, 2S9* | *4Meg/8Meg/16Meg* | *40/70/130* |
| *Austin DX4, DX2, SX2, SX Series* | *4Meg/16Meg* | *69/189* |
| Austin Edge CD P-133 edo | 8Meg/16Meg | 89/149 |
| Austin Edge Duet (pairs) edo | 16Meg/32Meg | 129/229 |
| Austin Vista | 4Meg/8Meg/16Meg/24Meg | 49/79/139/199 |
| *Canon 1120, 300P (pairs)* | *4Meg/8Meg/16Meg* | *50/79/120* |
| *Canon Innova Book 150, 175* | *4Meg/16Meg* | *59/130* |
| Canon Innova Book 200LS | 4Meg/8Meg/16Meg/24Meg | 59/89/179/249 |
| Canon Innova Book 350CD, 360, 475 | 8Meg/16Meg | 59/129 |
| *Canon Innova Book 460, 499 edo* | *8Meg/16Meg* | *89/149* |
| CTX EZ Book 500, 600, 700 Pent, Series | 4Meg/8Meg/16Meg | 59/89/139 |
| *DEC HiNote* | *4Meg/8Meg/16Meg* | *59/89/130* |
| DEC HiNote Ultra, Ultra II | 4Meg/8Meg/16Meg | 49/69/129 |
| DEC HiNote VP 520, 525, 535, 545 (pairs) | 8Meg/16Meg/32Meg | 89/139/269 |
| DEC HiNote VP 5100, 5120 | 8Meg/16Meg/32Meg/64Meg | 79/139/219/699 |
| DEC HiNote VP, Css, LSS, CTS, LTS | 8Meg/16Meg/32Meg | 79/139/269 |
| Dell Latitude LM (pairs) | 4Meg/8Meg/16Meg | 59/79/129 |
| Dell Latitude 433, C, CX | 4Meg/16Meg | 69/149 |
| *Dell Latitude LX, M* | *4Meg/8Meg/16Meg* | *59/89/139* |
| Dell Latitude XP, XPI | 4 Meg/8Meg/16Meg | 59/79/129 |
| *Epson ActionNote 850, 850c, 860c, 860cx* | *4Meg/8Meg/16Meg* | *30/70/130* |
| Epson ActionNote 880, 886c, 890, 910 | 4Meg/8Meg/16Meg/20Meg | 49/79/119/199 |
| *Epson ActionNote 4LC/25, 4LC/33, 4SLC/2-50, 4000* | *5Meg* | *69.00* |
| Fujitsu Lifebook 500, 600 Series edo | 8Meg/16Meg/32Meg | 69/139/269 |
| Fujitsu Monte Carlo, Montego, Milan | 8Meg/16Meg/32Meg | 69/139/269 |
| *Gateway 2000 Colorbook 4/33* | *4Meg/16Meg* | *69/179* |
| *Gatewey 2000 Nomad 42S DXL/SXL* | *4Meg/16Meg* | *140/559* |
| Gateway 2000 486 Handbook or Liberty | 4Meg/16Meg | 49/139 |
| Gateway 2000 Solo Series | 4Meg/8Meg/16Meg | 69/89/139 |
| Gateway Solo Series 2100, 2200 edo | 8Meg/16Meg | 89/139 |
| Hitachi C-Series | 8Meg/16Meg/32Meg | 79/129/229 |
| *Hitachi E-Series, MX Series* | *8Meg/16Meg/32Meg* | *79/139/269* |
| *Hitechi M-Series* | *8Meg/16Meg/32Meg* | *69/119/249* |
| *HP Omnibook 530, 600* | *4Meg/8Meg/12Meg* | *49/69/99* |
| HP Omnibook 800 | 8Meg/16Meg/32Meg | 79/129/349 |
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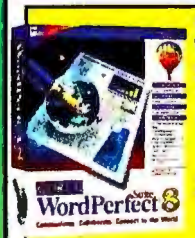

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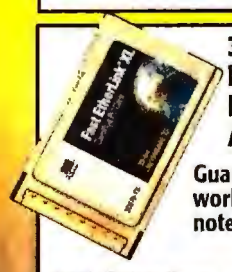

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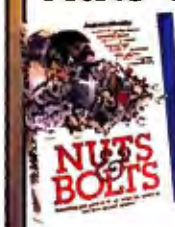


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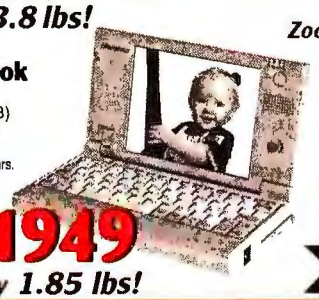

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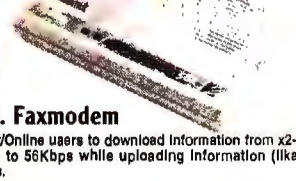

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Creative Labs Discovery 12X Kit w/SB 32..... .....283
Altec Lansing ACS500 5-Channel Dolby Speakers..... .....299
Labtec 3210 20-watt Speakers..... .....82
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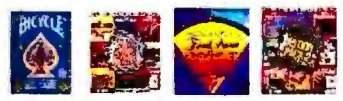

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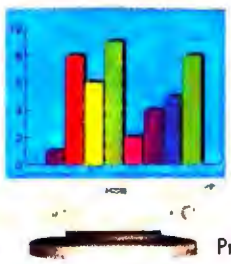

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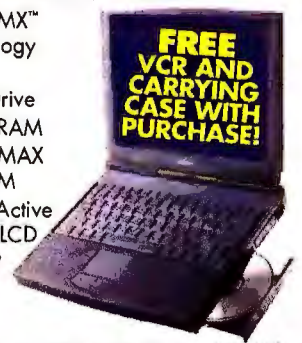


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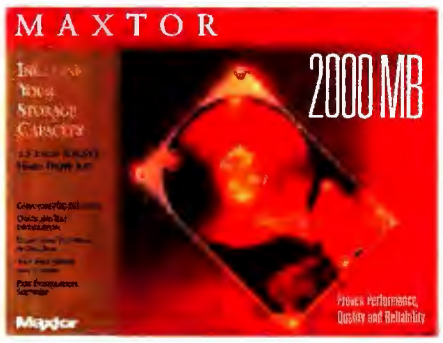


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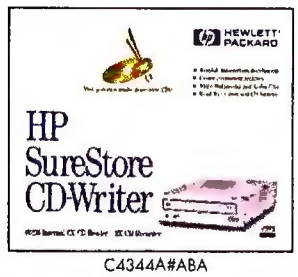


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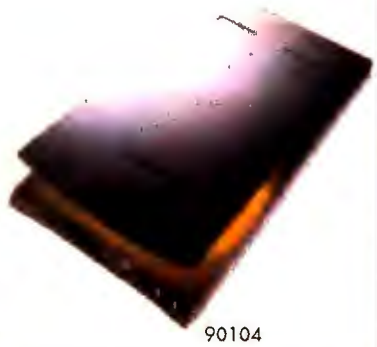

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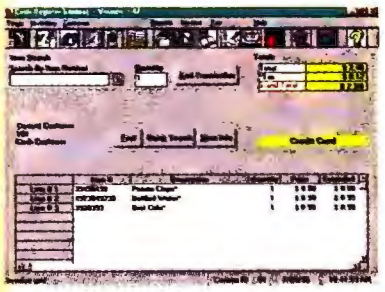

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**Ascentia J10, J20, J30, J50, J55**

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|---|---|---|---|---|---|
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| 32MB | $249.30 | 68810 | | | |

**Ascentia A60 Plus, A70 Plus**

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|---|---|---|---|---|---|
| 8MB | $73.46 | 91542 | 16MB | $134.02 | 91543 |
| 32MB | $309.89 | 91544 | 64MB | $608.23 | 91545 |

**Bravo MS 5166M, 5200, 5200M**

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| 16MB | $139.72 | 92399 | 32MB | $365.39 | 92071 |
| 64MB | CALL! | 92400 | 128MB | $1379.11 | 92401 |

**Bravo LC 6233**

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| 64MB | $598.85 | 92630 | | | |

### COMPAQ

**Armada 1120, 4150, 4160**

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|---|---|---|---|---|---|
| 8MB | $67.25 | 71879 | 16MB | $119.31 | 71880 |

**Armada 4110 series, 4120 series, 4130 series**

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|---|---|---|---|---|---|
| 8MB | $94.46 | 74915 | 16MB | $147.42 | 74917 |
| 32MB | $269.74 | 74918 | | | |

**Deskpro 2000, 4000, 6000**

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|---|---|---|---|---|---|
| 8MB | $63.54 | 74165 | 16MB | $119.58 | 74166 |
| 32MB | $227.39 | 74167 | | | |

**LTE Elite 5000 series**

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|---|---|---|---|---|---|
| 8MB | $86.83 | 62465 | 16MB | $147.42 | 62466 |
| 32MB | $267.51 | 62467 | 64MB | $555.09 | 62468 |

**Prolinea 2500**

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|---|---|---|---|---|---|
| 32MB | $279.41 | 79833 | 64MB | $637.03 | 79834 |
| 128MB | $1229.41 | 79835 | | | |

**Prolinea 5000, 5000R, 6000**

| | | | | | |
|---|---|---|---|---|---|
| 64MB | $604.27 | 71875 | 128MB | $1119.64 | 71876 |
| 256MB | $2558.72 | 71877 | 512MB | $4966.30 | 71878 |

**Presario 962, 9536, 9546, 9548, 972, 982, 974, 992, Prolinea P75, P90**

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|---|---|---|---|---|---|
| 8MB | $63.13 | 54679 | 16MB | $117.86 | 54680 |
| 32MB | $219.37 | 54682 | 64MB | $425.00 | 54681 |

**Presario 7200 series**

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|---|---|---|---|---|---|
| 8MB | $65.77 | 68815 | 16MB | $119.58 | 68812 |
| 32MB | $239.76 | 68813 | 64MB | $409.06 | 68814 |

### FUJITSU

**LifeBook 555TX, 655TX, 635T**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $72.93 | 83130 | 16MB | $128.78 | 80765 |
| 32MB | $309.89 | 80426 | | | |

### GATEWAY 2000

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|---|---|---|---|---|---|
| 8MB | $65.77 | 57571 | 16MB | $119.58 | 57572 |
| 32MB | $219.37 | 57573 | 64MB | $454.99 | 57575 |

**Solo V75 Deluxe, V90, S90, S90 Deluxe, S90 BestBuy, Solo 2100**

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|---|---|---|---|---|---|
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|---|---|---|---|---|---|
| 4MB | $31.56 | 43306 | 8MB | $59.02 | 42443 |

**LaserJet 4, 4M**

| | | | | | |
|---|---|---|---|---|---|
| 4MB | $44.60 | 32151 | 8MB | $85.84 | 32568 |

**LaserJet 4si, 4si MX**

| | | | | | |
|---|---|---|---|---|---|
| 4MB | $46.88 | 43307 | 8MB | $83.11 | 37583 |

### HITACHI

**MX series, 133T, 150T, 166T**

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|---|---|---|---|---|---|
| 8MB | $97.24 | 85193 | 16MB | $149.78 | 85195 |

### IBM

**PC 300 model 330, 340, PC 700 model 730, 750 A, E, N, B, F, P**

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|---|---|---|---|---|---|
| 8MB | $65.77 | 74840 | 16MB | $125.02 | 72593 |
| 32MB | $239.76 | 72594 | | | |

**PC 300-300GL**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $81.26 | 90286 | 16MB | $148.78 | 90287 |
| 32MB | $329.98 | 90288 | | | |

**ThinkPad 365E, 365ED**

| | | | | | |
|---|---|---|---|---|---|
| 16MB | $126.71 | 63579 | | | |

### IBM

**ThinkPad 365, X, XD series, 560, 760 E, ED, EL, ELD**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $69.46 | 69680 | 16MB | $128.08 | 69704 |
| 32MB | $284.49 | 71913 | | | |

**ThinkPad 340, 345C, CS, 355, 360C, CS, P, 755, CS, CE, CD, CV, CX**

| | | | | | |
|---|---|---|---|---|---|
| 4MB | $55.98 | 42715 | 8MB | $87.52 | 42716 |
| 16MB | $154.12 | 42717 | | | |

**ThinkPad 750, 750 C series, P**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $156.80 | 35181 | 16MB | $159.82 | 35182 |
| 32MB | $287.09 | 43310 | | | |

**ThinkPad 760, E, ED, EL, ELD, XD, XL, 380, 380D, 385D, 765D, L, LD, 560E**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $69.46 | 69680 | 16MB | $128.08 | 69704 |
| 32MB | $284.49 | 71913 | | | |

### NEC

**Versa 6000, 6030 series, 6050 series**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $85.84 | 71586 | 16MB | $149.44 | 71583 |
| 32MB | $274.04 | 71584 | | | |

**Versa 2000 series**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $66.47 | 44184 | 16MB | $127.39 | 44186 |

**Versa 2400, CD, 2405, CD, 2430CD, 2435CD**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $65.51 | 76394 | 16MB | $127.80 | 76396 |

**Versa 2600**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $93.08 | 85753 | 16MB | $158.80 | 85754 |
| 32MB | $309.35 | 85755 | 64MB | $619.55 | 85756 |

**Versa 4000 series, E, V, M, P**

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|---|---|---|---|---|---|
| 4MB | $81.26 | 30555 | 8MB | $87.52 | 30557 |
| 12MB | $136.65 | 43231 | 16MB | $146.09 | 31342 |
| 20MB | $199.21 | 43040 | 32MB | $269.74 | 43041 |

**Versa 6200MX, NT**

| | | | | | |
|---|---|---|---|---|---|
| 16MB | $139.48 | 85186 | 32MB | $274.04 | 85192 |

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**Extensa 450 series, 550 series, 560 series, 570 series**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $69.16 | 59865 | 16MB | $125.35 | 59866 |

**Extensa 510, 515**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $75.62 | 72130 | 16MB | $136.70 | 72134 |
| 32MB | $266.11 | 72136 | | | |

