SNEAK PEEK: FIRST P200+ PCs BEST SHOPPING SITES ON THE WEB

## PC WORLD

SEPTEMBER 1996

THE ULTIMATE HARDWARE GUIDE

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TOP 20 Power & Budget PCs TOP 20 Notebook PCs

**TOP 10 Printers TOP 10 Monitors** 

XEROX

TOP 10 Graphics Boards TOP 10 Modems

PLUS

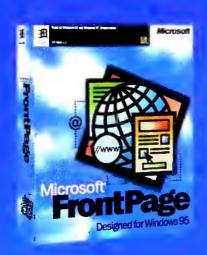
101 Word Processing Tips Corel's New Suite: Net-Ready Where to Find Cheap PCs

SPECIAL REPORT

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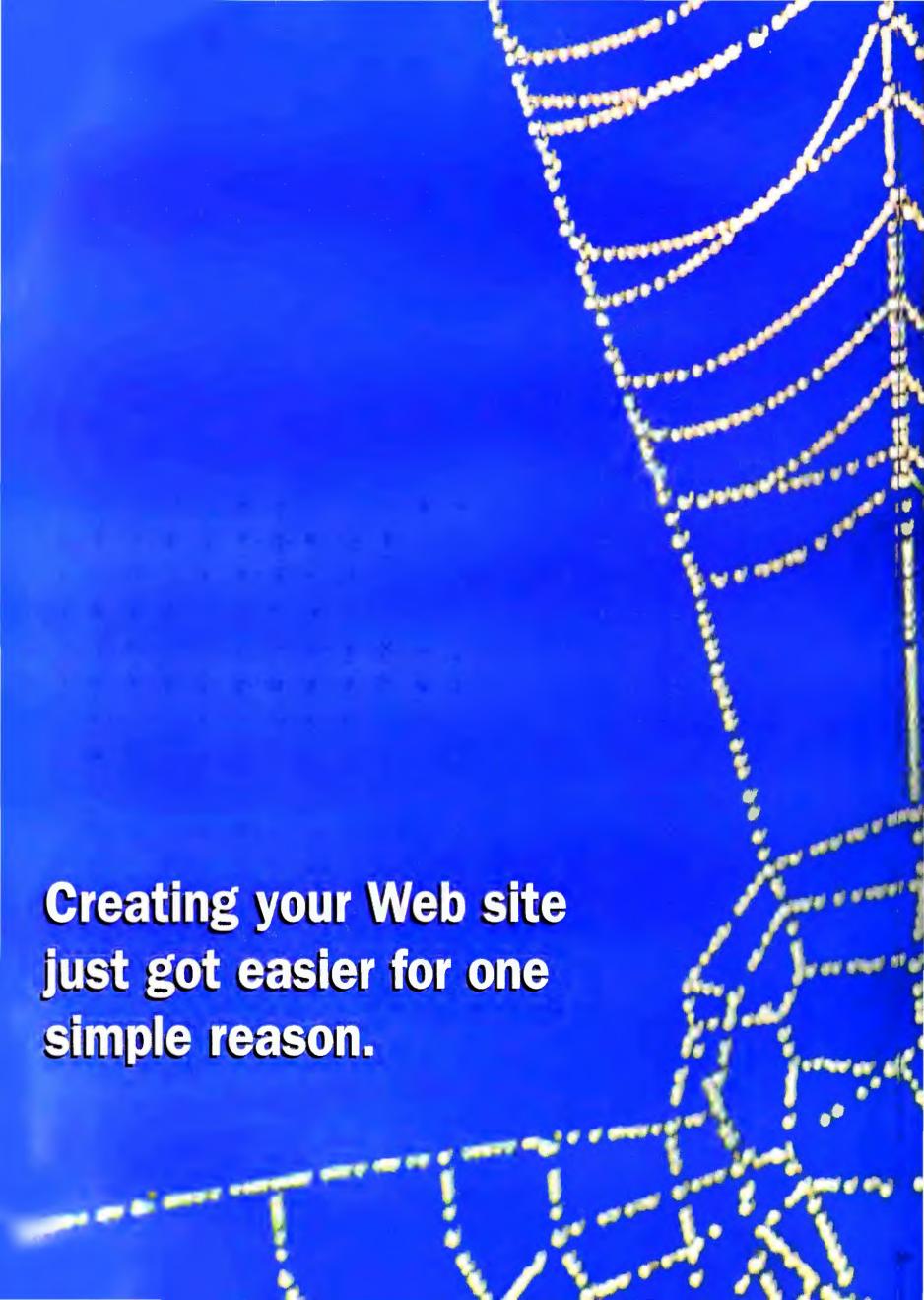
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VOLUME 14 ♦ NUMBER 9 ◆ MULTIMEDIA EDITION

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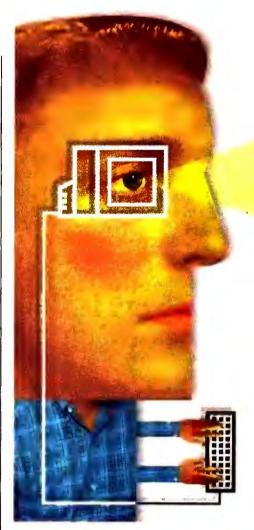
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## 195 THE ULTIMATE HARDWARE GUIDE: PENTIUM-200s. PLUS...

charts: The first Pentium-200 PCs hit the Top 20, prices drop on other fast PCs to clear out shelf space for P-200s, and 3-D graphics boards go mainstream. Plus, how to get the most out of *PC World*'s Top 20, including how to create your own Top 20 PC charts on PC World Online.

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## **DAILY NEWS**

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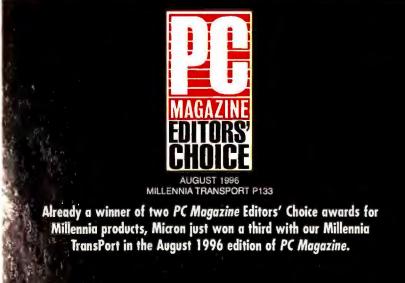
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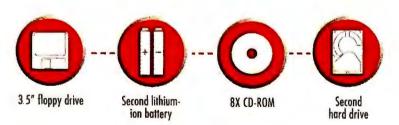
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Send material electronically to the appropriate forum on PC World Online (for example, send *Answer Line* submissions to the Answer Line forum); to the online address listed below; or mail them to *PC World*. Include

your name, city, and state in all correspondence. We reserve the right to edit letters.

PC World pays \$50 for published Here's How tips and questions; accepted submissions acknowledged by payment. Please note that editors cannot guarantee personal responses to questions that are not posted to PC World's online forums.

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## There are other ways to accelerate your multimedia, but may we suggest our new Graphics Blaster.

Multimedia can be a frustrating thing. Even on today's hottest systems, video playback can end up looking like a postage stamp with fewer colors than you get from a box of crayons. Or, when you zoom it to full screen, it looks like a slide show instead of a smoothly running movie. Before you resort to extremes, you might want to try our new Graphics Blaster™ multimedia accelerator from Creative Labs.

Graphics Blaster features high-tech video acceleration functions like asymptotic scaling, horizontal and vertical filtering and color space conversion built right into the hardware. The end result

is video that glides onto the screen in dazzling true color without dropping frames. And the powerful 64-bit graphics engine delivers Windows® performance that will blow you away.

Best of all, Graphics Blaster won't blow away your bank account. Our top-of-theline Graphics Blaster MA302 with 2MB of state-of-the-art Rambus memory — the same high performance memory used on Silicon Graphics workstations — costs less than comparable boards using yesterday's tired VRAM memory.

So when you're ready to boost your graphics and video performance to the stratosphere, pick up a Graphics Blaster dealer. It's got the multimedia muscle your expect from Creative Labs, the leader in high-

at your nearest Creative Labs deserves. What else would you performance multimedia products.

## Introducing Graphics Blaster Multimedia Accelerators







system

## Are You Being Served?

EARLIER THIS YEAR, our editors spent a couple of weeks with PC World readers, asking what they liked and disliked about the magazine. We talked to a cross section of people, from those running businesses in home offices to MIS professionals in large corporations. We learned a lot from this group, but two themes came across especially loud and clear: First, readers need to find information

faster, and they think computer magazines put too many hurdles in their way. Second, too many readers question the editorial objectivity of computer magazines, including PC World, and suspect that advertisers influence editorial content and product recommendations.

The second criticism surprised us. Unlike other computer magazines, PC World regularly publishes investigative consumer stories—on mail-order scams, misleading product specifications, used PCs and re-shrink-wrapped software, subpar service practices—in addition to publishing monthly consumer columns as a service to readers. We routinely factor reliability and service ratings into our evaluation of new PCs. We conduct rigorous, repeatable tests on all manner of computer products in our independent Test Center. We insist that editors and writers follow a standard journalistic code of ethics to avoid conflicts of interest. Still, though

the suspicion of PC World's editorial collusion with advertisers is completely unfounded, it calls for action on our part.

With this issue of PC World, we introduce a number of changes designed to address both concerns. Here's a quick rundown of some of these changes, from the first page to the last:

Table of contents. An expanded, three-page table of contents will help you find information more easily and quickly. On the contents pages and throughout the magazine, look for the icon used to designate related content on PC World Online (http://www .pcworld.com), such as expanded reviews and daily news.

Consumer Watch. Moved from our @Home section to the front of the magazine, Consumer Watch continues its long-standing tradition of taking the consumer's side and now addresses the needs of both business and home buyers. Here Contributing Editor Roberta Furger will alert you to important trends, offer straight-



Though suspicion of PC World's editorial collusion with advertisers is unfounded, it calls for action.

forward buying advice, and, when warranted, take companies or the industry to task for shoddy performance or questionable practices.