**TravelMate 5000 series, 5300**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $118.63 | 68609 | 16MB | $169.80 | 68608 |
| 8MB piggyback module | | $97.24 | 68610 | | |

### TOSHIBA

**Dynapad T200, T200CS**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $78.34 | 31508 | 16MB | $146.09 | 33132 |

**Equium 5160D, 5200D, 6200D**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $65.06 | 87226 | 16MB | $119.64 | 87227 |

**Infinia 7130, 7160, 7200**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $86.19 | 76190 | 16MB | $125.02 | 76191 |

**Portege 650, 660, CDT, Tecra 500, 510 series, 730 series and 740 series**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $66.47 | 72535 | 16MB | $129.12 | 72534 |

**Portege 610, Tecra 710,720, 730 series, Satellite Pro 200, 420, 430 series**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $89.92 | 67892 | 16MB | $148.76 | 67893 |
| 32MB | $275.35 | 67894 | | | |

**Satellite 100, 105, Satellite Pro 400, 410 series**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $89.30 | 63086 | 16MB | $148.76 | 63087 |
| 32MB | $279.56 | 61117 | | | |

**Satellite 110, 115, 200CDS, Satellite Pro 430CDT, 430CDS**

| | | | | | |
|---|---|---|---|---|---|
| 8MB | $89.92 | 67892 | 16MB | $148.76 | 67893 |
| 32MB | $275.35 | 67894 | | | |

**T2100, T2150**

| | | | | | |
|---|---|---|---|---|---|
| 4MB | $53.99 | 52810 | 8MB | $72.89 | 52811 |
| 16MB | $134.02 | 52812 | 24MB | $199.64 | 52813 |

**Tecra 510CDT, 510CDS, 520CDT, 530CDT, Satellite 270CDS, Satellite Pro 460**

| | | | | | |
|---|---|---|---|---|---|
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| 32MB | $289.70 | 74695 | | | |

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| NEC Versa 2000, 4000 | $449.01 87500 | $559.88 82845 | — |
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- Visioneer PaperPort Strobe scanner ..... 299.00

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- MAG Innovision 510V2 15" 0.28mm ..... 289.78
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- Magnavox MB4010 14" 0.28mm ..... 219.41
- Magnavox MV5011 15" 0.28mm ..... 277.56

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- NEC XV15+ 15" 0.25mm ..... 379.81
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- 150MHz upg for 90MHz ..... 319.48
- 166MHz upg for 100MHz ..... 339.25

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- OPTIMA 336 Business Modem internal ..... 226.29
- OPTIMA 336 Business Modem external ..... 236.48
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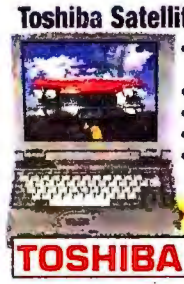

- 133MHz Pentium® Processor
- 16MB RAM
- 1.34GB HDD
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- 12.1" SVGA DSTN Color Display

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Internal Model BND2130 . **$147.99***
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Philips/Magnavox MB4010 MT1379 ..... $239.95

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Viewsonic E655 MT1311 ..... $319.95
Panasonic S15 MT1518 ..... $329.95
MAG DX15T TRINITRON MT1558 ..... $359.95
NEC E500 MT1547 ..... $389.95

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Power User MT1178 ..... $469.95
PRINCETON E070 MT1514 ..... $499.95
Viewsonic G771 MT1537 ..... $599.95
Panasonic S17 MT1520 ..... $619.95
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*Monitor size refers to CRT/Visable image size.

SONY 200SX MON0415 ..... $699.95
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### CREATIVE LABS

GBMA202 Graphics Blaster MA202 ..... $49.95
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### MEGAHERTZ

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V56K PC-Card, K56Flex DMD2473 ..... $199.95
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Sound Blaster AWE64 value EX7814 $99.99
Sound Blaster 16 Basic EX7961 ..... $69.99
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24X CD-ROM SCSI Drive DR6619 $219.95

### PHILIPS

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8X CD-ROM Drive Internal DR5208 ..... $199.95
8X CD-ROM Drive External DR5429 ..... $299.95

### HP SURESTORE

HP CD-Writer 2X/6X Internal DR6042 ..... $379.95
HP CD-Writer 2X/6X External Parallel DR6041 ..... $479.95
HP CD-Writer 2X/6X External SCSI DR6043 ..... $479.95

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DeskJet 340 PR11412 ..... $299.95
DeskJet 672C PR12302 ..... $199.95
DeskJet 694C PR12125 ..... $299.95
DeskJet 820Cse PR11480 ..... $299.95
DeskJet 870Cse PR11792 ..... $399.95
DeskJet 1600C PR11386 ..... $1349.95
LaserJet 5se PR12268 ..... $1049.95
LaserJet 6Lse PR12310 ..... $399.95
LaserJet 6Pse PR12301 ..... $799.95
LaserJet 6MP INP0975 ..... 999.95
OfficeJet 570 color 4-in-1 PR12303 ..... $599.95

### EPSON

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Stylus Color 400 PR12121 ..... $199.95
Stylus Color 600 PR12126 ..... $299.95
Stylus Color 800 PR12127 ..... $449.95
Stylus 1520 PR12430 ..... $799.95
Stylus Color 3000 (PC) PR12407 ..... $1999.95
Stylus Color Photo PR12380 ..... $499.95

### BROTHER

HL-720 (Windows Only) PR11689 ..... $299.95
HL-730DX (Window & DOS) PR11752 $329.95
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HL-1060 (10ppm) PR12042 ..... $699.95
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MFC-1950+ (ribbon) PR11487 ..... $449.95
MFC-4550 (laser) PR11715 ..... $799.95
MFC-6550MC (laser) PR11716 ..... $999.95

### OKIDATA PRINTERS

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OL600e PR11418 ..... $299.95
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ML321 Turbo PR11772 ..... $459.95
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ML591 PR11303 ..... $589.95

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BJC-240 PR11764 ..... $169.95*
BJC-4200 PR11763 ..... $199.95*
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BJC-620 PR11765 ..... $329.95
C2500 (Fax, Scan, Print, Copy) PR11712 $499.95*

### LEXMARK

Color Jetprinter 2050 PR11929 ..... $199.95*
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2390/2391 Plus Dot Matrix Printer PR12330/PR12325 ..... $369.95*/$469.95
4079 Plus PR11318 ..... $2699
4039 10 Plus PR11256 ..... $899.95*
Optra R Plus PR11421 ..... $999.95*
Optra Lx+/Optra Lxn+ PR11422/PR11699 ..... $1599.95*/$1999.95*
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Optra S 1250 12ppm PR12345 ..... $1089.95
Optra S 2450 24ppm PR12340 ..... $2179.95
Optra N-240/Optra N-245 w/16MB RAM PR11698/PR11697 ..... $2799.95*/$3299.95*

### NEC

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### IBM 300GL SERIES

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P200MMX 16MB, 2.5GB, 16X CD-ROM, WIN-95 CP5033 ..... $2219

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DeskPro 2000, MT, P200, 32MB, 3.2GB, 16X CD CP5247 ..... $1789
DeskPro 4000, DT, P166, 16MB, 2.4GB CP5259 ..... $1419
DeskPro 4000, DT, P200, 32MB, 2.4GB CP5256 ..... $1679
DeskPro 4000, DT, P233, 32MB, 3.2GB, 16X CD CP5253 ..... $2129

*Compaq & HP models do not include monitor unless otherwise stated.*

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Flex Special 6x86-pr166, 16MB, 2.0GB, 4MB/3D, 16xCD CP5413 ..... $999
Flex Performer 6x86-pr200, 32MB, 4.0GB, 4MB/3D, 20xCD CP5414 ..... $1399
Flex UltraPerformer 6x86-pr233, 32MB, 4.0GB, 4MB-WRAM, 20xCD CP5415 ..... $1849
CyberNet2 15" Monitor & Printer p/200MMX, 32MB, 2.0GB, 2MB/3D, 20xCD BN4349 ..... $1999
Basic Workstation & 14" Monitor p/166, 32MB, 2.0GB, 1MB/64-bit, 16xCD BN4348 ..... $1199
Business Workstation & 17" Monitor p/200MMX, 32MB, 4.0GB, 2MB/128-bit, 20xCD BN4347 ..... $1899

### HEWLETT-PACKARD VECTRA VL/VE w/ 2MB VID. MEM.

VL5-DT-166MMX DT, 166MMX, 16MB, 16GB, 256KB, CP5212 ..... $1199
VL5-DT-200MMX DT, 200MMX, 16MB, 25GB, 256KB, 8X CD, CP5224 ..... $1629
VL5-MT-166MMX DT, 166MMX, 16MB, 25GB, 512KB, CP5225 ..... $1299
VL5-MT-200MMX DT, 200MMX, 16MB, 25GB, 512KB, 8X CD, CP5227 ..... $1729

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### SONY

NEW! Digital Mavica MVC-FD5 Camera IN6346 ..... $399
DSC-F1 Digital Zoom Camera IN6191 ..... $699.95

### KODAK

DC20 Digital Camera INP0890 ..... $199.95
DC50 Digital Zoom Camera INP0647 ..... $699.95
DC120 Digital Zoom Camera INP1132 ..... $999.95

### VIVITAR

ViviCam 2000 Digital Camera IN6357 ..... $249.00
ViviCam 3000 Digital Camera IN6359 ..... $399.00

### MICROTEK

Scanmaker E3 Flatbed Scanner IN5573 ..... $199.95
Scanmaker E6 Flatbed Scanner IN5593 ..... $329.95
Scanmaker E6 Pro Flatbed Scanner IN5594 ..... $529.95

### UMAX

Astra 600P Flatbed Scanner IN6253 ..... $199.95
Astra 600S Flatbed Scanner INP1145 NOW ONLY! $199.95
MDX 8000 Digital Camara IN6251 ..... $479.95

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### TOSHIBA

Libretto 50CT P75, 6.1" TFT, 772MB CP5205 ..... $1949
Satellite 220CDS, P133, 12.1"DSTN, 1.3GB CP5166 ..... $1949
Satellite Pro 440CDX, P133MMX, 12.1" DSTN, 1.3GB CP5209 ..... $2399
Satellite Pro 440CDT, P133MMX, 12.1" TFT, 1.3GB CP5210 ..... $3299
Satellite Pro 460CDT, P166MMX, 12.1" TFT, 2.0GB CP5208 ..... $4199
Tecra 520CDT, P166MMX, 12.1" TFT, 2.1GB CP5206 ..... $4499
Tecra 530CDT, P166MMX, 12.1" XGATFS, 2.1GB CP3207 ..... $4899
Portege 300CT P133MMX, 10.4" TFT, 1.5GB CP5204 ..... $3399

### HITACHI Vision Book Series

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P150MMX, 1.4GB, 16MB, 10X, 12.1" HASTN CP5240 ..... $2499
P166MMX, 2.1GB, 16MB, 10X, 33.6, 12.1" TFT CP5241 ..... $3499

### HEWLETT-PACKARD Omnibook 5700

5700CT, P150 MMX, 2GB, 12.1" TFT CP4505 ..... $4299
5700CTX, P166 MMX, 3GB, 12.1" TFT CP4506 ..... $5199

### IBM ThinkPad

380 P150, 1.08GB, 16MB, 12.1" DSTN CP4775 ..... $1749
380D P150, 1.35GB, 16MB, 8X, 12.1" DSTN CP4773 ..... $1999
380D P150MMX, 2.1GB, 16MB, 8X, 12.1" TFT CP4774 ..... $3299
560 P100, 810MB, 8MB, 11.3" DSTN CP2901 ..... $1899
560 P133, 2.1GB, 8MB, 11.3" DSTN CP4220 ..... $1899
760XD P166MMX, 3GB, 32MB, 8X, 12.1"XGA TFT CP4435 ..... $5069

### TEXAS INSTRUMENTS

610CD, P150, 1.4GB, 16MB, 10X CD, 11.3" DSTN CP4934 ..... $1949
610CDT, P150, 1.4GB, 16MB, 10X CD, 11.3" TFT CP4933 ..... $2549

### COMPAQ Armada Series

4150 P150MMX, 1.6GB, 16MB, 10X, 21.1" CSTN CP5293 ..... $2999
4160T P166MMX, 2.0GB, 16MB, 10X, 12.1" CTFT CP5294 ..... $3999
1530DM P133MMX, 1.4GB, 16MB, 33.6, 10X, 12.1" CSTN CP5292 ..... $2899
1580DMT P150MMX, 2.1GB, 16MB, 33.6, 10X, 21.1" CTFT CP5295 ..... $3999

## IBM LAPTOP 380D

IBM.

- 150MHz Pentium Processor
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- 16MB RAM
- 12.1" DSTN SVGA Color Display
- 8X CD-ROM

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| P6DKF Dual PII 233/266/300 & up Full AT | $391 |
| P6SNE II Single P II 233/266/300 Baby AT | $322 |
| P6SNE Single P6 Baby AT | $267 |
| P5MMA98 Single P5MMX ATX | $169 |
| P5MMS98 Single P5MMX Boby AT | $169 |

**TYAN**

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|---|---|
| Tamcat AT Dual Pentium w/512K | $216 |
| Tamcat-3 Pentium MMX w/512K | $171 |
| 31570S TX MMX w/512K | $171 |

**intel.**

| | |
|---|---|
| Pro Evidence Dual Pentium Pro | $576 |
| Portland PII | $308 |
| Tuscon MMX W/512K | $187 |
| Venus Pentium Pro | $147 |
| Mori IIX MMX w/512K | $128 |

## CPUs

**intel.**

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|---|---|
| Pentium 300 and Up | Call |
| Pentium II-266 B 512K | $803 |
| Pentium II-233 B 512K | $662 |
| P-Pro 200 256K | $499 |
| P-233 MMX | $396 |
| P200 MMX | $284 |
| P166 MMX | $244 |
| P200 | $280 |
| P150 | $114 |
| P133 | $103 |
| P120 | $99 |
| P100 | $81 |

**AMD**

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|---|---|
| K6-233 | $436 |
| K6-200 | $240 |

## 168Pin DIMMs

| EDO ECC 3.3V | |
|---|---|
| 16MB | $120 |
| 32MB | $239 |
| 64MB | $425 |
| 128MB | $1150 |
| **SDRAM** | |
| 8MB | $60 |
| 16MB | $92 |
| 32MB | $179 |
| 64MB | $389 |

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|---|---|---|---|
| 4MB | $21 | $20 | $32 |
| 8MB | $35 | $34 | $57 |
| 16MB | $65 | $65 | $85 |
| 32MB | $122 | $122 | $175 |
| 64MB | $360 | $325 | $449 |

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**3Com**

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|---|---|
| EtherLink II 16-Bit ISA Combo (3C509B-COMBO) Ethernet 10Mbs 10BT thin thick w/sw combo AUI BNC Retail Box | $110 |
| EtherLink XL PCI Combo (3C900-COMBO) Bulk OEM Ethernet 10Mbs 10BT thin thick combo AUI BNC | $92 |
| Fast EtherLink XL TX 10/100 PCI (3C905-TX) 10/100 Base-TX Cat 5 UTP Retail box | $95 |

**intel.**

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|---|---|
| Ether Express 10/100MBs PCI T4 | $142 |
| Ether Express Pro 10/100MBs EISA 10BT | $240 |
| Ether Express Pro 10/100MBs ISA 10BT | $165 |
| Ether Express Pro 10/100MBs PCI TX | $79 |

**Xercom**

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|---|---|
| CardBus Ethernet 10/100MBs 10BT/100TX | $195 |
| Pocket Ethernet II Parallel 10MBs 10BT | $260 |

## NOTEBOOKS Canon

Inova Book 480 CDT, 490
8MB $57 16MB $110
Innova Book 360, 360, 475, 300P
8MB $59 16MB $112
Notejet III, Innova Book IB1100 P series
8MB $59 16MB $112

## NEC

**NOTEBOOKS**

Ultrlite Versa E, V, M, P, 4000, 4050, 4080
8MB $82 16MB $139
32MB $248
Versa S, 500, 550D, 2000, 2200C
8MB $65 16MB $115
Versa 6000 Series
8MB $80 16MB $135
32MB $245
Versa 6200 MX Series
8MB $60 16MB $115
32MB $275 64MB $550

## HEWLETT PACKARD

**NOTEBOOKS**

Omnibook 5000,5500 series
8MB $79 16MB $129
32MB $239
Omni Book 800 CS,CT
8MB $74 16MB $126
32MB $305

**DESKTOPS**

Vectra xu 6/150, 180, 200 XW
16MB $135 32MB $249
64MB $449
Vectra VT 6-150, 6-200
16MB $99 32MB $190
64MB $369 128MB $749
Vectra VL4 5/90, 5/100, XM4, VE2, XA
16MB $99 32MB $190
64MB $380
Netserver LH+,Pro,LD Series
16MB $122 32MB $249
64MB $450 128MB $1150

## Hard Drives

**Quantum**

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|---|---|
| Big Foot 6.4GB IDE | $369 |
| Big Foot4.4GB IDE | $233 |
| 3200A 3.2GB IDE | $231 |
| 32100S 2.1GB SCSI | $253 |

**Western Digital**

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|---|---|
| Ultrawide SCSI 4GB | $715 |
| 4GD IDE | $297 |
| AC 33100 3.1GB IDE | $233 |
| AC 22100 2.1GB IDE | $198 |
| AC 21200 1.2GB IDE | $165 |

**Fujitsu**

| | |
|---|---|
| 2.5GB IDE 10ms | $211 |
| 2.1GB IDE | $185 |
| 1623T 1.7GB IDE | $176 |
| 1626T 1.2GB IDIDE | $165 |

## Video Cards

**DIAMOND MULTIMEDIA**

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|---|---|
| 3D 3000 w/4MB VRAM PCI | $149 |
| 3D 2000 w/2MB PCI Upgrodoble | $76 |
| 3D 2000 2MB PCI | $55 |
| 2500 PCI w/MPEFG 1MB | $35 |

**matrox**

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|---|---|
| Millennium w/4MB OEM | $184 |
| Mystique 4MB Retail | $154 |
| Mystique 2MB OEM | $100 |

**Trident**

| | |
|---|---|
| 9680 2MB PCI | $33 |
| 9685 MPEG 1MB EDO | $43 |
| 9000 512K ISA | $26 |
| 8900 1MB ISA | $30 |

## COMPAQ

**NOTEBOOKS**

Contura 400, 410, 420, 430 also c&cx
8MB $68 16MB $121
LTE 5000series
8MB $65 16MB $118
32MB $225 32MB $445
Armada 4110 Series
8MB $65 16MB $118
32MB $225
[illegible] 4100 Series
8MB $61 16MB $113
32MB $255

**DESKTOPS**

Presario 4764, 4770
8MB $60 16MB $99
32MB $198
Professional W.S. 5000, Prolliant 800
16MB $124 32MB $245
64MB $445 128MB $1199

## Acer

**NOTEBOOKS**

Acer Note Pro 950 to 959
8MB $55 16MB $120 32MB $229
Acer Note 970cx, 370cx
8MB $64 16MB $118 32MB $269

**DESKTOPS**

Acer Acros 800 Power 9000,Altos 17000
8MB $79
16MB $119 32MB $279
Acer Altos 900, 9000 Pro
16MB $126 32MB $240

## IBM

**NOTEBOOKS**

Thinkpad 750, 755, 750C, Ce, Cs, P
8MB $99 16MB $149
32MB $279
Thinkpad 760 C, CD, L, LD
8MB $68 16MB $128
32MB $363
Thinkpad 760EX, ED, E, EL 365X, XD 560, 535
8MB $61 16MB $113
32MB $240

**DESKTOPS**

PS Valuepoint PS1 consultant, PS1 Essential Advisor
4MB $39 8MB $72
16MB $105
Aptiva Series
8MB $49 16MB $88
32MB $168

## AST

**NOTEBOOKS**

Ascentia A Series
8MB $63 16MB $114 32MB $259
Ascentia J Series
8MB $65 16MB $114 32MB $222
Ascentia P Series
8MB $73 16MB $125

## Fujitsu

**NOTEBOOKS**

Milan,Montega,Monte Carlos Lifebook
8MB $61 16MB $113 32MB $259
FMV 5100 NL/W,Y,Nu/W,Y
8MB $61 16MB $113 32MB $232

## DELL

**NOTEBOOKS**

Latitude XP 450C, XPi
8MB $62 16MB $118
Latitude LM P100, P133, M166
8MB $63 16MB $120
32MB $232

**DESKTOPS**

Optiplex GXL, GXM, GL, GM, GMT
16MB $105 32MB $185
Optiplex [illegible]
Dimension P133v, 166v, 200v, XPS P133s, P166s, P200s
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32MB $198
Poweredge 2100, 4100
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128MB $1225 256MB $2450
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Tecra 500, 510 CDS/CDT
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24MB $163

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**CREATIVE**

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| SB AWE 64 Gald (4MB) | $199 |
| SB AWE 64 Retail Pack | $106 |
| SN AWE 32 PnP Retail Pack | $171 |
| SB 32 PnP Retail Pack | $171 |
| SB 16 Vibra Nan IDE | $52 |

**YAMAHA**

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| 32 Bit Wave Table | $41 |
| 16 Bit 3D Saund | $27 |

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| 931 PnP 16 Bit | $22 |

## Modems

**US Robotics**

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| US Rabatics 56K Ext | $180 |
| US Rabatics 33.6K Voice | $145 |
| Spartster ISDN 12BK Madem | $235 |

**J-Mark**

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| J-Mark 33.6 Int | $65 |

**SmartLink**

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| Smartlink 5634BTA 56K x 2 Int | $125 |
| Smartlink 3334BAV 33.6K Voice | $78 |
| Smartlink 3334BTA 33.6K | $65 |

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**Iomega**

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| Jaz 1GB SCSI External | $387 |
| Jaz 1GB SCSI Internal | $289 |
| Zip 100MB | $141 |
| Ditta 3.2GB Tape Backup Ext. | $260 |
| Ditto 3.2GB Tape Backup Int. | $214 |
| Ditto 2GB Tape Backup Ext. | $187 |
| Ditta 2GB Tape Backup Int | $140 |

## CD Recorders

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| JVC 6/2 read/write w/1 MB Buffer ond 16Bit ISA SCSI-2 Ctrl | $341 |
| JVC 6/2 read/write w/1MB Buffer ond 32Bit PCI PnP | $412 |
| SONY 6/2 read/write 345 ISA 16Bit SCSI Controller | $380 |
| Yomoho 6/4 read/write 2MB Buffer 645 PCI PnP 32Bit SCSI Controller | $710 |

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Meblus 575/31, 91, A300 Series
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32MB $259
PC 9080, 3090
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32MB $229
PC 100, 100T, P133 Wide Note
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32MB $223

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**NOTEBOOKS**

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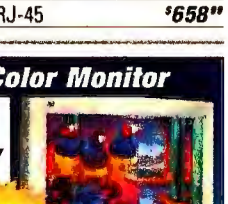

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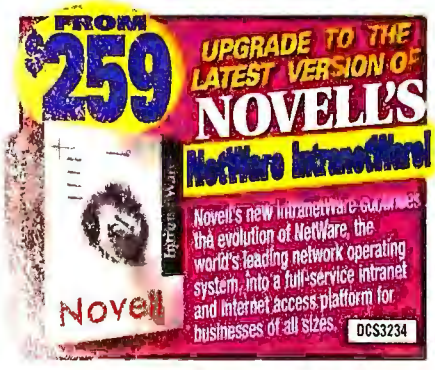

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| | |
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• Packet write compatible, tray Loading

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|---|---|---|---|
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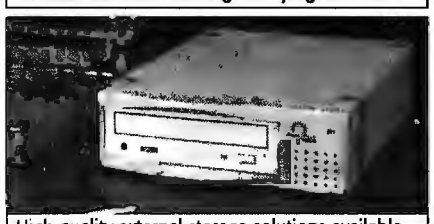

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| 1.6G8 | $315 | $415 |
| 2.5GB | $365 | $465 |
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| 4GB | $515 | $615 |
| 5GB | $595 | $695 |
| CD ROM | | |
| 16X | $295 | $395 |
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## IDE HARD DRIVES

| IDE | RPM | Brand | Model | Price |
|---|---|---|---|---|
| 1200MB | 5400 | Fujitsu | M1636T | $165 |
| 1275MB | 4500 | Seagate | ST31277A | $160 |
| 1281MB | 5200 | Western Digital | AC11200 | $152 |
| 1300MB | 4200 | JT5 | JT51300 | $155 |
| 1624M8 | 5200 | Western Digital | AC21600 | $167 |
| **1700MB** | **5400** | **Fujitsu** | **M1623T** | **$165** |
| 1700MB | 4500 | Seagate | ST31720A | $169 |
| 1750MB | 4480 | Maxtor | M81750A | $179 |
| 1750MB | 5400 | Fujitsu | MP3017A | $169 |
| 2000MB | 4500 | JTS | JTS2000 | $175 |
| 2100MB | 5400 | Fujitsu | M1624T | $173 |
| 2000MB | 5200 | Western Digital | AC22000 | $177 |
| 2100MB | 4480 | Maxtor | M82100A | $189 |
| 2132MB | 4500 | Seagate | ST32132A | $179 |
| 2151MB | 5400 | Quantum | FB32160A | $187 |
| **2500MB** | **5400** | **Fujitsu** | **M1638T** | **$190** |
| 2500MB | 5200 | Micropolis | MC4525A | $182 |
| 2557MB | 12ms | Seagate | ST32531A | $203 |
| 2559MB | 5200 | Western Digital | AC22500 | $197 |
| 2560MB | 5400 | Maxtor | M82560A | $209 |
| 2620MB | 5400 | Fujitsu | MP3026A | $196 |
| 3000MB | 4500 | JT5 | JT53000 | $199 |
| 3166MB | 5200 | Western Digital | AC33100 | $217 |
| 3228MB | 5400 | Quantum | FB33240A | $222 |
| 3245M8 | 4500 | Seagate | ST33240A | $229 |
| 3500MB | 4480 | Maxtor | MB3500A | $231 |
| 3500MB | 5400 | Fujitsu | MP3035A | $217 |
| 4000MB | 5200 | Western Digital | AC34000 | $277 |
| **4000MB** | **5200** | **Micropolis** | **MC4540A** | **$249** |
| 4310MB | 5400 | Quantum | FB34320A | $265 |
| 4326MB | 4500 | Seagate | ST34340A | $295 |
| 4335MB | 3600 | Quantum | BF4335A | $225 |
| 4370MB | 5400 | Fujitsu | MP3043A | $242 |
| **5000MB** | **5200** | **Micropolis** | **MC4550A** | **$329** |
| 5120MB | 5400 | Maxtor | M85120A | $368 |
| 5160MB | 5400 | Western Digital | AC35100 | $367 |
| 5250MB | 5400 | Fujitsu | MP3052A | $309 |
| 644BMB | 5400 | Quantum | F836480A | $365 |
| 6450M8 | 5400 | Seagate | ST56450A | $429 |
| 6480MB | 3600 | Quantum | BF6480A | $339 |