PCW Advocate. Also moved to the front of the magazine, this column (formerly known as Feedback) goes to bat for readers by attempting to resolve their service-related problems with companies. Written by Assistant Editor Aoife McEvoy, PCW Advocate will also let you know which companies earn readers' accolades for outstanding customer service.

Bugs and Fixes. Moved from Top of the News (where it was called Bug Watch) and expanded to a full page, this column tracks hardware and software bugs and incompatibilities. Contributing Editor Scott Spanbauer also points you to fixes-software patches, updated drivers, and work-arounds when necessary.

The Top 100. This new section includes revamped versions of PC World's monthly Top 20 and Top 10 reviews. For more information about all the changes in the Top 100 and the complementary coverage on PC World Online, turn to pages 196-197.

@Home. This expanded section will include regular columns-@Home Products, Keeping Up, and Top 5 Home PCs—and feature stories like this month's "Is Shopping on the Internet Worth It Yet?" which examines the pros and cons of Internet shopping. Here you'll also find Contributing Editor Steve Bass's column, Home Office, relocated from its position on the last page.

Here's How. Now leading off this section is Real Problem, Real Solution, a first-person report from a manager whose company has used PC hardware or software to solve a business problem. Answer Line, formerly Help Line, responds to your hardware and software questions. Along with the other Here's How columns, two new

columns appear this month. Multimedia Tips will help you troubleshoot problems with CD-ROMs, CD-ROM drives, and other multimedia products. Upgrade Guide is a one-page photographic guide to performing hardware and software upgrades yourself.

Full Disclosure. Writer Stephen Manes's column moves to the last page of the magazine. This month Manes takes on the thinly veiled marketing ploy known as product registration.

All these changes—and more that you'll see as you read this issue—are designed to help you find the information you need more quickly and to remind you that PC World's recommendations are independent and objective.

Our thanks go to award-winning designer Don Morris and his design studio and to PC World Art Director Robert Kanes and our art department for the magazine's superb new design. We hope you'll like what you find. Let us know what you think.



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June-September 1996 Windows Recommended WinBook XP5/120MHz



April 1995, WinBook XP Best Value 486DX4 Notebook



April 1996, WinBook XP5 P120 16/1.3GB Active Matrix



Laptop Buyer's Guide May 1996, WinBook XP5 P120 16/1.3GB Active Matrix Color



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June 1996 Issue WinBook XP5 P120 16/1.3GB, TFT



Laptop Buyer's Guide July 1995, WinBook XP DX4/100 8/810, TFT



PC LAPTOP
"Value Notebook of the Year"
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August 1994, WinBook XP DX2/50 4/260 Monochrome

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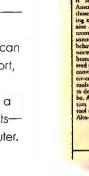
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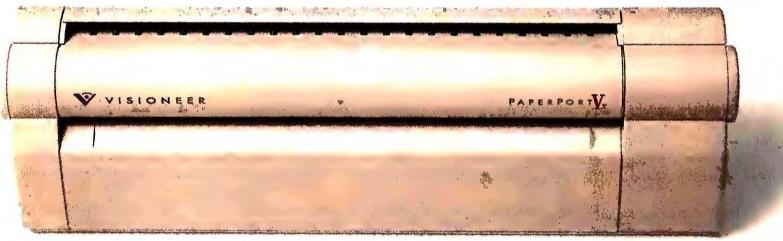
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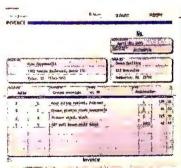
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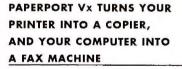
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## YOUR TAKE ON: Alleged RAM fraud • World Class winners and losers • ISP shopping

## SCAMS SCARING BUSINESS AWAY

THANK YOU FOR the article "RAM Scam!" in your July edition. Considering all the money that is put into computers every day, scams like those alleged in the article are very harmful to the entire industry and breed paranoia toward respectable companies. I hope the computer industry does not become like some other industries in which the motto is, "Screw everyone else over to make a buck." I myself almost bought RAM from several such companies, but because of your article, I won't.

Jason Meinzer, Kailua, Hawaii

I WAS SHOCKED and at the same time quite happy to read your article about alleged RAM fraud.

Such scams are terrible for people who do legitimate business online and by mail order. As a consultant and reseller I have done a wide range of business coast to coast, but I doubt that very many shoppers will do business with small mail-order



companies after reading "RAM Scam!" Still, even though it will scare away some business, I am very pleased with your reporting. Great story!

Gregg Daly, Salinas, California

## **OS/2 HOPELESS? HARDLY**

IN "BEST PRODUCTS OF 1996" [July], your sidebar "Is It World Class Yet?" included this little comment: "Last year, what did our panel of experts crown as product of the year? IBM's OS/2 Warp, a product so hopelessly doomed..."

Where do you see OS/2 as hopeless or doomed? IBM has a loyal user base (steadily growing, with a string of millionsale months, according to the company's John Thompson), loyal independent software vendors and shareware authors. incredible performance, great stability, multitasking, the works.

I'd hardly say that OS/2 Warp is hopeless. In light of the impressive roster of companies that rely on OS/2's dependable multitasking, I would hardly say that it's doomed either. Statements such as yours are way out of line. Please watch them in the future. I'll believe it when IBM itself says, "Further development of OS/2 has permanently ceased."

Eric McCann, Mt. Plymouth, Florida

## TAKING THE GUESSWORK OUT OF CHOOSING AN ISP

I THINK THAT "The No-Nonsense Guide to Internet Providers" [July] was written with me in mind. Its thoroughness and information were superb! It all but took the guesswork out of picking an Internet service provider. I now know where to look, who to call, and the right questions to ask. Thank you for a great article and a great magazine. I just renewed my subscription.

Judy DeVos, Mission, Texas

## MICROSOFT NETWORK'S **METAMORPHOSIS**

I JUST READ your article on Internet service providers. When you listed major national online services, you did not include the Microsoft Network. I'm new to this field of technology; is there something that does not qualify it?

Ken Linn, Microsoft Network Author's response: Microsoft Network is listed as an Internet service provider rather than as an online service. At the time we worked on the article, the service was in transition. It was neither a commercial online service nor an ISP, but it was moving in the direction of becoming an ISP-and currently it is more of a Web-based content provider than anything else. -Yael LI-Ron

## CROSS FIRE

## Win 95 Should Have Won World Class

REGARDING "BEST PRODUCTS OF 1996" [July]: As a new Netscape Navigator user and a satisfied Windows 95 customer since last August, I was somewhat amused by your panel's conclusion that Navigator is Product of the Year and Win 95 both runner-up and Loser of the Year.

By and large, Windows 95 was very low in num-

ber of bugs and high in reliability. Given all the hype, the fact that cynics could not find more to gripe about shows something about the product's quality. And while Navigator has done much to further the Internet, such development was bound to happen anyway. Surely your experts can't ignore all the 32-bit software that Windows 95 has caused to be developed worldwide.

Product of the Year? Sorry, you panel of experts. My vote goes to Windows 95. Keith Murray, Wichita, Kansas

## It's a Loser, and So Is the Press

WHEN READERS VOTED Windows 95 as Loser of the Year, the editors of PC World should have graciously stepped to the podium to accept the award on Billy Gates's behalf. It was your magazine, and so many like it, that abandoned journalism and greedily misrepresented the truth. It isn't 32-bit, it isn't preemp-

tive multitasking; the significance of Win 95 is as a face-lift for Windows.

Don't blame Microsoft: You had the beta code in your hands. Recognize your role and accept responsibility. You were losers as journalists and industry analysts. Read your own words: "Everyone we spoke to who pinned 'loser' on Windows 95 complained about Microsoft's big buildup." Forget Microsoft; it's supposed to promote its products. You're supposed to sort out the truth about them.

Jim Clancy, Atlanta

## **COMING UP**

## TECH SUPPORT ONLINE Get It Good (and Free)

Free tech support used to be just a phone call away. Vendors still provide no-cost support online, but Web sites are often unresponsive. Here's a guide to online tech support—where to go and how to find what you need.

## **MULTIFUNCTION DEVICES** Jacks of All Trades

They're printers, fax machines, copiers, and scanners. But integration in multifunction devices comes with compromises. We review the latest from Canon, HP, Sharp, and Xerox.

## SOFTWARE SUITES Suite Tips and Tricks

Application suites should provide efficient, integrated ways to get your work done with a word processor, spreadsheet, database, and more. What are the best ways for it all to work together? We uncover the best tips for Microsoft Office, Lotus SmartSulte, and Corel WordPerfect Office.

## **NEW TECHNOLOGY** Internet PCs for the Home

Net appliances are coming, from set-top boxes to modem-equipped TVs.

## **ALSO NEXT MONTH**

The PC World Top 100: The most current buyers' guide to hardware. Check out the Top 20 Power Desktops, Budget Desktops, and Notebooks; plus the Top 10 Personal Printers, 15-inch Monitors, Graphics Boards, and Modems.

Special Report on the Web and Workgroups: Our latest top workgroup and enterprise servers. Plus a look at intranet apps and tools.



## SOLD ON PC WORLD ONLINE

JUST GOT DONE USING your Web site for the first time. I am very impressed with both the layout and functionality of the pages. It took me only a few minutes (at 14.4 kbps, no less!) to find the reviews and product comparisons I was looking for. After reading the articles, I called a manufacturer at the phone number listed, and a short conversation later was sold on the purchase of a SyQuest EZ135 that's just ducky.

Thanks for providing all the resources I needed in one place-it made my research that much easier.

Chris Chorney, Meriden, Connecticut

HOW IRONIC THAT, after blowing the lid off of fee-based hardware technical support. PC World's own online edition now requires a subscription.

David E. Carr, Tewksbury, Massachusetts Editor's response: PC World Online does not require a subscription; our content is free on all the major commercial online services, and the vast majority of it also is free on the World Wide Web (http://www.pcworld.com). But certain premium services on the Web site do require a subscription. We charge a small monthly fee for certain special services: interactive buying guides, extra shareware, some audio content, and so on. We also offer steep discounts in online subscription fees for those who already subscribe to the print magazine. -Russell Glitman

### SURVIVING A HARD DISK CRASH

SORRY TO READ ABOUT Steve Bass's bad luck ["When My Backup Crashed," Home Office, July]. I have a Conner Tape-Stor 800 and have used it twice in the last three months to restore my hard drive. The first time it helped me recover from corrupted files, and the second time it saved me from a virus, after which I wound up having to format my hard drive twice. I was (and am) so thankful for that tape backup, it's now just about a daily procedure. The Conner is probably the best investment I've made.

Michael Burgess, Cumming, Georgia

HERE'S THE BEST METHOD for testing a tape backup: Restore part of the tape. Select three large files, from the beginning, the middle, and the end of the tape. Move or rename the original files on the hard disk, and then selectively restore these three files. Use DOS's comp command to make sure the restored copy is the same as the original. Open and examine a restored document or spreadsheet file. I strongly recommend doing this test once every few months.

I've had two tape drives malfunction without indicating errors. I caught the problem both times with this method.

Jed Rothwell, Internet

## STAMP OUT UNSOLICITED FAXES

I WAS A BIT concerned when I read your Small Office/Home Office special report [July]. In "You Sleep, Your Office Doesn't," you state, "Come midnight, it automatically broadcasts marketing solicitation faxes to prospective clients..."

This statement implies that you may be faxing to clients who have requested information (a legal activity) or to prospective clients with whom you have had no contact (cold contacts, an illegal activity). A federal law outlaws unsolicited faxing of marketing, sales, or other information to prospects who have not specifically requested this information.

Thank you for an excellent publication. This one omission is small but I feel an obligation to set the record straight.

David Fant, President, Market Mapping Plus, Wyoming, Michigan

## CORRECTIONS AND CLARIFICATIONS

Our July news story "RAM Scam!" discussed a memory broker in San Diego named West Coast Micro, which changed its name in 1993 to Pacific Coast Micro. This company is in no way related to West Coast Micro Inc., a memory distributor In Costa Mesa, California. PC World has no record of reader complaints against the Costa Mesa company and regrets any confusion that the name similarity may have caused.

The PC WorldBench score for the Dell Dimension P100t appeared incorrectly in the July and August Top 5 Home PCs charts. The correct score is 173.

PC World regrets the errors.

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Product	CRT Size/ Viewable	Dot Pitch Aperture Grille*	Max. NI Resolution	OnView Controls	TC0 Certified	MSRP
ViewSonic 15G	15"/13.8"	0.28mm	1,280 x 1,024	Yes		\$425
ViewSonic 15GS	15"/14.0"	0.28mm	1,280 x 1,024	Yes	Yes	\$449
ViewSonic 15GA	15"/14.0"	0.27mm	1,280 x 1,024	Yes	Yes	\$499
ViewSonic 17GS	17"/16.0"	0.27mm	1,280 x 1,024	Yes	Yes	\$699
ViewSonic 17GA	17"/16.0"	0.27mm	1,280 x 1,024	Yes	Yes	\$799
ViewSonic GT770	17"/15.9"	0.25mm*	1,280 x 1,024	Yes		\$899
ViewSonic 20G	20"/18.4"	0.28mm	1,600 x 1,280		Yes	\$1,299
ViewSonic GT800	20"/19.1"	0.30mm*	1,600 x 1,280	Yes		\$1,899
ViewSonic G810	21"/20.0"	0.25mm	1,600 x 1,280	Yes		\$1,745

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## THE PRICE OF LOW RELIABILITY

YOUR METHOD OF SCORING computers seems fair for your monthly ratings of Top 20 PCs. However, your readers should be aware of the relationship between price and reliability. I bought a WinBook XP notebook that eventually showed up in your Top 20. It did not score very high for reliability, but the price was attractive. I have since sent it back to the factory four times for repairs.

Having to pay for shipping has added nearly \$250 to the cost of the computer. The company has offered to sell me an extended warranty for an additional \$300. Consequently, when I see a low reliability figure in your ratings, I add \$750 to the list price to include shipping, extended warranty, and a contingency amount for pain and suffering.

John P. Kavchar, Santa Cruz, California

## PUMPED UP AND LOSING GROUND

REGARDING "COREL PUMPS UP Word-Perfect Suite for Win 95" [June]: Corel pumped it up so much that it takes Word-Perfect 7 about twice as long to load on my machine as Microsoft Word 7.0. Word-Perfect, which used to be the standard for PC word processing, lost ground by releasing a 32-bit version almost a year after the arrival of Windows 95.

Sure, the suite includes many bonus applications. But bigger isn't always better. At the core of the suite is WordPerfect 7, which unfortunately is slow to load and close and has a user interface that's too busy. I installed it, checked it out, and uninstalled it, all within an hour. Then I sent it back to Corel for a refund.

Christopher Brown, Kalaheo, Hawaii Editor's note: Like you, we found Word-Perfect 7 to be disappointingly slow, in addition to encountering other shortcomings in the Corel WordPerfect Suite. But we did find pluses, including a great price and, as you mention, lots of extra applications. Check out our feature story, "Software Suites: Corel Takes on Microsoft and Lotus" in this issue. and decide for yourself.

PC World welcomes your responses, ideas, and other letters to the editor. See page 12 for contact information.