## SCSI HARD DRIVES

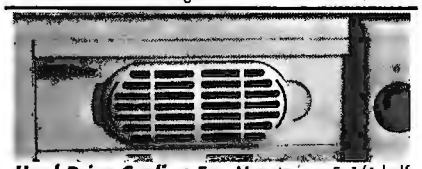
*Add a DPT 2044U Ultra SCSI controller $249*

| SCSI | RPM | Brand | Model | Price |
|---|---|---|---|---|
| 1050MB | 5400 | Seagate | ST31055N | $242 |
| 2150MB | 5400 | Seagate | ST52160N | $275 |
| 2150M8 | 7200 | Seagate | ST32171N | $479 |
| 2151MB | 5400 | Quantum | FB321605 | $239 |
| 322BMB | 5400 | Quantum | F8332405 | $305 |
| **4100MB** | **7200** | **Micropolis** | **MC4341** | **$549** |
| 4300MB | 5400 | Micropolis | MC4743 | $369 |
| 4310MB | 5400 | Quantum | FB343205 | $369 |
| 4350MB | 7200 | Seagate | ST34371N | $709 |
| 4400MB | 7200 | Fujitsu | M29545 | $575 |
| 4550MB | 7200 | Micropolis | MC4345 | $599 |
| 4550MB | 7200 | Micropolis | MC4345AV | $685 |
| 4550MB | 7200 | Quantum | XP345505 | $735 |
| 4550MB | 10,000 | Seagate | ST34501N | $859 |
| 6448MB | 5400 | Quantum | FB364805 | $479 |
| **9100MB** | **7200** | **Micropolis** | **MC3391** | **$985** |
| 9100MB | 7200 | Fujitsu | M2949S | $995 |
| 9100MB | 7200 | Quantum | XP391005 | $1115 |
| 9100MB | 7200 | Micropolis | MC3391AV | $1119 |
| 9100MB | 7200 | Seagate | ST19171N | $1169 |
| 9100MB | 10,000 | Seagate | ST19101N | $1479 |
| 23300MB | 5400 | Seagate | ST423451N | $2669 |

## WIDE HARD DRIVES

*Add a DPT 2044UW Ultra Wide SCSI controller for $279*

| WIDE | RPM | Brand | Model | Price |
|---|---|---|---|---|
| 1050MB | 5411 | Seagate | ST31055W | $329 |
| 2150MB | 7200 | Seagate | ST32171W | $515 |
| **4294MB** | **7200** | **Micropolis** | **MC3243W** | **$629** |
| 4294MB | 7200 | Micropolis | MC3243WAV | $789 |
| 4350MB | 7200 | Seagate | ST34371W | $750 |
| 4400MB | 7200 | Fujitsu | M2954W | $599 |
| 4550MB | 7200 | Micropolis | MC4345W | $619 |
| 4550MB | 7200 | Micropolis | MC4345WAV | $709 |
| 4550M8 | 7200 | Quantum | XP34550W | $735 |
| 4550MB | 10,000 | Seagate | ST34501W | $889 |
| **9091MB** | **5400** | **Micropolis** | **MC3391W** | **$1039** |
| 9091MB | 5400 | Micropolis | MC3391WAV | $1139 |
| 9100MB | 7200 | Fujitsu | M2949W | $1049 |
| 9100MB | 7200 | Quantum | XP39100W | $1115 |
| 9100MB | 7200 | Seagate | ST19171W | $1229 |
| 9100MB | 10,000 | Seagate | ST19101W | $1459 |
| 23300MB | 5400 | Seagate | ST423451W | $2599 |



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## CD ROM DRIVES

***IDE CD ROM***

| Speed | Brand | Model | ms | Int |
|---|---|---|---|---|
| 12X | Toshiba | XM5702B | 115 | $98 |
| 16X | Delta | DELTA16X | 120 | $79 |
| 16X | Lite On | LTN262A | 120 | $89 |
| 16X | Toshiba | XM6002B | 90 | $91 |
| 16X | Mitsumi | CRMCFX16X | 120 | $92 |
| 16X | NEC | CDR1600 | 100 | $95 |
| 18X | Acer | AC616A | 120 | $92 |
| 20X | Lite On | LTN202A | 120 | $94 |
| 24X | Delta | DELTA24X | 99 | $89 |
| 24X | Panasonic | CR585 | 85 | $109 |
| 24X | Toshiba | XM6102B | 85 | $122 |

***IDE CD CHANGERS***

| 5peed | Brand | Model | # Disks | Int |
|---|---|---|---|---|
| 6X | NEC | CDR4X6 | 4 | $89 |
| 8X | NEC | CDR4X8 | 4 | $119 |
| 12X | Panasonic | 5QTC512N | 5 | $269 |

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Creative Labs 5ound Blaster AWE64 (5864AWEGOLD) $180
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25 Watt (5PEAKERJR) $99 35 Watt (5PEAKERPRO) $129
Universal sound cable(AUDIOMIX) $9
Turn any IDE CD ROM into an external for parallel printer port (PPCASECD) $99
Turn any IDE CD ROM into an external for PCMCIA port (PCMCIACASECD) $189

***SCSI CD ROM***

| 5peed | Brand | Model | ms | Int |
|---|---|---|---|---|
| 12X | Toshiba | XM5701B | 115 | $149 |
| 12X | Plextor | PX12T5(tray) | 105 | $209 |
| 12X | Plextor | PX12C5(caddy) | 105 | $259 |
| 15X | Toshiba | XM3801B | 99 | $159 |
| 16X | NEC | CDR1610 | 100 | $159 |
| 20X | Plextor | PX20TS | 95 | $235 |

***SCSI CD CHANGERS***

| Speed | Brand | Model | # Disks | | |
|---|---|---|---|---|---|
| 4X | Pioneer | DRM624X | 6 | (ext) | $389 |
| 16X | Nakamichi | MJS16 | 4 | | $239 |

| ***SCSI CD TOWERS*** | | 4 Drive | 7 Drive |
|---|---|---|---|
| 15X | Toshiba | 99ms | $999 | $1729 |
| 16X | NEC | 100ms | $929 | $1659 |
| 20X | Plextor | 95ms | $1399 | $2499 |

***SCSI CD TOWERS w/ 4 Disc Changers***
Nakamichi 16X 150ms $1399 $2399

## CD RECORDERS

***Sony 2x6***
Internal SCSI drive (CDU926S) $339*
***Yamaha 4x6***
Internal 5C5I drive tray load (YCDR400T) $539*
Internal SCSI drive caddy load (YCDR400) $549*
***Philips 2x6***
Complete kit includes software, controller, and 1 disk
Internal SCSI (CDD2600) $439
***Hewlett Packard SureStor 6020I***
SureStor 6020I includes software, and 1 disk
Internal 5CSI (C4343CDR) $369
Complete internal kit w/ controller (C4343CDR-1) $409
External for parallel printer port (C4345A) $545
***Sony 2x8***
Internal IDE (CDU92BS) $399*
Kit w/ 1 disk, and software compatible with Win 95 & Win NT 3.51 & up. Req IDE controller. (C0U92BSKIT) $429
***Mitsumi 2x6***
IDE Kit includes 3 disks, and software compatible with Win 95 & Win NT 3.51 and up. Requires IDE controller.
Internal (CRMC2600TE) $420
*Drive must be purchased with CDR software or media.

## ULTRA IDE HARD DRIVES

***FUJITSU***

| | | | | | |
|---|---|---|---|---|---|
| 1750MB | 10ms | 5400 | MP3017U | 3 | $174 |
| 2620M8 | 10ms | 5400 | MP3026U | 3 | $201 |
| 3500MB | 10ms | 5400 | MP3035U | 3 | $222 |
| 4370M8 | 10ms | 5400 | MP3043U | 3 | $247 |
| 5250MB | 10ms | 5400 | MP3052U | 3 | $314 |

***QUANTUM***

| | | | | | |
|---|---|---|---|---|---|
| 2151M8 | 10ms | 5400 | FB32160A | 3 | $187 |
| 3228MB | 10ms | 5400 | FB33240A | 3 | $222 |
| 4310MB | 10ms | 5400 | FB34320A | 3 | $265 |
| 6448MB | 10ms | 5400 | FB36480A | 3 | $365 |

***MAXTOR***

| | | | | | |
|---|---|---|---|---|---|
| 7000MB | 10ms | 5200 | M87000A | 3 | $462 |

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|---|---|---|---|---|---|
| 5160MB | 12ms | 5400 | AC35100 | 3 | $367 |

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|---|---|---|
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| 7-14Gig | Bmm, 120MB/min, ELIANTB20 | $1549 |
| 7-14Gig | Bmm, 60MB/min, EXB8700LT | $689 |
| 7-14Gig | Bmm, 60MB/min, EXBB700 | $999 |
| (EXB8700 includes: 1 tape, 1 cleaning tape, and backup software) | | |
| 20-40Gig | Bmm, 360MB/min, EXBB900 | $3769 |
| 70-140Gig | 8mm, 60MB/min, EXB10H | $4239 |

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|---|---|---|
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| 2-4Gig | DAT-DC, 42MB/min, C1536AI | $609 |
| 4-8Gig | DDS-2 DAT, 60MB/min, C1599AI | $859 |
| 12-24Gig | DDS-3 DAT, 120MB/min, C1554AI | $1249 |
| 72-144GB | DDS-3 DAT, 120MB/min, C564BA | $2779 |

***SEAGATE***

| | | |
|---|---|---|
| 2-4Gig | DAT-DC, 66MB/min, 5TD24000N | $599 |
| 4Gig | Mini, 29M8/min, TSTB000 | $339 |
| 4-8Gig | DD5-2 DAT, 48MB/min, C4326RP | $739 |
| 48-96Gig | DDS-2 DAT, 48MB/min, C45B6NP | $1879 |

***SEAGATE MINI CART***
Prices include Dos/Win backup software & 1 tape

| | | | |
|---|---|---|---|
| 800MB | TR1, TSTB00R $99 | Parallel ver | $139 |
| 3.2Gig | TR3, T5T3200 $179 | Parallel ver | $185 |
| 4-8Gig | TR4, TSTB000 IDE or SCSI | | $339 |

***SONY***

| | | |
|---|---|---|
| 4-8Gig | DDS-2 DAT, 44MB/min, SDT5000AI | $789 |
| 4-8Gig | DDS-2 DAT, 90MB/min, SDT7000AI | $849 |
| 12-24Gig | DD5-3 DAT, 144MB/min, 5DT9000AI | $1049 |
| 32-64Gig | DDS-2 DAT, 90MB/min, TSL7000X | $2129 |

***QUANTUM***

| | | |
|---|---|---|
| 15-30Gig | DLT, 150M8/min, DLT2000XT | $2679 |
| 20-40Gig | DLT, 180MB/min, DLT4000 | $4099 |
| 75-150Gig | DLT loader, 150MB/min, DLT2500XT | $4949 |
| 100-200Gig | DLT loader, 180M8/min, DLT4500 | $6819 |
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| 140-280Gig | DLT loader, 180MB/min, DLT4700 | $8629 |

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|---|---|
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| Internal IDE for PC (ZIP100A) | $139 |
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| External for PC parallel port (PPZIP100) | $145 |
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| | |
|---|---|
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| External SCSI in our case with 1 disk (JAZEX) | $348 |
| External SCSI in Iomega case with 1 disk (JAZX) | $388 |
| Disks Qty 2-4/5-9/10+ 1Gig | $87/$85/$82 |

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| | |
|---|---|
| Ext. SCSI (EZ230S) | $190 |
| Ext Parallel(EZ230PP) | $190 |
| Extra Disks Qty 2-4/5-9/10+ | $30/$26/$24 |

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|---|---|
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|---|---|---|---|---|
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| 230MB | [TJ230] | $20 | $16 | $14 |
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| 640MB 3 1/2" | [TJ640] | $38 | $34 | $32 |
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| 1.3GB 1024K | [TJ1.3] | $51 | $47 | $45 |
| 2.3GB 512K | [TJ2.3] | $69 | $65 | $63 |
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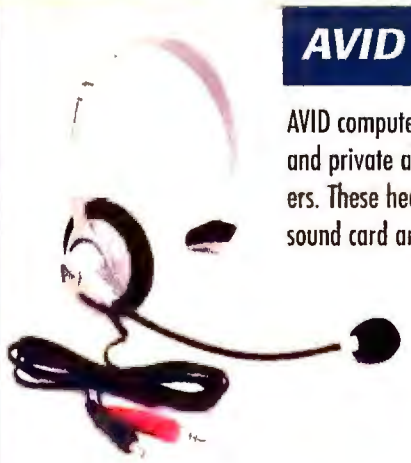

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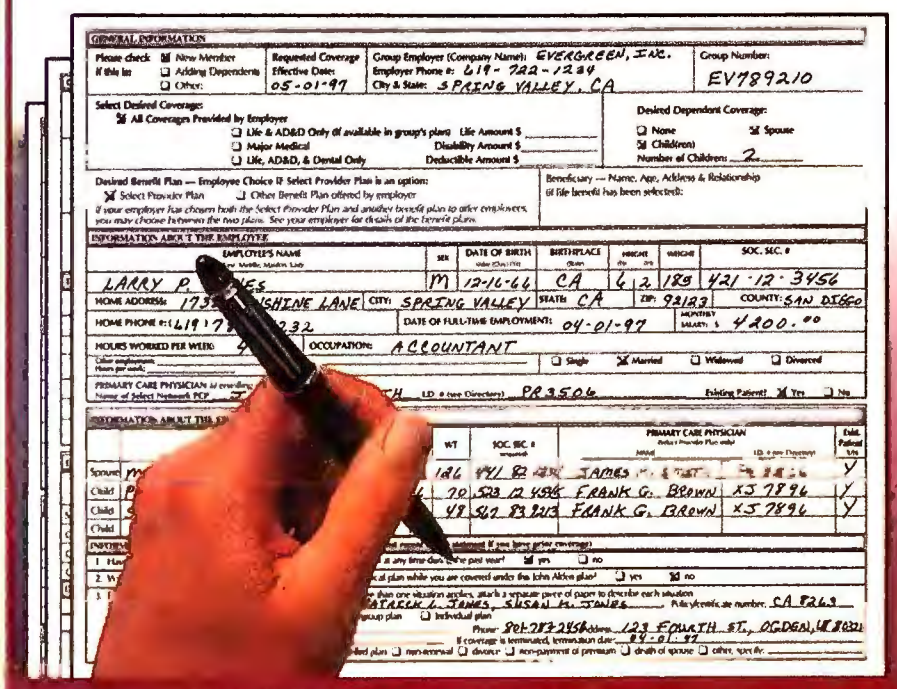

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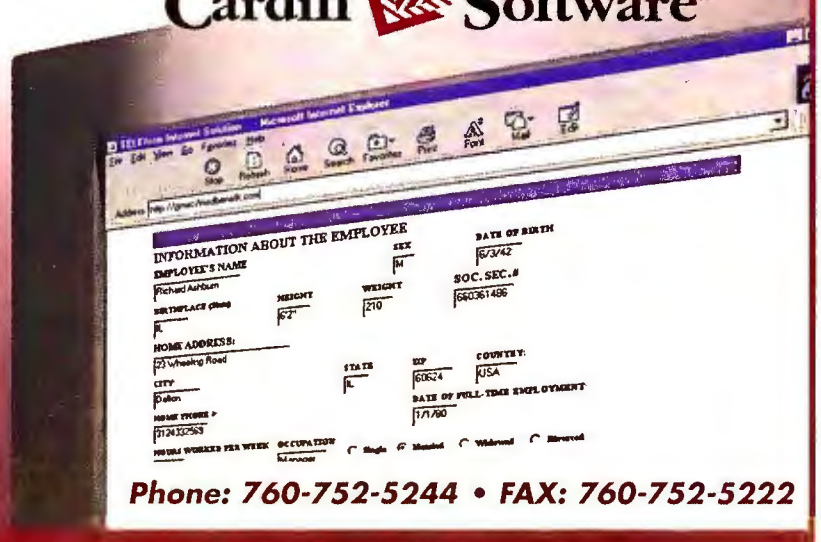

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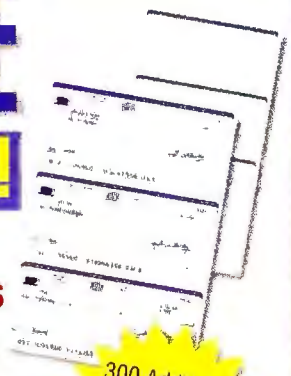

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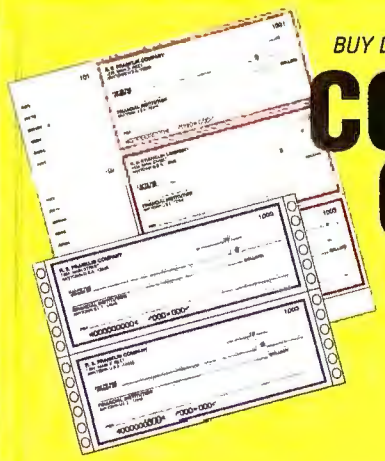

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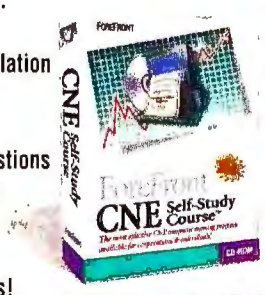


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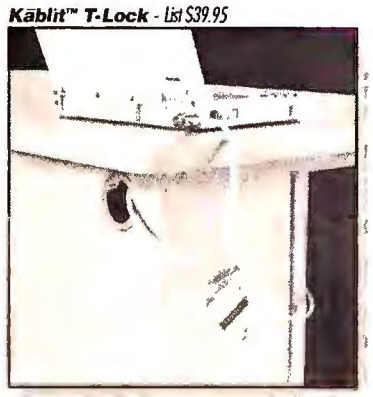

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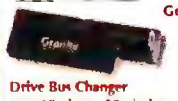

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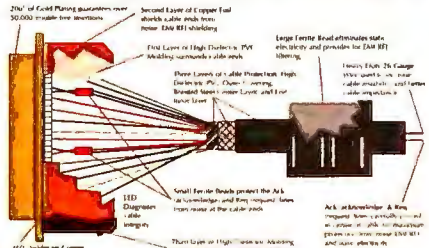

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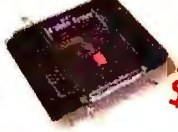

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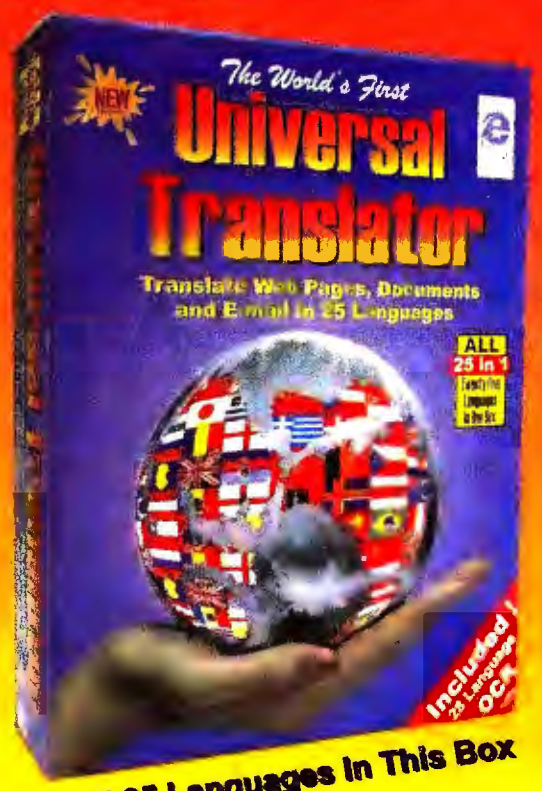


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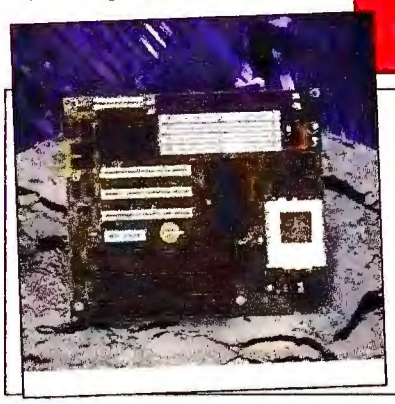

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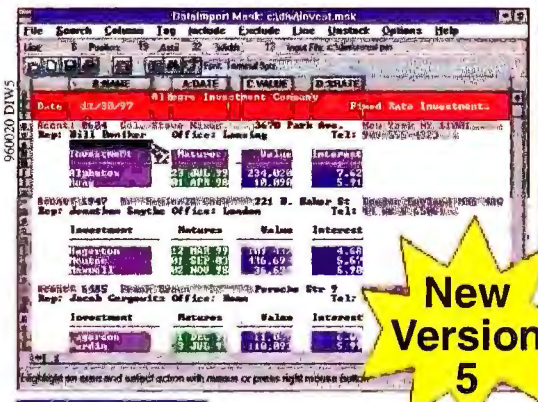

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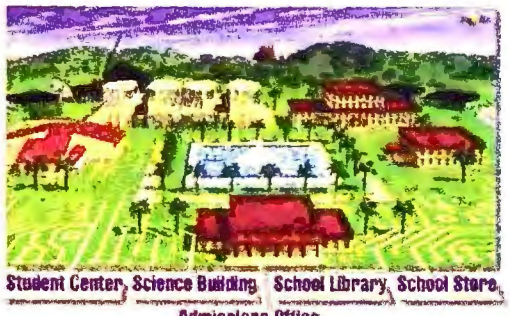


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LEGAL NOTICE

**SUPERIOR COURT OF THE STATE OF CALIFORNIA**
**FOR THE COUNTY OF SANTA CLARA**

| | |
|---|---|
| JUSTIN PERISH, D.C., et al, on behalf of themselves and all others similarly situated, Plaintiffs, v. INTEL CORPORATION and DOES 1 through 50, inclusive, Defendants. | No. CV755101<br>**Class Action**<br>**SUMMARY NOTICE OF SETTLEMENT** |

SUMMARY NOTICE OF CLASS ACTION AND PROPOSED SETTLEMENT

TO: ALL PERSONS OR ENTITIES IN THE UNITED STATES WHO DURING THE PERIOD SEPTEMBER 1, 1992 TO JULY 1, 1997 (the "Class Period") PURCHASED FOR THEIR OWN USE AND NOT FOR RESALE ANY DESKTOP PERSONAL COMPUTER, MOBILE PERSONAL COMPUTER, SERVER OR WORKSTATION, OR COMPONENT THEREOF (INCLUDING MOTHERBOARDS AND MICROPROCESSORS) ("PCs") EQUIPPED WITH INTEL 486 ™ PROCESSORS, PENTIUM® PROCESSORS OR PENTIUM®PRO PROCESSORS.

PLEASE READ THIS SUMMARY NOTICE CAREFULLY. THIS SUMMARY NOTICE RELATES TO A PROPOSED SETTLEMENT OF LAWSUITS WITH INTEL CORPORATION. THIS IS ONLY A SUMMARY. THE PROPOSED SETTLEMENT IS DETAILED IN A NOTICE OF SETTLEMENT THAT YOU ARE ENCOURAGED TO READ IN ITS ENTIRETY. IF YOU ARE A CLASS MEMBER, IT CONTAINS IMPORTANT INFORMATION ABOUT YOUR RIGHTS AND THE EXCHANGE OF CERTAIN RIGHTS FOR THE RELINQUISHMENT OF CERTAIN CLAIMS SHOULD THE SETTLEMENT BE APPROVED.

YOU ALSO HAVE A RIGHT TO BE EXCLUDED FROM THE CLASS AS DETAILED IN THE NOTICE OF SETTLEMENT OF CLASS ACTION. IF YOU WISH TO BE EXCLUDED FROM THE CLASS YOU MUST FOLLOW THE PROCEDURES OUTLINED IN THE NOTICE OF SETTLEMENT. IF YOU DO NOT REQUEST EXCLUSION FROM THE CLASS AND THIS SETTLEMENT BECOMES EFFECTIVE YOU WILL BE GIVEN CERTAIN RIGHTS IN EXCHANGE FOR THE RELINQUISHMENT OF CERTAIN CLAIMS. THAT PROCEDURE WILL NOT GIVE YOU THE RIGHT TO A TRIAL ON SUCH CLAIMS, AND YOU WILL WAIVE YOUR RIGHT TO A TRIAL ON SUCH CLAIMS.

NOTICE IS HEREBY GIVEN, pursuant to California Code of Civil Procedure § 382 and California Civil Code § 1781 and an Order of the Superior Court of the State of California for the County of Santa Clara dated July 1, 1997, that a hearing will be held before the Honorable Socrates Manoukian in Department 3 located at 191 North First Street, San Jose, California at 9:00 a.m. on October 3, 1997 (the "Settlement Hearing") to determine (i) whether the proposed settlement (the "Settlement") of the above-captioned litigation (the "Consolidated Action") as set forth in a Settlement Stipulation dated July 1, 1997 (the "Settlement Stipulation") is fair, reasonable and adequate, and (ii) whether a final judgment should be entered dismissing the Consolidated Action on the merits with prejudice against the Plaintiffs and all members of the Settlement Class.

In brief, the Settlement Stipulation provides for Intel to do the following:

1. Each Settlement Class Member who purchased a PC containing a 120 MHz or a 133 MHz Pentium® processor between October 23, 1995 and January 5, 1996 shall be entitled to receive a certificate good for a $50.00 rebate on the purchase of an Intel OverDrive® processor suitable for replacement of the microprocessor in their PC if they submit a qualified request for the certificate along with their retailer's receipt for the PC to Intel within the applicable time period and if they submit a qualified, completed certificate along with the retailer's receipt for a qualified Intel OverDrive® processor to Intel within the applicable time period.

2. Intel will provide consumers with (i) certain kinds of information about the OverDrive® processor, including upgrade compatibility information provided by the manufacturers of PCs, and (ii) certain technical assistance.

3. Intel has agreed to provide certain disclosures in the future regarding the iCOMP® Index 2.0 ratings and SPEC95 benchmark test results for its products..

THE ABOVE IS ONLY A SHORT SUMMARY OF THE PROPOSED SETTLEMENT, ALL OF WHICH IS DISCUSSED MORE FULLY IN THE DETAILED NOTICE OF SETTLEMENT. THE PROPOSED SETTLEMENT, YOUR RIGHT TO PARTICIPATE IN THESE PROCEEDINGS, AND THE MEANS BY WHICH YOU MAY EXCLUDE YOURSELF FROM THE SETTLEMENT CLASS ARE DESCRIBED IN THE NOTICE OF SETTLEMENT. IF YOU ARE A MEMBER OF THE SETTLEMENT CLASS AND DESIRE ADDITIONAL INFORMATION OR A DETAILED PRINTED NOTICE OF SETTLEMENT, YOU MAY OBTAIN A COPY OF THE NOTICE OF SETTLEMENT BY CALLING INTEL AT 1-800-628-8686 AND ASKING FOR A COPY TO BE MAILED TO YOU. IN ADDITION, A FULL COPY OF THE NOTICE OF SETTLEMENT IS AVAILABLE AT INTEL'S HOME PAGE ON THE WORLD WIDE WEB (HTTP://WWW.INTEL.COM). YOU MAY ALSO OBTAIN A COPY BY WRITING TO OR CONTACTING SETTLEMENT CLASS COUNSEL AT THE FOLLOWING ADDRESS:

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ALL QUESTIONS RELATING TO THE PROPOSED SETTLEMENT SHOULD BE DIRECTED TO COUNSEL FOR THE SETTLEMENT CLASS IDENTIFIED ABOVE. PLEASE DO NOT CALL OR WRITE THE COURT OR THE CLERK'S OFFICE FOR INFORMATION. THE CLERK'S OFFICE IS NOT PERMITTED TO GIVE LEGAL ADVICE.

Dated: July 1, 1997

By Order of the Superior Court of the State of California for the County of Santa Clara.