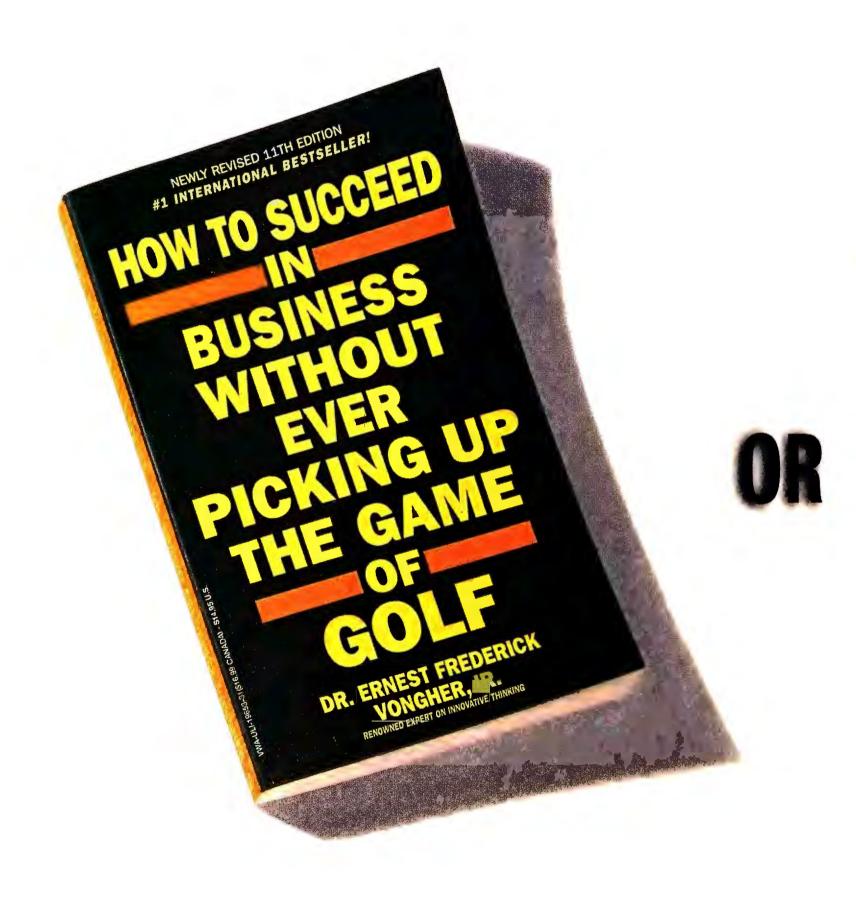


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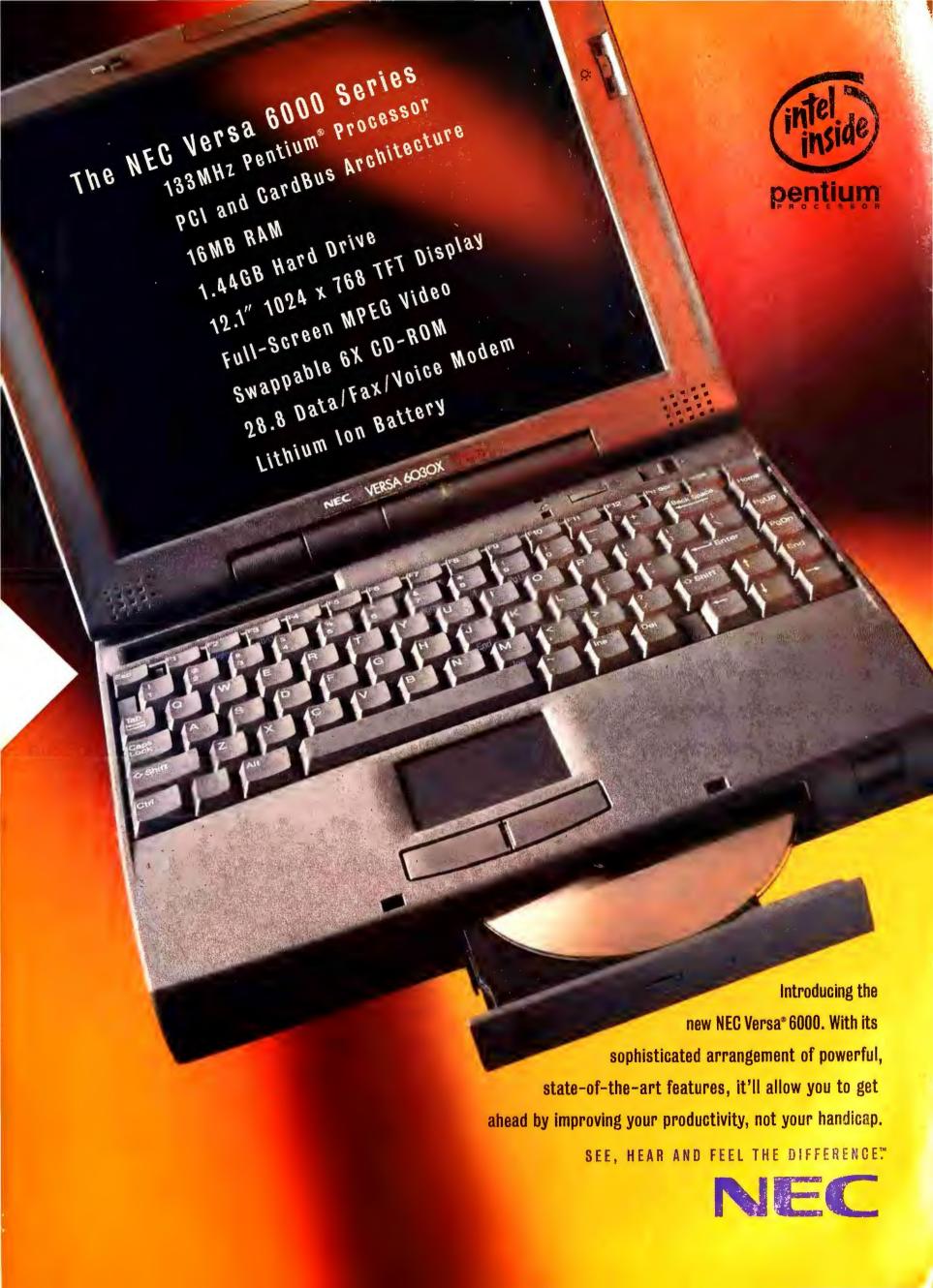
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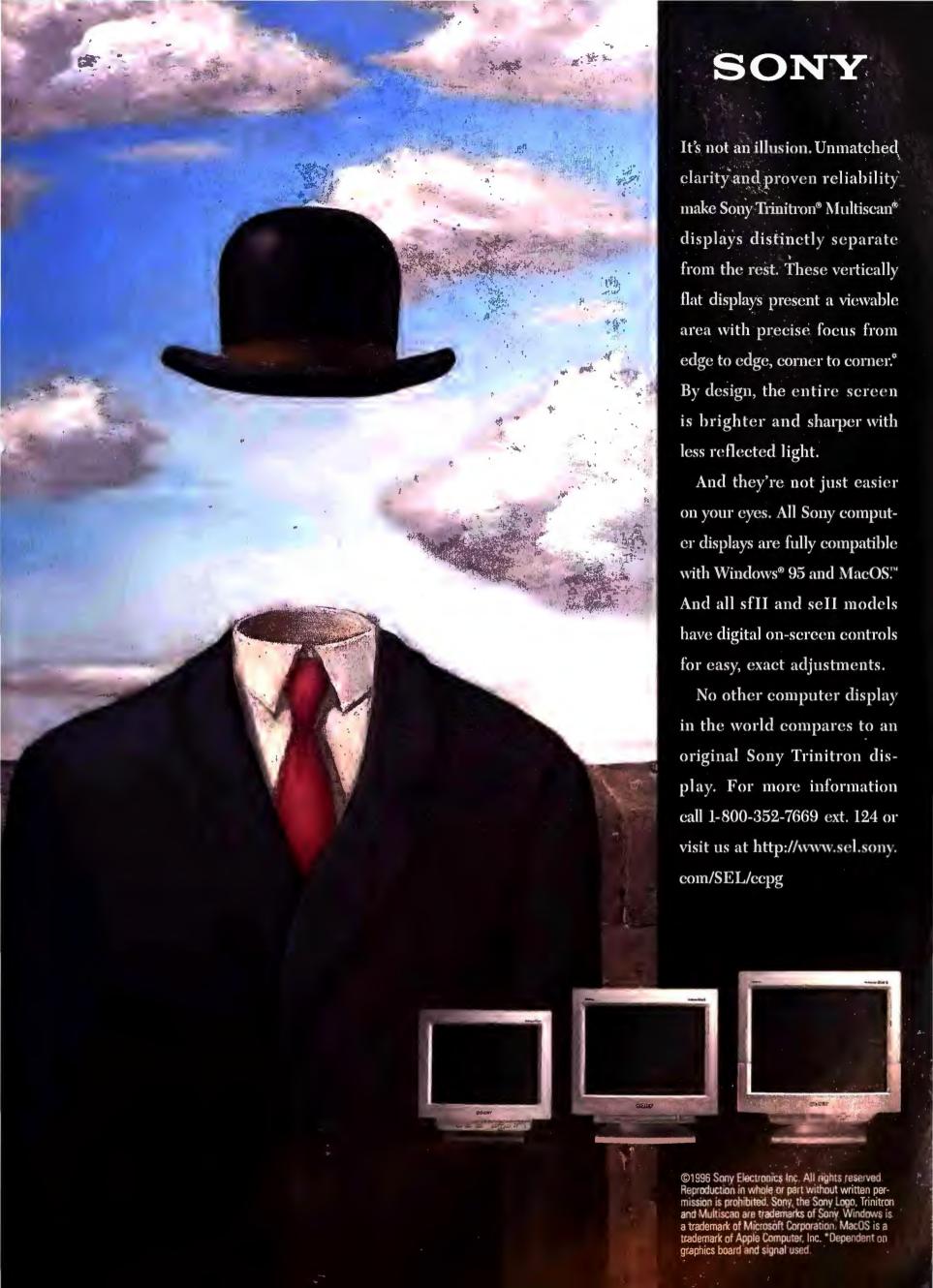
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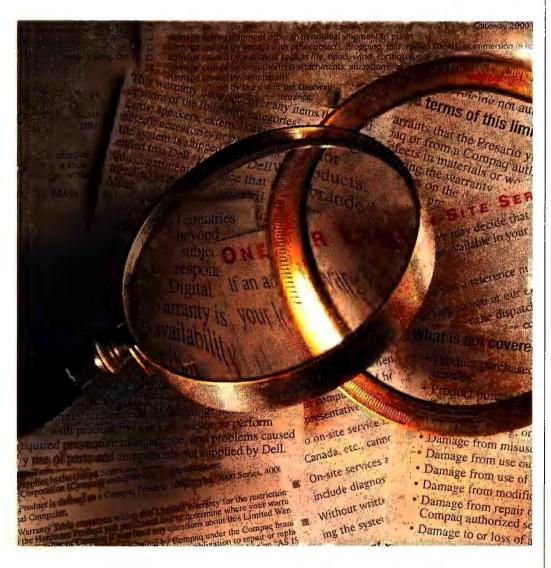
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# PC Warranties: Look Before You Leap

Knowing your coverage before you need it will save you some last-minute hassles.



YOUR PC'S WARRANTY provides you with valuable information in small type about when and how its manufacturer will carry out all the wonderful policies that its advertisements display in large type. But when was the last time you read your PC warranty?

If you're like me, you probably don't give it more than a passing glance—until your computer starts giving you trouble. By then, it's probably too late. By then you're probably in panic mode, so discovering that the warranty doesn't cover everything you thought it did can only further distress you.

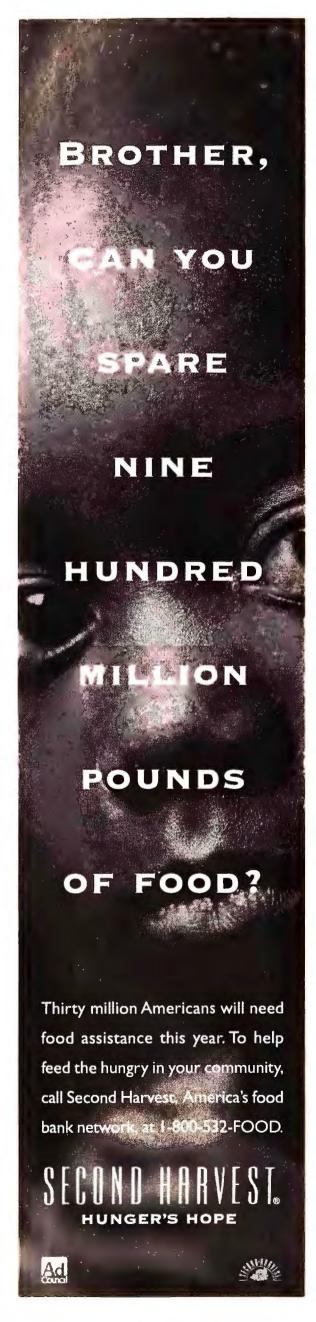
The whole concept of warranties is to give you the perception of security and convenience. For example, the current trend in PC warranties is to offer "on-site" service. But depending on how the warranty is written, you could wind up swapping out your own hard drive instead of having a technician come to your home or office to do it for you. Although many companies tout three-year warranties, not all three-year warranties are created equal. Some vendors really do pay for both parts and labor in the second and third years, while others limit second- and third-year coverage to replacement parts alone—it's up to you to install the parts or pay someone else to do it.

#### IT'S THE DETAILS THAT MATTER

ALAS, YOU WOULDN'T DISCOVER any of these differences (lawyers call them caveats) just by flipping through ads in PC World or other magazines. To assess how well you'll really be taken care of in time of need, you have to go to the source: the warranty itself. There, amidst the legal mumbo jumbo and 6-point type, you'll find the details on how product returns, repairs, tech support, and other services will be handled.