The Honorable Socrates Manoukian
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| 701 | 702 | 703 | 704 | 705 | 706 | 707 | 708 | 709 | 710 | 711 | 712 | 713 | 714 | 715 | 716 | 717 | 718 | 719 | 720 |
| 721 | 722 | 723 | 724 | 725 | 726 | 727 | 728 | 729 | 730 | 731 | 732 | 733 | 734 | 735 | 736 | 737 | 738 | 739 | 740 |
| 741 | 742 | 743 | 744 | 745 | 746 | 747 | 748 | 749 | 750 | 751 | 752 | 753 | 754 | 755 | 756 | 757 | 758 | 759 | 760 |
| 761 | 762 | 763 | 764 | 765 | 766 | 767 | 768 | 769 | 770 | 771 | 772 | 773 | 774 | 775 | 776 | 777 | 778 | 779 | 780 |
| 781 | 782 | 783 | 784 | 785 | 786 | 787 | 788 | 789 | 790 | 791 | 792 | 793 | 794 | 795 | 796 | 797 | 798 | 799 | 800 |
| 801 | 802 | 803 | 804 | 805 | 806 | 807 | 808 | 809 | 810 | 811 | 812 | 813 | 814 | 815 | 816 | 817 | 818 | 819 | 820 |
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| 841 | 842 | 843 | 844 | 845 | 846 | 847 | 848 | 849 | 850 | 851 | 852 | 853 | 854 | 855 | 856 | 857 | 858 | 859 | 860 |
| 861 | 862 | 863 | 864 | 865 | 866 | 867 | 868 | 869 | 870 | 871 | 872 | 873 | 874 | 875 | 876 | 877 | 878 | 879 | 880 |
| 881 | 882 | 883 | 884 | 885 | 886 | 887 | 888 | 889 | 890 | 891 | 892 | 893 | 894 | 895 | 896 | 897 | 898 | 899 | 900 |

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953 Windows 95 software
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959 Multimedia products
960 Utilities
961 Mail order companies
962 Storage devices

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| 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 | 12 | 13 | 14 | 15 | 16 | 17 | 18 | 19 | 20 |
| 21 | 22 | 23 | 24 | 25 | 26 | 27 | 28 | 29 | 30 | 31 | 32 | 33 | 34 | 35 | 36 | 37 | 38 | 39 | 40 |
| 41 | 42 | 43 | 44 | 45 | 46 | 47 | 48 | 49 | 50 | 51 | 52 | 53 | 54 | 55 | 56 | 57 | 58 | 59 | 60 |
| 61 | 62 | 63 | 64 | 65 | 66 | 67 | 68 | 69 | 70 | 71 | 72 | 73 | 74 | 75 | 76 | 77 | 78 | 79 | 80 |
| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 |
| 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 |
| 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 |
| 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 |
| 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 |
| 241 | 242 | 243 | 244 | 245 | 246 | 247 | 248 | 249 | 250 | 251 | 252 | 253 | 254 | 255 | 256 | 257 | 258 | 259 | 260 |
| 401 | 402 | 403 | 404 | 405 | 406 | 407 | 408 | 409 | 410 | 411 | 412 | 413 | 414 | 415 | 416 | 417 | 418 | 419 | 420 |
| 421 | 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 | 439 | 440 |
| 441 | 442 | 443 | 444 | 445 | 446 | 447 | 448 | 449 | 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 | 458 | 459 | 460 |
| 461 | 462 | 463 | 464 | 465 | 466 | 467 | 468 | 469 | 470 | 471 | 472 | 473 | 474 | 475 | 476 | 477 | 478 | 479 | 480 |
| 481 | 482 | 483 | 484 | 485 | 486 | 487 | 488 | 489 | 490 | 491 | 492 | 493 | 494 | 495 | 496 | 497 | 498 | 499 | 500 |
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| 601 | 602 | 603 | 604 | 605 | 606 | 607 | 608 | 609 | 610 | 611 | 612 | 613 | 614 | 615 | 616 | 617 | 618 | 619 | 620 |
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| 641 | 642 | 643 | 644 | 645 | 646 | 647 | 648 | 649 | 650 | 651 | 652 | 653 | 654 | 655 | 656 | 657 | 658 | 659 | 660 |
| 661 | 662 | 663 | 664 | 665 | 666 | 667 | 668 | 669 | 670 | 671 | 672 | 673 | 674 | 675 | 676 | 677 | 678 | 679 | 680 |
| 681 | 682 | 683 | 684 | 685 | 686 | 687 | 688 | 689 | 690 | 691 | 692 | 693 | 694 | 695 | 696 | 697 | 698 | 699 | 700 |
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| 81 | 82 | 83 | 84 | 85 | 86 | 87 | 88 | 89 | 90 | 91 | 92 | 93 | 94 | 95 | 96 | 97 | 98 | 99 | 100 |
| 101 | 102 | 103 | 104 | 105 | 106 | 107 | 108 | 109 | 110 | 111 | 112 | 113 | 114 | 115 | 116 | 117 | 118 | 119 | 120 |
| 121 | 122 | 123 | 124 | 125 | 126 | 127 | 128 | 129 | 130 | 131 | 132 | 133 | 134 | 135 | 136 | 137 | 138 | 139 | 140 |
| 141 | 142 | 143 | 144 | 145 | 146 | 147 | 148 | 149 | 150 | 151 | 152 | 153 | 154 | 155 | 156 | 157 | 158 | 159 | 160 |
| 161 | 162 | 163 | 164 | 165 | 166 | 167 | 168 | 169 | 170 | 171 | 172 | 173 | 174 | 175 | 176 | 177 | 178 | 179 | 180 |
| 181 | 182 | 183 | 184 | 185 | 186 | 187 | 188 | 189 | 190 | 191 | 192 | 193 | 194 | 195 | 196 | 197 | 198 | 199 | 200 |
| 201 | 202 | 203 | 204 | 205 | 206 | 207 | 208 | 209 | 210 | 211 | 212 | 213 | 214 | 215 | 216 | 217 | 218 | 219 | 220 |
| 221 | 222 | 223 | 224 | 225 | 226 | 227 | 228 | 229 | 230 | 231 | 232 | 233 | 234 | 235 | 236 | 237 | 238 | 239 | 240 |
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| 421 | 422 | 423 | 424 | 425 | 426 | 427 | 428 | 429 | 430 | 431 | 432 | 433 | 434 | 435 | 436 | 437 | 438 | 439 | 440 |
| 441 | 442 | 443 | 444 | 445 | 446 | 447 | 448 | 449 | 450 | 451 | 452 | 453 | 454 | 455 | 456 | 457 | 458 | 459 | 460 |
| 461 | 462 | 463 | 464 | 465 | 466 | 467 | 468 | 469 | 470 | 471 | 472 | 473 | 474 | 475 | 476 | 477 | 478 | 479 | 480 |
| 481 | 482 | 483 | 484 | 485 | 486 | 487 | 488 | 489 | 490 | 491 | 492 | 493 | 494 | 495 | 496 | 497 | 498 | 499 | 500 |
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|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| 901 | 902 | 903 | 904 | 905 | 906 | 907 | 908 | 909 | 910 | 911 | 912 | 913 | 914 | 915 | 916 | 917 | 918 | 919 | 920 |

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## Advertiser Index A-Z

Get more information–circle the appropriate number on the reader service card.


| Reader service number | | Page |
|---|---|---|
| - | Acer America Corporation | 122-123 |
| - | Acer Components | 35 |
| - | Adaptec Inc. | 16 |
| 3 | ADI Systems | 52 |
| 12 | Adobe Systems Inc. | 183 |
| 16 | Advanced Micro Devices | 90-91 |
| 14 | AEC | 181 |
| 202 | allCLEAR | 305 |
| 9 | ALR | 307 |
| - | Anthro Corporation | 34 |
| 45 | APC | 104-105 |
| 17 | APC | 197 |
| 20 | ArtMedia USA-Pacific Technology | 315 |
| - | AST Computers | 71 |
| - | AST Computers | 110-111 |
| - | AST Servers | 103 |
| 5 | ATI Technologies | 32 |
| - | AverMedia | 286 |
| 91 | Caere Corporation | 297 |
| 11 | CMOS | 136-137 |
| - | Compaq Computer Corporation | 44-45 |
| - | Compaq Computer Corporation | 172-173 |
| 43 | CompuServe | 301 |
| - | Computer Book Club/TAB | 317 |
| 44 | Computer Discount Warehouse | 10-11 |
| 46 | Computer Discount Warehouse | 12-13 |
| 41 | Computer Discount Warehouse | 337 |
| 65 | Computer Discount Warehouse | 338-339 |
| - | Corel Corporation | 130-131 |


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# INDEX


| Reader service number | | Page |
|---|---|---|
| 49 | Costech Technologies, Inc. | 134 |
| 54 | Creative Labs Inc. | 125 |
| 59 | Creative Labs Inc. | 127 |
| 69 | Creative Labs Inc. | 129 |
| 56 | Crucial Technology | 319 |
| 64 | CTX Int'l | 311 |
| 74 | Cybermax | 92-93 |
| 81 | Dataviz, Inc. | 69 |
| 80 | Dataviz, Inc. | 363 |
| - | Dell Computer Corp. | C5-C8 |
| - | Dell Computer Corp. | 38-39 |
| - | Dell Computer Corp. | 50-51 |
| - | Dell Computer Corp. | 202-203 |
| - | Dell Computer Corp. | 209 |
| - | Dell Computer Corp. | 303 |
| 147 | Dirt Cheap Drives | 344 |
| 95 | Epson America, Inc. | 289 |
| - | EXABYTE/Eagle Division | 156 |
| - | Fujitsu Computer Products of America | 274-275 |
| 103 | Fujitsu PC Corporation | 56-57 |
| - | Gateway 2000 | 73-88 |
| 125 | Hansol | 97 |
| 97 | Hayes | 135 |
| - | Hewlett Packard | 151 |
| - | Hewlett Packard | 153 |
| - | Hewlett Packard | 155 |
| 109 | Hitachi | 2-3 |
| - | HP LaserJet Supplies | 263 |
| - | HP LaserJet Supplies | 265 |
| 110 | Hyundai Electronics America | 255 |
| - | IBM Corporation | 138-139 |
| - | Imation | 67 |
| - | Iomega | 132 |
| - | Iomega | 133 |
| 104 | ITT Sheraton | 26 |
| 113 | ITT Sheraton | 27 |
| 170 | KDS | 280 |
| 120 | KeyStone Learning Systems | 176 |
| 128 | Kingston Technology | 269 |
| - | LA TRADE | 327 |
| 176 | LA Vision | 228 |
| 96 | LG Electronics U.S.A., Inc. | 40 |
| 132 | Lincoln Navigator | 147 |
| 143 | Matrox Graphics, Inc. | 42-43 |
| 135 | Mega Image | 324 |
| - | Micrografx Inc. | 340D |
| 149 | Micron Electronics | 9 |
| - | Micron Electronics | 159-168 |
| 160 | Micron Electronics | 248-249 |
| - | Microsoft | C2-P1 |
| - | Microsoft Explorer | 107 |
| - | Microwarehouse | 342-343 |

| Reader service number | | Page |
|---|---|---|
| 169 | Midwest Computer Works | 330 |
| - | Minolta | 48 |
| - | Minolta | 49 |
| 153 | Minolta Peripheral Products | 65 |
| 155 | Mitsubishi Electronics America, Inc. | 195 |
| 158 | NEC | 28-29 |
| 180 | NEC | 282-285 |
| 205 | NEC Monitors | 200-201 |
| - | Nomai | 229 |
| - | NRI Schools | 309 |
| 121 | Oldsmobile Silhouette | 15 |
| 247 | Optiquest | 273 |
| 166 | Panasonic | 37 |
| 195 | PC America | 336 |
| 165 | PC Connection | 328-329 |
| 183 | PC MALL | 340B-340C |
| 167 | PC Universe | 341 |
| 172 | PC World Online | 210 |
| 129 | PCs Compleat/Comp USA Direct | 331-335 |
| 212 | PKWARE | 36 |
| 191 | PowerQuest | 323 |
| 196 | PowerQuest | 325 |
| 192 | Premio Computers | 179 |
| 152 | Princeton Graphic Systems | 4-5 |
| 151 | Princeton Graphic Systems | 20-21 |
| 184 | ProGen Systems | 46 |
| - | Quantex | 113-118 |
| 204 | Ricoh Corporation | 313 |
| 194 | Rose Electronics | 299 |
| 197 | Sampo | 295 |
| - | Samsung Electronics America | 98-99 |
| - | Samsung Electronics America | 267 |
| 213 | Sceptre Technologies, Inc. | 364-365 |
| 206 | Shecom | 340A |
| 207 | Shinho | 109 |
| - | Sony Electronics, Inc. | 217-220 |
| - | Sony Electronics-Convergence | 30-31 |
| 253 | SPSS, Inc. | 213 |
| 210 | STB Systems | 276 |
| 217 | Symantec Visual Page | 224 |
| 214 | Sys Technology, Inc | 322 |
| 221 | Telecommuting and Home Office Expo | 89 |
| 222 | Televideo Inc. | 257 |
| 227 | Toray Marketing and Sales | 278 |
| 228 | Toshiba America | 120-121 |
| 234 | Toshiba America Electronic Components Inc. | 211 |
| 243 | Toshiba America Imaging Systems Div. | 199 |

| Reader service number | | Page |
|---|---|---|
| 240 | Twinhead Corporation | 177 |
| - | U.S. Robotics | 185-188 |
| - | Umax PC | 233 |
| 250 | UMAX Technologies | 245 |
| - | Union Camp | 270 |
| 241 | USA Flex | 340 |
| 255 | V Communications, Inc. | 320 |
| 260 | ValueWeb | 321 |
| 239 | ViaGrafix | 326 |
| 245 | Video Professor | 294 |
| 224 | ViewSonic | 24-25 |
| 246 | ViewSonic | 157 |
| - | Visio | 231 |
| 187 | Visioneer | 22 |
| 187 | Visioneer | 54-55 |
| 251 | Western Digital | 247 |
| 254 | WinBook | 18-19 |
| 257 | Xerox Corporation | 101 |


## Advertiser Index by Product Category

**Get more information—circle the appropriate number on the reader service card.**

### HARDWARE

#### Boards/Cards/Chips


| | | |
|---|---|---|
| 16 | Advanced Micro Devices | 90-91 |
| 5 | ATI Technologies | 32 |
| 54 | Creative Labs Inc. | 125 |
| 59 | Creative Labs Inc. | 127 |
| 69 | Creative Labs Inc. | 129 |
| 56 | Crucial Technology | 319 |
| 128 | Kingston Technology | 269 |
| 143 | Matrox Graphics, Inc. | 42-43 |
| 206 | Shecom | 340A |
| 210 | STB Systems | 276 |