Some of the minutiae you turn up might surprise you. Here's just a sampling of what I discovered when I took out my magnifying glass and studied the warranties of some of the leading PC companies:

- ◆ Dell's warranties do not cover sound cards or speakers. Similarly, some nonstandard components are not covered under a Dell system warranty—even if you had them installed at the time you bought your PC. Instead, they are covered under warranties issued by the components' manufacturers.
- ◆ Dell and Gateway both offer three-year warranties. But on some systems, unless you pay extra up front, Gateway's and Dell's second and third years of coverage pay only for replacement parts—not for the technician to install them. Austin's multiyear warranty, on the other hand, covers parts and labor.
- ◆ You don't get to decide when you need on-site service—even when you pay extra for it. For example, for an extra fee, Micron will provide on-site service for its Home MPC systems. But Micron's warranty makes clear who's in the driver's seat when it comes to dispatching a technician. It reads, "To arrange for on-site service you must call Micron...and our representatives will, if Micron elects to provide on-site service



[emphasis added], make arrangements with such third party to provide service to you." And this proviso pretty much reflects standard operating procedure for most warranties.

◆ On-site service varies depending on where you live. Most PC companies stip-

You should get your

hands on as many

warranties as

possible before you

make a decision

about which

computer to buy.

ulate that on-site service is available only to customers located within a specific geographic area. Typically, this condition is worded in terms of the customer's proximity to one of the company's authorized dealers or repair centers. Compag, for example, provides on-site service only within 60 miles of a ser-

vice center. Acer will drive a little farther: It provides on-site service for customers located within 100 miles of one of its service centers. But it tacks an additional 24 hours onto the guaranteed response time for customers whose home or office is more than 50 miles from the nearest Acer service center.

- ◆ Most companies reserve the right to replace defective parts still under warranty with previously used components that have been "factory reconditioned." But the length of time those parts are covered under warranty varies by manufacturer. Gateway covers replacement parts for 30 days, Micron for 90 days.
- ◆ NEC requires customers to show or send a receipt before receiving warranty service. Compaq uses what it calls its Warranty Verification System to determine eligibility. Just provide the PC's serial number, and Compag or one of its authorized service centers can verify coverage.

#### **GETTING THE HARD COPY**

IF I'VE CONVINCED YOU that reading the warranty prior to purchase makes sense (and it does), then the only thing left is to get your hands on as many warranties as possible before deciding which PC to buy. Fortunately, that's fairly easy to do. Thanks to the proliferation of World Wide Web sites, I was able to download detailed warranty and technical support information for Acer, Compaq, Dell, Dig-

ital, Gateway 2000, Micron Electronics, and NEC Technologies. (Among the other major PC companies, AST, Austin, Hewlett-Packard, and IBM all have Web sites chock-full of product information, but I found only one line at each site about the corresponding warranty coverage.)

> Another possible source of warranty information is a company's fax-back service. Simply dial a toll-free number from a touch-tone phone, select the information you're looking for from a voice-mail menu, and then punch in your fax number and wait for the document to be sent. The systems are automat-

ed, so you can call day or night. As with some Web pages, though, you may get only the barest details about the warranty.

You can also check out warranties at retail stores, which are required by law to have the warranties for all products they sell available. The warranties are typically stored in big binders in the customer service department, so you can flip through and find the information for the products you're interested in. Check to make sure the warranty covers the specific model you're considering, since policies can vary markedly among a PC maker's multiple product lines.

But stores don't necessarily update the binders every time they start selling a new line, so the information can easily be out of date. For example, I went to Circuit City looking for the warranty on an IBM Aptiva, but all I found was the document for the discontinued PS/1. If you can't find the information you need, ask the salesperson to pull a warranty from one of the boxes. You may get a funny look, but you'll see the document. One more bit of advice: Ask for copies of the warranties to take with you, particularly if you're trying to compare coverage of multiple PCs.

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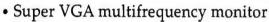
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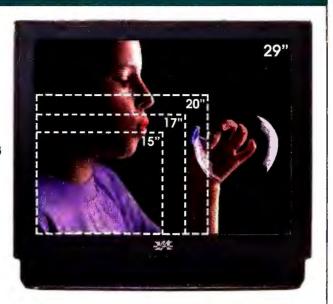


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# CONSUMER WATCH

won additional service in extraordinary circumstances the warranty ordinarily would not cover. But who wants to fight? Not me. I'd much rather spend a little time up front researching a purchase than a lot of time later on regretting it.

Have you ever been caught off guard by the fine print in your computer's warranty? Send me your comments on warranties or any other topic you'd like to see covered in an upcoming Consumer Watch column at consumerwatch@pcworld.com.

#### KNOW YOUR RIGHTS

What to look for in a PC warranty.

Exclusions: Are any components not covered under the standard warranty? Limitations: Does the company specify conditions under which coverage applies? For example, when will it dispatch an on-site technician? Some companies limit on-site service to specific components; others offer it only to customers in a specific geographic area.

Length of coverage: How long is the system under warranty? If it's a multiyear warranty, check to see if you're entitled to on-site service after the first year (a rarity) and whether the additional years cover both parts and labor. Voiding the warranty: Does installing your own components or memory nullify your coverage?

Technical support: Just about every company offers toll-free technical support. Check on the hours of operation and whether it's free of charge. Free software support is likely limited to installation questions. With a few notable exceptions, hardware support should still be free. If you don't see the information in the warranty, ask. Don't assume it's free.

Replacement parts: Does the company reserve the right to replace defective parts with refurbished or reconditioned ones? While reconditioned parts may function as well as new components, you should know if that's what you're getting. You can ask that only new parts be used-though the company's not obligated to comply with your request.

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# Getting out of Sprynet trials ◆ Hard drive warranties ◆ Quantex service improves

# ISP Accounts: Difficult to Cancel?

#### **SAYING NO TO SERVICES**

I ACCEPTED SPRYNET'S offer of a free trial. I liked the company's Internet service, but my family bugged me about the bill, so I stopped using it. However, I can't figure out how to quit. I believe Sprynet is a division of CompuServe, but how do I discontinue the service?

> Kenneth McDade, Washington, Pennsylvania

Editor's response: It was a mystery to many readers how to cancel their accounts. We spoke to John Irwin, Sprynet's public relations specialist, who assured us he canceled McDade's account when he stopped using the service. At press time, McDade reports he is hopeful the credit will appear on his next statement. Sprynet is owned by Spry, CompuServe's separate Internet division. Irwin suggests going to Customer Care on the Sprynet home page (http://www.sprynet .com) if you have questions about the service. You have three options for canceling a Sprynet account: Call 206/957-8997; fax a cancellation note to 206/957-6000; or send an e-mail message to cancel@spry.com or

service@spry.com. Remember to include your full name, address, and e-mail address to speed up cancellation.

#### WHO HANDLES MY WARRANTY?

I PURCHASED an Acer system with a 1.2GB Seagate hard drive from Data Techniques in Richmond, Virginia. Eight months later the com-

puter crashed, so I sent it to a local repair shop. The technician there told me that the problem lay with the hard drive. But Data Techniques has gone out of business, and I'm wonder-

> George B. Walkey, Myrtle Beach, South Carolina

Editor's response: We received several let-

ters about Seagate hard drive problems. We contacted Seagate to try to find out what Walkey's options were. Woody Monroy, corporate communications manager, told us many consumers are confused about who handles hard drive warranties. It depends on whether you bought a Seagate hard drive kit off the shelf or got the drive preinstalled in a computer. In the first situation, Seagate handles the warranty; in the second, the dealer or system manufacturer does. Normally, Seagate would have told Walkey to contact Acer. But Monroy discovered that Walkey's retailer had assembled various components in an Acer box, so Seagate sent Walkey a replacement drive.

Our advice? Be careful when you buy a bargain computer. If a retailer has cobbled together a system from parts on hand, you could encounter hassles when it comes to resolving warranty issues.

## BETTER SERVICE ALL AROUND ONE YEAR LATER

I BOUGHT A PC from Quantex Microsystems in October 1994, and in the process I became miffed with the company. First, I had difficulty getting through to the sales department, both to place my order and to follow up on it.

Then, after the system arrived, I had trouble getting through to Quantex's tech support.

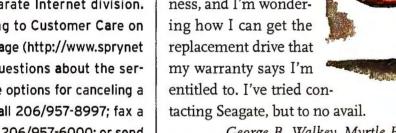
Recently I received approval to purchase a computer for work, and I wanted the most bang for my buck. Extensive research indicated that the best machine was a Quantex. I hesitated initially,

but in the end I ordered one.

What a difference a year makes! The sales line was answered immediately. And for follow-up questions, I was able to reach my salesperson directly at his own toll-free number. Because of some Windows 95 problems, I had to call technical support on four separate occasions—also on a toll-free number. Each of those calls was answered by a technician within 30 seconds. Quantex has sure improved the way it does business, and I'm impressed.

Peter Belmas, Reno, Nevada

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 an assistant editor for PC World.



## THE FINE PRINT

# Is 30-Day Money-Back Always a Guarantee?

The ad seems impressive. But watch out for hidden costs. Fine print in a Maximus ad for PCs in Computer Shopper held surprises about the 30-day money-back guarantee.

- 1. You have to pay return shipping and the original freight if you decide to send the system back within 30 days.
- 2. The 30-day period starts on the date the system is shipped to you, so your evaluation period may be less than 30 days.
- 3. The money-back guarantee applies only to advertised systems. If you add memory or request any modification, you void the guarantee. Without it, you may be liable for a 20 percent restocking fee.

Be sure to have your list of questions ready and a copy of the ad

with you when you call to place any PC order.

e, applies only to Maximus Advertised models applies only to Maximus Advertised models applies correspond to the correspond to the correspond to the correspond to the corresponding to the correspond

# Now There's A Compaq For Just About Everyone.



Now, whether you're looking for the ultimate in performance, flexibility or economy, there's a Compaq® notebook that's just right for you.

The Compaq LTE® 5000 family gives you a Pentium® processor up to 133MHz, and a MultiBay™ design that lets you add optional interchangeable devices — like a second hard drive (up to 4GB) or a 6X CD-ROM drive. Add the MultiBay Expansion Base, and you can mix and match capabilities anywhere.

For even more flexibility, try a notebook from our

new Armada 4100 line. It will transform from a super-portable slimline notebook (with a Pentium processor up to 133MHz) to a multimedia notebook with its optional, and detachable, Mobile CD Unit. And it can hold up to three lithium ion batteries — one of which can function as a handy carrying handle.

And the new Armada 1100 family lets you hit the road with a 100MHz Pentium processor, at an incredibly affordable price. With Compaq, the choice is yours. (So is the call.)

# WHICH ONE'S FOR YOU?







	LTE 5280	Armada 4110	Armada 1120			
Processor	120MHz Pentium®	100MHz Pentium	100MHz Pentium			
Standard Memory	16MB	8MB	8MB			
Memory Expandable to	80MB	40MB	24MB			
Hard Drive	1.35GB Removable/ Multiple Drive Support	810MB	810MB			
Battery	Enhanced NiMH	Lithium Ion	Enhanced NiMH			
Cache	256K L2	256K L2	N/A			
Video Graphics	32-Bit PCI Local Bus	32-Bit PCI Local Bus	32-Bit PCI Local Bus			
IR Support	Yes	Yes	No			
Pointing Device	EasyPoint™ II	Touchpad Optical Trackball (optional)	Optical Trackball			
Display (others available)	11.3" CTFT SVGA	11.3" CSTN SVGA	10.4" CSTN			
Other Features	<ul> <li>Intelligent Manageability</li> <li>16-Bit Stereo Sound and joystick/MIDI port</li> <li>MVA and Optional Hardware-Based MPEG</li> <li>Optional MultiBay Expansion Base with/without ISA Slot</li> <li>Optional 6X CD-ROM Drive</li> </ul>		<ul> <li>Tilting, Full-Function Keyboard</li> <li>Detachable handle</li> </ul>			
Software Preinstalled	Choice of Windows® 95 or Windows 3.1	Windows 95	Windows 95, Astound, CSE, and MS-Works®			
Weight	7.2 - 7.5 lbs. depending on model	5.1 - 8.2 lbs. depending on configuration	6.1 lbs.			
Worldwide Limited Warranty†	3-Year	3-Year	1-Year**			
Price* (other models available)	\$5,399	\$2,599	\$1,899			

TO ORDER, CALL:

1-800-888-5539

1-800-308-7774

M-F 7-7 Sat. 9-3 CST. Ask for our free catalog.

For your nearest Compaq Authorized Reseller.



\*All prices shown are Compaq DirectPlus prices. Reseller prices may vary. Other models available; call for pricing. Call for lease prices. Leasing is provided for a term of 36 months and is subject to approved credit and certain terms and conditions. Call for details. †The Compaq Armada 4100 and LTE 5000 are covered by a Three-Year Worldwide Limited Warranty. The Arinada 1100 is covered by a One-Year Worldwide Limited Warranty with pick-up/carry-in service. \*\*Two-year extension available. Ask for details. Battery packs and certain options are covered by a One-Year Warranty. Offer available in the U.S. only. © 1996 Compaq Computer Corporation. All Rights Reserved. Compaq and the Compaq Logo Registered U.S. Patent and Trademark Office. DirectPlus is a registered service mark, LTE is a registered trademark, and Armada, EasyPoint, and MultiBay are trademarks of Compaq Computer Corporation. Windows and MS-Works are registered trademarks of Microsoft Corporation. The Intel Inside Logo and Pentium are registered trademarks and the Pentium Processor Logo is a trademark of Intel Corporation. Products, prices and programs are subject to change without notice. Other products are trademarks or registered trademarks of their respective companies.

# To cruise the Internet, you need the right vehicle.



Today's Internet is a superhighway, taking you to places you've never dreamed of. But to travel it in style, you need the right vehicle. The new 17PX monitor from Hansol. This 17-inch (15.7" viewable) masterpiece features a 0.26mm dot pitch black matrix CRT with anti-static and AR coating, plus

1600 x 1200 ultra-high resolution. For clarity, color, and depth that makes you feel you're looking out a window, not at a screen. While its rapid refresh rate keeps you steady, its advanced menu controls provide 20 on-screen settings to keep you in complete command. It's also fully PC and Mac compatible, with

no adapter needed, and comes with a 3-year limited warranty.

So from outer space to the inner earth, no matter where you're going, with the new 17PX monitor from Hansol, you're heading in the right direction.

# Hansol











VITEK

For further information, call toll free 1-888-HANSOL1(1-888-426-7651).

Hansol Multitech, Inc., 6 Centerpointe Dr., Suite 220, La Palma, CA 90623

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# Speed Enhancements, Security Improvements

# A Faster, Better Microsoft Exchange

IF YOU USE WINDOWS 95'S Exchange e-mail program, you know how long it takes to load. Microsoft has released an updated version, renamed Windows Messaging, that loads faster, integrates features formerly available only through add-ons, and fixes bugs.

Microsoft says the Windows Messaging update also performs better on 8MB systems and incorporates two add-ons formerly available separately: One module lets it access Microsoft Mail

shared folders, and the other supports Internet e-mail. Download the 3MB self-extracting archive file from Microsoft's Web site (http://www.microsoft.com/windows/software/exupd.htm).

Microsoft has also posted new versions of its Exchange Server Client for Windows 95, NT, and 3.1 and DOS. Though Exchange Server is a LAN e-mail and group scheduling application aimed primarily at Windows NT-based corporate workgroups, the new Exchange Server Client offers stand-alone users everything they'll find in the Windows Messaging update, and a little more.

Besides supporting existing Exchange Server features such as shared folders, forms, and directory synchronization, the filledout upgrade adds signatures—a standard e-mail feature still

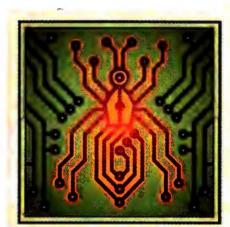
#### **New Windows 95 Password Cache Fix**

B U G You downloaded and installed the Windows 95 Service Pack 1, and suddenly vour Dial-Up Networking Internet connection no longer saves your password. What gives? Ironically, the problem rests with the Service Pack's fix for Windows 95's anemic original password encryption (reported in Bug Watch, March). If a program like Dial-Up Networking tries to remove a password from the cache file, a larger section of the

file may become corrupted. This event trashes any passwords stored there and prevents further password caching in the corrupted area.

You'll find a new password caching patch on Microsoft's Windows 95 Web site (http://www.microsoft.com/ windows/software/passwd.htm). This patch retains the more aggressive encryption from the Service Pack fix, but doesn't toast your cache file.

FOUND A HARDWARE or software bug? Post your report on PC World Online, or send us e-mail at bugsandfixes@pcworld.com.



# Netscape Navigator 2.02

As we reported in the June column, Netscape's Navigator 2.0 Web browser passed along to the end user serious security flaws in the Java programming language. Netscape's Navigator 2.01 update plugged some, but not all of these holes. according to Princeton University researchers Drew Dean, Ed Felton, and Dan Wallach.

WORK-AROUND Netscape says Navigator 2.02 (http://home.netscape.com/comprod/ mirror/client\_download.html) addresses potential security holes. Nevertheless, Princeton's Java-jammin' research trio says version 2.02 is still open to attack from Java applets, which theoretically may damage your system. Dean, Felton, and Wallach (http:// www.cs.princeton.edu/sip/) recommend disabling Navigator's Java support. To do this choose Options. Network Preferences Language, and uncheck the Enable Java and Enable JavaScript options.

missing from Windows Messaging. The client software also comes with an enhanced copy of Microsoft's Schedule+ personal information manager, which can import data from a wide range of third-party PIMs and PDAs including Act for Windows 1.1 and 2.0, Lotus Organizer 1.0 and 1.1, Ecco, PackRat 4.1, and Sharp and HP organizers. Incredibly, you still can't transfer data between Exchange and Schedule+ address books.

You can download the Exchange/Schedule+ bundle in a single file or in several parts from http://www.ms-exchange.com/download.htm. Note: the two files total over 9MB and can take more than an hour to download with a 28.8-kbps connection.

# U.S. Robotics WinModem 33.6 Upgrade

U.S. Robotics has posted two files that upgrade its WinModem from 28.8 to 33.6 kbps. You can find wm336upg.exe and winm336.exe on http://www.usr.com/home/2055.html.

# Micron BIOS and Digital Video Upgrades

Micron recently released an updated BIOS for its Millennia Transport notebooks that fixes two separate problems: dropped characters when data is transferred through the serial port or modem, and the screen flashing on intermittently in suspend mode under Windows 3.1. You can find bios4011.exe on http://www.mei.micron .com/services/bbs/transport.htm.

# Update: Symantec FTP Server on the Move

Since pointers to patches for pcAnywhere32 and WinFax Pro appeared in the July column, Symantec rearranged its FTP site. Find pcAnywhere's 70up\_a.exe patch at ftp://ftp.symantec .com/public/updates/win95nt/pca; the WinFax Pro 7.02 patch at ftp://ftp.symantec.com/public/updates/win95nt/winfax/v70.

{ See How Business Travels }

# Center Stage, Monte Carlo.

Meet the Monte Carlo notebook from Fujitsu. Multimedia tools for the road or office.

It's your presentation. Your chance to steal the show. Do it with impact, using sound, visuals, and motion.