#### Communication


| | | |
|---|---|---|
| 97 | Hayes | 135 |
| - | U.S. Robotics | 185-188 |


#### Desktop Computers


| | | |
|---|---|---|
| 11 | CMOS | 136-137 |
| - | Dell Computer Corp. | C5-C8 |
| - | Dell Computer Corp. | 38-39 |
| - | Dell Computer Corp. | 50-51 |
| - | Dell Computer Corp. | 202-203 |
| - | Dell Computer Corp. | 303 |
| - | Gateway 2000 | 73-88 |
| - | Hewlett Packard | 153 |
| - | Hewlett Packard | 155 |
| 149 | Micron Electronics | 9 |
| - | Micron Electronics | 159-168 |
| 160 | Micron Electronics | 248-249 |
| - | Microwarehouse | 342-343 |
| 158 | NEC | 28-29 |
| 180 | NEC | 282-285 |
| 192 | Premio Computers | 179 |
| 184 | ProGen Systems | 46 |
| - | Quantex | 113-118 |
| 214 | Sys Technology, Inc | 322 |
| - | Umax PC | 233 |
| 241 | USA Flex | 340 |


#### Desktop Publishing


| | | |
|---|---|---|
| - | Compaq Computer Corporation | 172-173 |
| 74 | Cybermax | 92-93 |
| 80 | Dataviz, Inc. | 363 |
| - | Umax PC | 233 |


#### File Servers


| | | |
|---|---|---|
| 9 | ALR | 307 |
| - | AST Servers | 103 |
| 160 | Micron Electronics | 248-249 |


#### Laptop/Notebook


| | | |
|---|---|---|
| - | AST Computers | 71 |
| - | Compaq Computer Corporation | 44-45 |
| 64 | CTX Int'l | 311 |
| - | Dell Computer Corp. | 209 |
| 103 | Fujitsu PC Corporation | 56-57 |
| - | Gateway 2000 | 73-88 |
| - | Hewlett Packard | 151 |
| 109 | Hitachi | 2-3 |
| 135 | Mega Image | 324 |
| - | Micron Electronics | 159-168 |
| - | Samsung Electronics America | 98-99 |
| 213 | Sceptre Technologies, Inc. | 364-365 |
| - | Sony Electronics-Convergence | 30-31 |
| 228 | Toshiba America | 120-121 |
| 240 | Twinhead Corporation | 177 |
| 254 | WinBook | 18-19 |


#### Local Area Networks


| | | |
|---|---|---|
| 11 | CMOS | 136-137 |
| 194 | Rose Electronics | 299 |


#### Monitors/Displays


| | | |
|---|---|---|
| - | Acer Components | 35 |
| 3 | ADI Systems | 52 |
| 20 | ArtMedia USA-Pacific Technology | 315 |
| 125 | Hansol | 97 |
| 110 | Hyundai Electronics America | 255 |
| 170 | KDS | 280 |
| 96 | LG Electronics U.S.A., Inc. | 40 |
| 155 | Mitsubishi Electronics America, Inc. | 195 |
| 205 | NEC Monitors | 200-201 |
| 247 | Optiquest | 273 |
| 166 | Panasonic | 37 |

| Reader service number | | Page |
|---|---|---|
| 152 | Princeton Graphic Systems | 4-5 |
| 151 | Princeton Graphic Systems | 20-21 |
| 197 | Sampo | 295 |
| – | Samsung Electronics America | 267 |
| 213 | Sceptre Technologies, Inc. | 364-365 |
| 207 | Shinho | 109 |
| 222 | Televideo Inc. | 257 |
| 234 | Toshiba America Electronic Components Inc. | 211 |
| 224 | ViewSonic | 24-25 |
| | **Motherboards** | |
| – | AST Computers | 110-111 |
| | **Multimedia** | |
| 176 | LA Vision | 228 |
| 197 | Sampo | 295 |
| 227 | Toray Marketing and Sales | 278 |
| 243 | Toshiba America Imaging Systems Div. | 199 |
| 246 | ViewSonic | 157 |
| | **Other** | |
| – | Acer America Corporation | 122-123 |
| – | AverMedia | 286 |
| – | IBM Corporation | 138-139 |
| – | Micrografx Inc. | 340D |
| | **Peripheral/Sharing Devices** | |
| – | Adaptec Inc. | 16 |
| 194 | Rose Electronics | 299 |
| | **Power/Protection** | |
| 45 | APC | 104-105 |
| 17 | APC | 197 |
| | **Printers/Plotters** | |
| 95 | Epson America, Inc. | 289 |
| – | Fujitsu Computer Products of America | 274-275 |
| 153 | Minolta Peripheral Products | 65 |
| 204 | Ricoh Corporation | 313 |
| 257 | Xerox Corporation | 101 |
| | **Scanners/Digitizers** | |
| – | Minolta | 49 |
| 250 | UMAX Technologies | 245 |
| 187 | Visioneer | 54-55 |
| | **Storage/Backup Devices** | |
| 147 | Dirt Cheap Drives | 344 |
| – | EXABYTE/Eagle Division | 156 |
| – | Imation | 67 |
| – | Iomega | 132 |
| – | Iomega | 133 |
| – | Nomai | 229 |
| 227 | Toray Marketing and Sales | 278 |
| 251 | Western Digital | 247 |

**SOFTWARE**

| | | |
|---|---|---|
| | **CAD/CAM** | |
| 239 | ViaGrafix | 326 |
| | **Communications/Fax/Modems** | |
| 260 | ValueWeb | 321 |
| | **Dataconversion** | |
| 81 | Dataviz, Inc. | 69 |
| | **Desktop Publishing** | |
| 12 | Adobe Systems Inc. | 183 |
| | **Education** | |
| 245 | Video Professor | 294 |
| | **Graphics** | |
| 202 | allCLEAR | 305 |
| – | Visio | 231 |
| | **Management** | |
| 195 | PC America | 336 |
| | **Multimedia** | |
| 176 | LA Vision | 228 |
| | **Operating Systems** | |
| 255 | V Communications, Inc. | 320 |
| | **Other** | |
| 187 | Visioneer | 22 |
| | **Presentation Graphics** | |
| 49 | Costech Technologies, Inc. | 134 |
| | **Schedule Software** | |
| 14 | AEC | 181 |
| | **Software Suites** | |
| – | Corel Corporation | 130-131 |
| – | Microsoft | C2-P1 |
| | **Spreadsheets/Templates/Forms** | |
| 202 | allCLEAR | 305 |
| 91 | Caere Corporation | 297 |
| | **Statistics** | |
| 253 | SPSS, Inc. | 213 |
| | **Utilities** | |
| 14 | AEC | 181 |
| 212 | PKWARE | 36 |
| 191 | PowerQuest | 323 |
| 196 | PowerQuest | 325 |
| 255 | V Communications, Inc. | 320 |
| | **Video** | |
| 120 | KeyStone Learning Systems | 176 |
| | **Web Authoring Tools** | |
| 217 | Symantec Visual Page | 224 |
| 260 | ValueWeb | 321 |
| | **Windows** | |
| 212 | PKWARE | 36 |
| | **Word Processing/Aids** | |
| – | Corel Corporation | 130-131 |

**MISCELLANEOUS**

| | | |
|---|---|---|
| | **Automobiles** | |
| 132 | Lincoln Navigator | 147 |
| 121 | Oldsmobile Silhouette | 15 |
| | **Books/Periodicals/Subscriptions** | |
| – | Computer Book Club/TAB | 317 |
| | **Computer Accesories** | |
| – | Union Camp | 270 |
| | **Hotels** | |
| 104 | ITT Sheraton | 26 |
| 113 | ITT Sheraton | 27 |
| | **Internet Services** | |
| – | Microsoft Explorer | 107 |
| | **Mail Order** | |
| – | Computer Book Club/TAB | 317 |
| 44 | Computer Discount Warehouse | 10-11 |
| 46 | Computer Discount Warehouse | 12-13 |
| 41 | Computer Discount Warehouse | 337 |
| 65 | Computer Discount Warehouse | 338-339 |
| 147 | Dirt Cheap Drives | 344 |
| – | LA TRADE | 327 |
| 169 | Midwest Computer Works | 330 |
| – | NRI Schools | 309 |
| 165 | PC Connection | 328-329 |
| 183 | PC MALL | 340B-340C |
| 167 | PC Universe | 341 |
| 129 | PCs Compleat/Comp USA Direct | 331-335 |
| 206 | Shecom | 340A |
| | **Online Services** | |
| 43 | CompuServe | 301 |
| 172 | PC World Online | 210 |
| | **Other** | |
| – | Anthro Corporation | 34 |
| – | Minolta | 48 |
| – | Sony Electronics, Inc. | 217-220 |
| | **Supplies** | |
| – | HP LaserJet Supplies | 263 |
| – | HP LaserJet Supplies | 265 |
| – | Union Camp | 270 |
| | **Trade Shows** | |
| 221 | Telecommuting and Home Office Expo | 89 |
| | **Training** | |
| 120 | KeyStone Learning Systems | 176 |
| – | NRI Schools | 309 |


## Products Featured in Editorial

Get more information–circle the appropriate number on the reader service card.


| Reader service number | | Page |
|---|---|---|
| | **AntiVirus** | |
| 725 | PC-cillin Housecall, Trend Micro | 112 |
| | **Backup/Storage** | |
| 733 | Safeguard Interactive Backup | 126 |
| | **Bulletin Board/Chat Utility** | |
| 705 | Reunion, eShare | 100 |
| | **CD-ROM Drive** | |
| 737 | CD Traveler 820, EXP Computer | 128 |
| | **Desktop Computers** | |
| 649 | Acma EXP 200 | 240 |
| 650 | CLR Infinity PT5-AX | 240 |
| 658 | CyberMax Power Max | 250 |
| 652 | Dell Dimension M200a | 250 |
| 632 | Dell Dimension XPS H266 | 240 |
| 651 | Dell Dimension XPS M166s | 250 |
| 633 | Dell Dimension XPS M233s | 240 |
| 656 | Dell OptiPlex GS+ 166L | 250 |
| 641 | Dell OptiPlex GX Pro 200 | 240 |
| 640 | Dell OptiPlex Gxi 233 | 240 |
| 635 | Dell OptiPlex GXi 5200 | 240 |
| 699 | Digital Venturis FX-2 6166K | 94 |
| 612 | Dimension XPS M166s | 289 |
| 611 | Dimension XPS M233s | 289 |
| 617 | EggCam | 285 |
| 654 | Gateway 2000 G5-166 M | 250 |
| 637 | Gateway 2000 G5-233 | 240 |
| 634 | Gateway 2000 G6-233 | 240 |
| 639 | Gateway 2000 G6-266 | 240 |
| 703 | Gateway 2000 G6-266XL | 96 |
| 738 | Hitachi DJ-1000 Digital Camera | 133 |
| 614 | HP Pavilion 5320 | 289 |
| – | HP Pavilion | 290 |
| 642 | HP Vectra VA 6/200 MT | 240 |

# INDEX


| Reader service number | | Page |
|---|---|---|
| 663 | HP Vectra VE 5/133 | 250 |
| – | IBM PC 350 | 250 |
| – | IBM PC 365 | 240 |
| 665 | Kingdom 6x86 P166+ Super Value | 250 |
| 669 | Kingdom Pentium MMX 200 | 250 |
| 661 | Micro Express Micro Flex-PR/233 | 250 |
| 667 | Micro Express MicroFlex-686/ P200+LC | 250 |
| 653 | Micron Home MPC | 250 |
| 613 | Micron Home MPC | 289 |
| 636 | Micron Millennia Pro2 200 B | 240 |
| 659 | Midwest Micro MWH-200 | 250 |
| 645 | Multiwave P-200 MMX | 240 |
| 646 | National Microcomputers Expert Pro II | 240 |
| 660 | Polywell Poly 500 QX | 250 |
| 664 | ProGen Atlas X 200 | 250 |
| 657 | Quantex QP5/166 SM-3 | 250 |
| 666 | Quantex QP5/200 M-4 | 250 |
| 668 | Quantex QP5/233 SM-3 | 250 |
| 662 | Quantex QP6/200 PD-4 | 250 |
| 615 | Quantex QP6/200 SM-2 | 289 |
| 644 | Quantex QP6/200 SM-4 | 240 |
| 638 | Quantex QP6/233 SM-3 | 240 |
| 643 | Sys Technology Sys Performance 200K6 | 240 |
| 647 | Sys Technology Sys Performance P200T2M | 240 |
| 648 | Sys Technology Sys Performance Pro 200 | 240 |
| 704 | Toshiba PDR-2 | 100 |
| 700 | USA Flex 6x86MX-PR200 | 94 |

**DVD-ROM Kit**

| | | |
|---|---|---|
| 708 | DVD471TII, DynaTek Automation Systems | 102 |

**Encryption**

| | | |
|---|---|---|
| 735 | Secure IQ, Securicor 3net | 126 |
| 734 | Atrieva | 126 |

**Entertainment/Game**

| | | |
|---|---|---|
| 620 | D.A. Pursuit of Justice, Legacy Software | 287 |
| 619 | Earth Quest, DK Multimedia | 286 |

**Fonts**

| | | |
|---|---|---|
| 707 | ByHand, Sagittal Software | 102 |

**Genealogy Software**

| | | |
|---|---|---|
| 618 | Corel Family Tree Suite | 285 |

**Graphics Boards**

| | | |
|---|---|---|
| 625 | ATI 3D Xpression+ PC2TV | 281 |
| 629 | Diamond Stealth 3D 2000 Pro | 281 |
| 626 | Diamond Stealth 3D 3000XL | 281 |
| 623 | Hercules Terminator 3D/DX | 281 |
| 630 | Matrox Millennium | 281 |
| 624 | Matrox Mystique 220 Business | 281 |
| 628 | STB Lightspeed 128 | 281 |
| 622 | STB Nitro 3D | 281 |
| 627 | STB Velocity 3D | 281 |
| 631 | VideoLogic GrafixStar 600 | 281 |