The Monte Carlo™ notebook delivers all with remarkable ease, offering the full multimedia capability of a desktop.

The Monte Carlo notebook is backed by a three-year limited warranty, including 24-hour, 7-day toll-free technical assistance. And with optional extended warranties, you can get services such as next-day replacement.

All from Fujitsu, a \$36 billion leader in information technologies with operations in more than 100 countries.

Fujitsu has earned this position by focusing closely on the consumer and exceeding expectations.

See for yourself how the Monte Carlo notebook can help you take center stage.

OUTSTANDING PERFORMANCE

Up to 133MHz Pentium\* processor, 256K

Ievel 2 cache\* and up to 16MB expandable EDO

RAM all built on 32-bit PCI bus architecture

DAZZLING MULTIMEDIA

Dynamic sound, quality stereo speakers, microphone, and MPEG 1 support enhance multimedia presentations

SIX-SPEED CD-ROM

Advanced six-speed CD-ROM unleashes the power of multimedia with sound, video, text and graphics







LARGE, BRILLIANT SCREEN

With up to 12.1" SVGA active-matrix color display, and 2MB video RAM, visuals are crisp and text is sharp

FLEXIBLE CONNECTIVITY

PCMCIA slots offer expandability and connectivity while an IrDA-compliant port provides wireless data transfer

WORLDWIDE SERVICE & SUPPORT

Three-year limited warranty, including 24-hour, 7 days a week, toll-free technical support



{ See How Business Travels }

# Frequent Flyer, Montego.

Meet the Montego notebook from Fujitsu. The ultralight choice for business on the go.

You're always on the go. From your office. On the plane. To wherever your business takes you. So get the notebook that travels light. The Montego™ notebook from Fujitsu packs a lot of power into a light 4.9-pound design. Its removable floppy disk drive can be interchanged with a second Lithium Ion battery to provide up to six full hours of high performance. With premium components and precision manufacturing, the Montego notebook is engineered to maximize mobile comfort. It is backed by a three-year limited warranty, including 24-hour, 7-day toll-free technical assistance. All this from Fujitsu, a \$36 billion global leader in information technologies.

For convenience that knows no bounds, choose the Montego notebook.

POWERFUL PROCESSING

100MHz Intel Pentium® processor and EDO RAM all built on 32-bit PCI bus architecture provide outstanding performance

MODULAR DESIGN

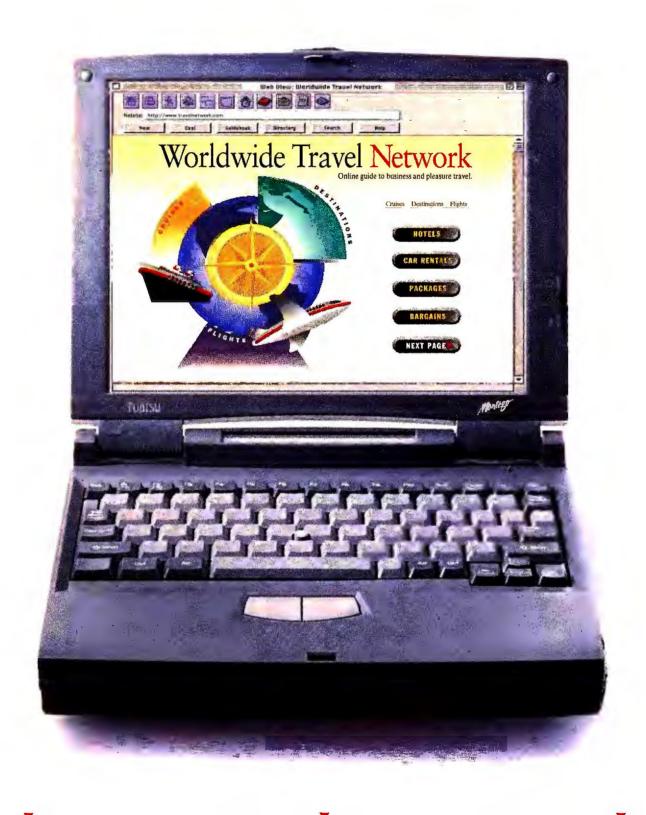
Built-in and removable floppy disk drive with an interchangeable second Lithium Ion battery for up to six hours of performance

#### BRILLIANT DISPLAY

SVGA active-matrix color display offers crisp 800 x 600 resolution for sharp text and colorful graphics







## OUTSTANDING STORAGE

Up to 1GB hard drive has ample room for all the applications and files you need to stay productive

#### FLEXIBLE CONNECTIVITY

PCMCIA slots offer expandability and connectivity while an IrDA-compliant port provides for wireless data transfer

## WORLDWIDE SERVICE & SUPPORT

Three-year limited warranty, including 24-hour, 7 days a week, toll-free technical support



# D OF THE EMS

# Fastest PCs No Longer Have Intel Inside

# Cyrix P-200+ PCs Beat



Russell Glitman and Randy Ross

sions—Cyrix reworked the architecture to improve processing efficiency. The result is a processor that doesn't just sound fast, it is fast.

Cyrix has priced its new chip aggressively. It charges system vendor customers \$499 each in volume, about \$100 less per chip than Intel charges for the Pentium-200. As a result,

While Cyrix intends the P200+ to compete with the Pentium-200, the P200+ systems also equal or surpass the average performance of Pentium Pro-200 systems—a feat that says as much about the Pentium Pro's weakness under Windows 95 and with 16bit code as it does about the P200+'s strength (see "Pen-

# JUSTIN

# RAM Scam Part II

Z-MEMORY EXPERTS, one of the memory brokers at the center of PC World's July "RAM Scam" report, has disappeared. According to sources, Z-Memory changed its name to Nevada Micro in June, then sold its assets to Imagination Enterprises, a computer retailer that also does business under the name IMG. Z-Memory was owned by Don Royal Smith of Boulder City, Nevada. Smith has operated several mail-order firms in Southern California and Nevada that went out of business owing customers hundreds of thousands of dollars. IMG representatives deny any relationship to Smith; however, at least two IMG employees were formerly employed by Smith. PC World has also learned that Smith was arrested on July 16 in Clark County, Nevada, on three felony counts of issuing checks with insufficient funds. More charges are expected. —A. F.

# **DirectX Warning**

IF YOUR graphics board vendor doesn't offer drivers for DirectX. Microsoft's new multimedia technology, you could be confused when the new DirectX games hit. The DirectX setup program, included with apps that use DirectX, checks to see if your driver is Microsoft-certified. If it's not, DirectX may replace the driver with Microsoft's-without warning. You'll get DirectX benefits but may lose graphics board performance and access to utilities often included with a board vendor's drivers. —B, G. T E R N

# Intel's Best Pentiums

defined Pentium performance. Chip for chip, whatever clock speed you cared to compare, Intel took the gold. To stay ahead of rivals, Intel slashed prices even as it developed faster processors and increased production capacity. It seemed no competitor could catch Intel. But Cyrix has.

UNTIL NOW INTEL

Not only caught Intel but surpassed it, with a 150-MHz Pentium-compatible chip, the **6x86-P200+**. Preproduction P200+ systems from Cyrix and two other vendors ran up to 5 percent faster than the average Intel Pentium-200 system. Sounds implausible, until you know the secret behind the P200+'s greater speed: The chip runs on a 75-MHz system bus, while Intel's Pentium-200 processor runs on a 66-MHz system board. Moreover, where Intel has pushed the current Pentium design to the limit—with only moderate performance increases in its fastest ver-

systems with the **P200+** ran up to 5 percent faster than the average Intel Pentium 200-MHz system.

Preproduction

P200+ system prices should be competitive with prices of P200 systems. For instance, Cyrix's own P200+ minitower with 16MB of EDO RAM, a 256K secondary cache, a 2.5GB hard drive, a Matrox MGA Millennium graphics card with 2MB of WRAM, a Sound Blaster AWE32 sound card, and a 17-inch monitor lists for \$2699. A similarly configured Dell Dimension XPS P200 is close to \$4000.

#### THE NEED FOR SPEED

WE WERE SURPRISED that all three preproduction P200+ systems we tested—from Cyrix, Micro Express, and HiQ—surpassed the average performance of PCs based on Intel's Pentium-200 CPU. tium PCs Go Pro," August).

With a score of 227, HiQ's CS

200 PowerStation had the best PC WorldBench performance of the three P200+s, about 5 percent better than the average comparably configured Pentium-200 system. For \$2859, the HiQ delivers 32MB of RAM; 512K of secondary cache; a 2.15GB hard drive; a Matrox MGA Millennium graphics card with 2MB of WRAM; an 8X CD-ROM drive; a Sound Blaster 16 sound card; and a 17-inch monitor. The \$2499 Micro Express MicroFlex-686/200+. with an almost identical configuration, followed closely with a score of 225, about 4 percent faster than the Pentium-200 average. (The HiQ and Micro Express were compared to Pentium-200 PCs with 512K of secondary cache.) The Cyrix high-end \$4999 system, scored 223—

3 percent better than similarly configured Pentium-200 systems. The Cyrix 6x86 P200

has >

System

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today from PC World Online's Daily News Service (http://www.pcworld.com/news.html).

#### TEST REPORT

# 150-MHz 6x86-P200+ PCs Pass Pentium-200s



Excell 7.0 for Windows 95

Paradox 5.0 for Windows 95

1-2-3 release 5 for Windows

.pcworld.com). Data based on PC WorldBench testing conducted by the PC World Test Center, All rights reserved.

32MB of RAM, 256K of secondary cache, a Matrox MGA Millennium graphics card with 2MB of WRAM, a 15-inch monitor, and a 4GB SCSI-2 hard disk controlled by a Fast/Wide SCSI cache controller with 64MB of DRAM.