**Hard Disk Utility**

| | | |
|---|---|---|
| 727 | DiskMapper with Office 97 Zoom, Micro Logic | 112 |
| 732 | Uninstaller 4.5, CyberMedia | 124 |

**Image Editor**

| | | |
|---|---|---|
| 728 | Kai's Photo Soap, MetaCreations | 119 |

**Input Device**

| | | |
|---|---|---|
| 702 | Cross iPen, A.T. Cross | 96 |

**Keyboards**

| | | |
|---|---|---|
| 698 | Darwin LaunchBoard | 290 |
| 697 | Future Keyboard, Acer | 290 |

**Kids' Creativity Software**

| | | |
|---|---|---|
| 621 | Super Craftshop, PrintPaks | 285 |

**Modem**

| | | |
|---|---|---|
| 721 | 3/Com/USR Sportster 56K | 283 |
| 712 | 3Com/U.S. Robotics Courier V.Everything | 283 |
| 718 | Boca 33.6 Internal Fax Modem M3361 | 283 |
| 715 | Diamond Multimedia SupraFaxModem 336i PnP Faxmodem for Windows | 283 |
| 714 | Hayes Optima 336B Internet Business Modem | 283 |
| 720 | Maxtech NetPacer Pro | 283 |
| 719 | Motorola ISG ModemSurfr | 283 |
| 717 | Shark Multimedia BabyTiger-336R | 283 |
| 716 | Wisecom Accelerator IV 33600 Voice Internal | 283 |
| 713 | Zoom ZoomfaxModem V.34I Plus | 283 |

**Monitors**

| | | |
|---|---|---|
| 607 | Compaq V70 | 171 |
| 606 | Dell UltraScan 1000HS | 171 |
| 731 | DeluxScan HL7870s | 124 |
| 608 | Hansol Mazellen 17PX | 171 |
| – | IBM P70 | 171 |
| 601 | Iiyama Vision Master Pro 17 | 171 |
| 602 | Mitsubishi Diamond Pro 87TXM | 171 |
| 605 | Princeton Graphic Systems EO75 | 171 |
| 604 | Samsung SyncMaster 700b | 171 |
| 609 | Sony CPD-220VS(2) | 171 |
| 603 | ViewSonic PT775 | 171 |

**Notebook Computers**

| | | |
|---|---|---|
| 683 | AMS TravelPro 105CS | 258 |
| 675 | ARM ARMNote TS97MX | 258 |
| 680 | Compaq Armada 1520DM | 258 |
| 685 | CTX EZBook 750MS | 258 |
| 672 | CTX EzBook 764MT | 258 |
| 673 | Dell Latitude LM M166ST | 258 |
| 686 | Fujitsu LifeBook 420D | 258 |
| 689 | Gateway 2000 Solo 2100 S5-120 | 258 |
| 678 | Gateway Solo 2100 S5-150 | 258 |
| 679 | Gateway Solo 2200 S5-166 | 258 |
| 677 | Gateway Solo 9100-XL | 258 |
| 688 | Hitachi E133T/1000 | 258 |
| 687 | Mega Image MegaBook 911 | 258 |
| 671 | Micron Transport XKE P166 A | 258 |
| 684 | Toshiba Satellite 200 CDS | 258 |
| 681 | Toshiba Satellite Pro 430CDS | 258 |
| 674 | Transmonde Vibrant 166Tmx | 258 |
| 670 | WinBook FX | 258 |
| 676 | WinBook LM | 258 |
| 682 | Winbook XP5 Pro P150 | 258 |

**Personal Information Manager**

| | | |
|---|---|---|
| 710 | Lotus Organizer 97 GS | 106 |
| 709 | Voice Pilot 3.0 for Windows 95 | 106 |

**Printers**

| | | |
|---|---|---|
| – | Epson Stylus Color 1520 | 273 |
| 691 | HP LaserJet 5M | 273 |
| – | IBM Network Color Printer | 273 |
| – | IBM Network Printer 12 | 273 |
| 692 | Lexmark Optra S 1250 | 273 |
| 690 | Lexmark Optra S 1650 | 273 |
| 693 | Okidata OkiPage 16n | 273 |
| 695 | Tektronix Phaser 350 | 273 |
| 696 | Tektronix Phaser 560 | 273 |
| 694 | Xerox DocuPrint C55mp Color Laser Printer | 273 |

**Printing Utility**

| | | |
|---|---|---|
| 616 | SuperPrint, Zenographics | 314 |

**Push Technology**

| | | |
|---|---|---|
| – | BackWeb | 206 |
| – | Caravelle Transceive | 206 |
| – | Castanet | 206 |
| – | Incisa | 206 |
| – | PointCast Network | 215 |

**Remote Control**

| | | |
|---|---|---|
| 726 | PCAnywhere 32 V 8.0, Symantec Corp | 119 |
| 729 | PocketPoint Remote Control, Mind Path Technologies | 119 |

**Scan Coverter**

| | | |
|---|---|---|
| 706 | TView PresoCard | 102 |

**Scanner**

| | | |
|---|---|---|
| 724 | OpticPro 9630P, Plustek USA Inc | 108 |
| 722 | PaperPort Strobe, Visioneer Inc | 108 |
| 723 | ScanMaker V300, Microtek Lab Inc | 108 |

**Servers**

| | | |
|---|---|---|
| 611 | Compaq ProLiant 800 | 222 |
| 610 | Digital Prioris MX 6200 SMP | 222 |
| 614 | HP NetServer E 40 6/200 | 222 |
| 612 | HP NetServer LD Pro 6/180 | 222 |
| 613 | HP NetServer LD Pro 6/200 | 222 |

**Software Suite**

| | | |
|---|---|---|
| 610 | Microsoft Office 97 | 49 |

**Travel Software**

| | | |
|---|---|---|
| 711 | Business Traveler's Suite, Rand McNally | 106 |

**USB**

| | | |
|---|---|---|
| 701 | CMD Technology's CSA-6700 | 95 |

**Utility**

| | | |
|---|---|---|
| – | Microsoft Kernel Toys | 290 |

**Visual Modeling Tool**

| | | |
|---|---|---|
| 730 | Analytica, Decisioneering | 124 |

**Web Photo Album**

| | | |
|---|---|---|
| 736 | Pictra Album | 128 |

**Web Print Shop**

| | | |
|---|---|---|
| – | iPrint | 285 |

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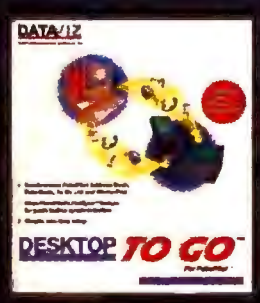


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# Memo to Microsoft: Enough, Already

SO I'M TRYING TO INSTALL a 56-kilobits-per-second external x2 Plug and Play modem. It comes with explicit step-by-step instructions, right down to specific screen shots of what you're supposed to see as you proceed through the installation. Simple. Easy.

Wrong. I happen to be installing it on a new PC that comes with the OSR2 version of Windows (version 4.00.950 B). In this version, the arrogant wizards of Microsoft have changed the Plug and Play installation dialogs—invalidating virtually every Plug and Play setup manual in existence. Now when Plug and Play works, the process is slightly more automatic; when it doesn't, as in my case, the process is monumentally confusing.

Microsoft often seems to assume that because its products are the de facto standards, we have to swallow anything it wants to cram down our throats. The most recent example? Office 97. When Microsoft blithely introduced Office's new file formats without providing a real way of converting the files to older formats, it met with such widespread frustration that the company offered a public apology and an eventual fix. (For tips on dealing with the latest Office, see "Inside Office 97" in this issue. —*Editor*)

Microsoft has become such an octopus, its left tentacles don't know what its right tentacles are up to.

## USE IT AND LIKE IT

OFFICE 97 STILL FORCES obnoxious cartoon characters on you. Sure, you can turn off the Office Assistants, but you'll lose access to some genuinely useful assistance. For the first time, Microsoft has included true context-sensitive help; if you want it and several other handy features, you have to put up with the cartoons too, like 'em or not.

Then there are Microsoft's "wizards." I just ran one to install Windows' infrared port driver. That part was easy. But trying to make a link by using the Direct Cable Connection software meant putting the right information into three or four disparate places after the wizard abandoned the field. It took about an hour, and the process was so baffling, I'm not positive I could do it again.

Is consistency a virtue? The first version of Microsoft's Picture-It manages to violate standards Microsoft itself has promulgated. For no good reason, the OK buttons appear on the right, with Cancel buttons on the left—a dopey stunt last seen in Microsoft Bob.

The list of stuff like this is getting longer. The new-look Microsoft Network offers a Yahoo-like directory of Internet sites. Great. But beyond the top levels, there's no apparent organization. It's not hierarchical, it's not alphabetical, it's a dog's breakfast. When I pointed this out to a developer, his classic Microsnot sneer implied, "We don't have to care. We're Microsoft."

## OCTOPUS'S GARDEN

HOW ABOUT CUSTOMER support? Microsoft has become such an octopus, its left tentacles don't know what its right tentacles are up to. When I tried to use a Windows CE machine, running its version of Microsoft Internet Explorer, to access the Internet via the Microsoft Network, the MSN technical support people I called insisted the scheme couldn't possibly work. In fact it could, but first I had to talk to an MSN supervisor, who couldn't solve the problem himself but accidentally gave me a hint.

Perhaps most irritating is Microsoft's insistence on incorporating much of its software into the operating system without your asking. How does it get away with installing files on your system drive, along with other practices that are typically off-limits to its competitors?

When confronted, the company relies on excuses, euphemisms, shrugs, and spin. Bugs have become "issues." Press releases hide problems behind promises. Because Microsoft can afford to treat complaints as rounding errors that end up around the 10th decimal place of the bottom line, it becomes a good listener only when it perceives direct threats to its franchises.

Microsoft is increasingly looking like General Motors did in the sixties. It cranks out big, gimcrack-laden road hogs with built-in obsolescence, and it gets people to buy them because there's no real alternative. Where are the Toyotas and Volkswagens of the software industry when we need them?

PC World *contributing editor Stephen Manes is a columnist for the* New York Times *and coauthor of* Gates: How Microsoft's Mogul Reinvented an Industry *(Touchstone/Simon & Schuster, 1994, 800/223-2348).* ■

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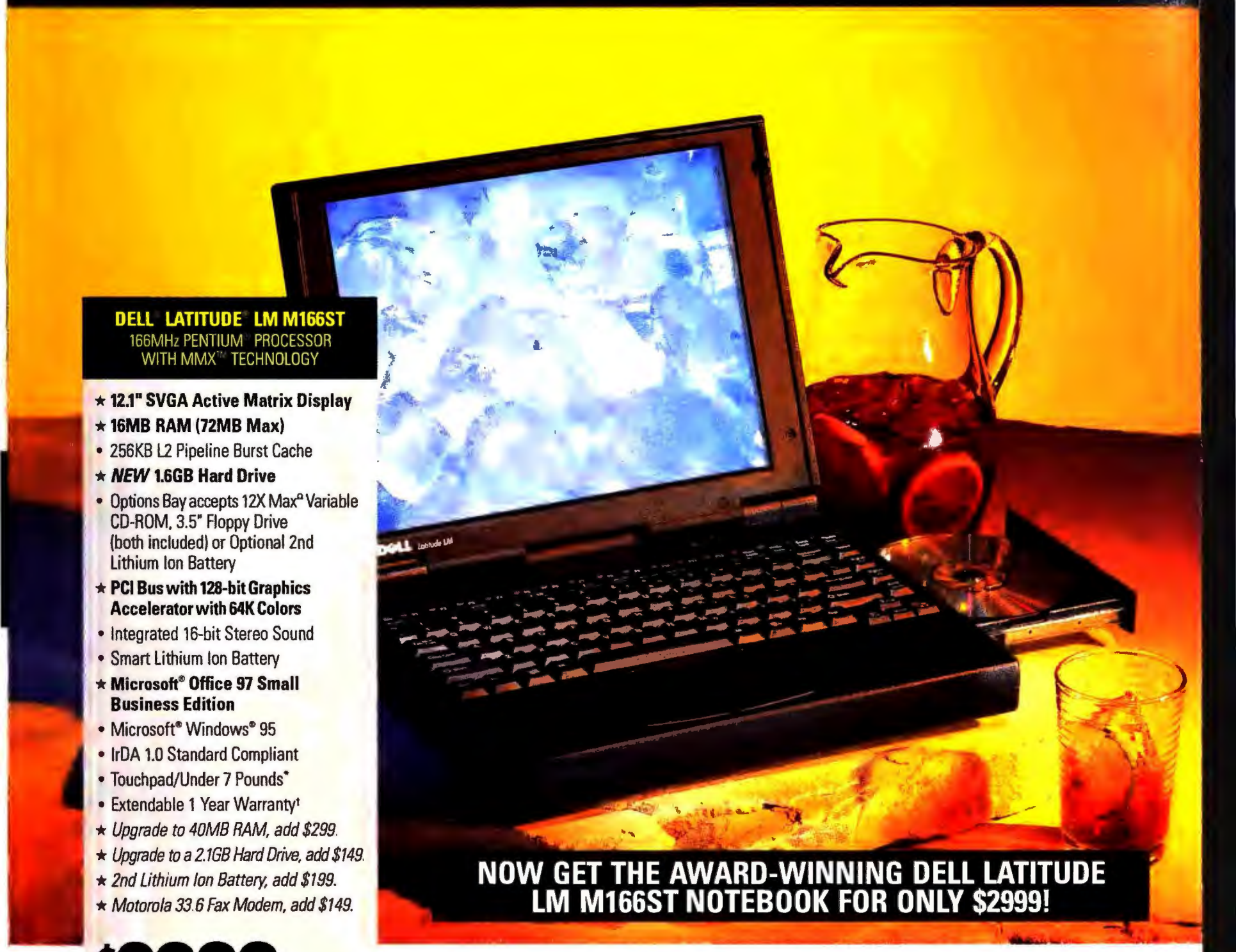

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