The differences in performance are likely due to the various states of the preproduction motherboards the three vendors used.

#### **HOW'D THEY DO THAT?**

THE CYRIX P200+ provides a classic example of why you shouldn't base performance predictions solely on a chip's internal processing speed: At 150 MHz, the P200+ runs at a slower internal processing speed than the 200-MHz Pentium, but it gives better performance. Its advantage has as much to do with the system

bus as with the chip. The 75-MHz speed of a P200+'s system bus means that data leaving the CPU doesn't slow down as much as it does when it leaves a Pentium-200 on a 66-MHz system bus.

Beyond system bus speed, the P200+ also benefits from a more advanced architecture than the Pentium's. Like the Pentium, it's superscalar meaning it supports two pipelines to process instructions. But the P200+ makes more efficient use of its time with out-of-order completion—a technique that pushes one instruction ahead of another in the pipeline if the first instruction is delayed. Intel's Pentium processor relies on branch prediction, which can delay the processor as it guesses which instruction will be required next.

**Expected Ship Dates for New** Intel, Cyrix, and AMD Chips Q4 1996 AMD K5-PR150 **AMD K5-PR133 AMD K5-PR120** Q1 1997 **AMD K5-PR166** Cyrix M2 Intel P55C Q2 1997 AMD-K61 Intel Klamath<sup>2</sup> Q4 1997 Intel P55C OverDrive Intel Deschutes 300-MHz P6 Intel Merced P7 1998 Сугіх МЗ 32-bit with MMX extensions. Pentium Pro with support for MMX extensions but without built-in secondary cache. Source: Microprocessor Report and Intel and Cyrix reports.

"Intel's problem is, they are pushing the current product as fast as it can go to get it to P200," says Linley Gwennap, editor of the Microprocessor Report newsletter. Cyrix, on the other hand, can continue to increase its CPU performance simply by improving its CPU manufacturing process.

"The bottom line is, [the P200+] is faster," says Cyrix marketing manager Ben Williams. "It takes instructions and performs them more optimally. The megahertz game is no longer the way to portray [the relative performance of] a product or processor."

## **UPGRADABLE** INNOVATION

THE CYRIX DESIGN has an important long-term benefit: The next generation of Cyrix processors, the M2, will sup-

port Intel's MMX multimedia and communication extensions to the x86 instruction set and fit in the same socket the 6x86 uses. This socket means that system vendors won't have to retool their PC lines, which should let them bring M2 systems to market rapidly and keep costs down. The M2 will also be available retail as an upgrade chip, which means that users who buy a 6x86 today will be able to upgrade to the M2. The M2 line is scheduled to go into volume production in early 1997.

Cyrix is not without handicaps; chief among them is the limited availability of chip sets and system boards that support the P200+'s 75-MHz bus speed. Says Gwennap, "Cranking up the bus speed can make life more difficult for the motherboard designer." At press time, P200+ system

boards were in final design stages and sparsely available. That may limit your options.

As of midsummer the only top-tier PC vendor to announce plans for P200+ systems was IBM, which also manufactures 6x86 chips for Cyrix. IBM plans to use the chip in its business PCs this fall and is also evaluating the processor for its Aptiva line.

#### TO BUY OR TO PASS?

THE BOTTOM LINE: The P-200+ is fast and keeps the competitive heat on Intel. That's a plus for all buyers. P200+ systems surpass those that use Intel's P-200 and are 10 to 15 percent faster than PCs based on the P-166. That's a reason to consider Cyrix if you demand the ultimate in performance. Intel, the torch passes to Cyrix.

-Gabrielle Mitchell

# Cyrix P200+ systems

PROS: Faster and cheaper than average Intel P200 PCs.

CONS: Available mostly from third-tier vendors.

VALUE: Sets new price/performance mark.

#### 6x86 P200 System

List price: \$4999

Cyrix

800/340-7971

http://www.cyrix.com

READER SERVICE NO. 836

#### HiQ CS 200 PowerStation

List price: \$2859

HiQuality Computer Systems 800/827-5836, 408/245-5836 http://www.hig.com

READER SERVICE NO. 837

#### MicroFlex-686/200+

List price: \$2499

Micro Express

.....

800/989-9900

READER SERVICE ND. 838

# PCs to Sport New Floppy Drives

IOMEGA'S 100MB ZIP drive will soon appear in PCs from popular vendors, including IBM, HP and Acer. Meanwhile, backers of the 120MB LS-120 drive-3M, Matsushita-Kotobuki Electronics, and Compaq Computer-announced similar deals. Though the competing drives offer comparable capacities, the LS-120 has a key advantage; it can read and write standard 3½-inch 1.44MB floppy disks. —M. D., R. F.

# **DVD Delayed?**

VENDORS HAVE FAILED to resolve copy-protection and licensing issues, a development that could delay shipment of DVD players and DVD-ROM drives from this fall to early next year, analysts say. DVD players, which may someday replace VCRs, bring superior video and audio quality to movies played from 4.7GB discs. The devices are expected to sell for \$500 to \$700. However, Toshiba America and Panasonic are still pledging a fall launch. —L. M.

# Universal Serial Bus on Schedule

BY YEAR-END, expect to see PCs and peripherals sporting the much-anticipated Universal Serial Bus connector, a high-speed port more than ten times faster than the lowly serial port it's designed to replace. Additional USB benefits over

# A Day Late and a Clock Speed Short

WHILE CYRIX HAS KEPT PACE with Intel's aggressive Pentium development, Intel's oldest competitor, Advanced Micro Devices, has frequently missed deadlines for its Pentium-class chips. AMD only just released its own 100-MHz Pentium competitor, the K5-PR100-more than a year after Intel's P-100 appeared.

Despite its tardy arrival, the
K5-PR100 is no slouch. In
benchmark testing using a
reference system from AMD
with 16MB of RAM and 256K of
secondary cache, AMD's processor achieved

a PC WorldBench score of 168; the average mark for similarly configured Intel Pentium-100 systems is 160. The K5 particularly excelled in our test with Picture Publisher 6.0 for Windows 95, where it was nearly 30 seconds faster than the average P-100.

The chip's greatest advantage may be its cost. With volume pricing of \$84 each, the K5-PR100 costs about 25 percent less than Intel's chip. This aggressive pricing, however, will likely force the processor into the low end of the market with

smaller system vendors such as CyberMax.

Moreover, Intel expects Pentium-120 and Pentium-133 PCs to define the sweet spot in the market this fall, with system prices hovering around \$1200. The average PC WorldBench score for a Pentium-133 is 176. If the K5-PR100's strong

WorldBench score indicates future

AMD performance, the company's fall lineup—the K5-PR120, K5-PR133 and K5-PR150—could provide a competitive alternative to Intel's Pentiums.

AMD says its K5-PR166 will be in limited

production this year with volume shipments coming early in 1997, along with the AMD-K6, a 32-bit processor that will support Intel's MMX multimedia extensions to the x86 instruction set. To compete seriously with Intel, AMD must ship these chips on time and prove itself a reliable supplier of the latest technology. Then it may once again attract major system vendors such as Compaq.





FOR THE PAST YEAR,

selecting the right ver-

sion of Windows has

been tricky at best. You could

go with Windows 95, which

boasts Microsoft's latest, most

usable interface. You could opt

for Windows NT Workstation

3.51 and get a more reliable

operating system that has

more network-oriented fea-

tures and takes better advan-

NT 4.0: Easier, More Powerful, Some Compatibility Issues

> tage of the latest hardware. Or you could do what some corporations did: stick with Windows 3.1 and bide your time until the release of Windows NT Workstation 4.0, the first Windows version that combines a

friendly interface with Windows NT's advanced features. A number of companies chose to stick with Windows 3.1 because adopting an operating system as a corporate standard is a big decision. In addition, many businesses were unwilling to choose ease of use over power and commit to Windows 95 when something better might be just around the corner.

Microsoft plans to ship Win-

dows NT 4.0 by the end of the summer. But does it truly combine the best aspects of Win 95 and NT? Says beta tester Tom Bernhardt, "We think it's great." Bernhardt is a senior technology analyst at Star Enterprise, the \$8 billion oil refining and marketing organization that operates Tex-

aco gas stations in the eastern half of the United States. "It offers Windows NT's historic stability and management, along with a new interface and usability features." Star Enterprise intends to roll out NT 4.0 gradually to about 3500 of its PC users, most of whom are still running Windows 3.1.

Based on our first hands-on experience with a prerelease version of NT 4.0, we're impressed by its potential, too. But compatibility with existing hardware and applications will be a problem for many users. Moreover, we still need to test the final version before we can assess such vital issues as speed and stability. We also want to compare NT 4.0 with the new version of IBM's OS/2 Warp operating system.



WINDOWS NT 4.0'S NEW INTERFACE is a dead ringer for the look and feel of Windows 95.

# **Not Quite Windows 96**



MICROSOFT IS QUIETLY shipping PC makers a revision of Windows 95 that bundles bug fixes, new drivers,

utilities the company released online during the year since Windows 95 shipped, plus other new features. The revision, dubbed **OEM** Service Release 2, also includes free Internet tools. Systems preinstalled with OSR2 should be available by October. But buying a



**EASY INTERNET ACCESS: OSR2 includes a** utility that helps you set up an account with a local Internet provider.

new system may be the only way users can get all of OSR2's

improvements. Microsoft hasn't said when OSR2 will replace the current shrinkwrapped version of Windows 95 in retail stores. Moreover, the retail product will probably omit some key features.

Perhaps the most significant addition in OSR2 is a new file system, FAT32, that supports hard disks larger than 2GB and allocates disk space more efficiently than the 16bit FAT system DOS and Windows 95 use. A 2GB FAT partition, for example, is divided into 32K clusters, which means that a 2K file wastes 30K of disk space. By comparison, a 2GB FAT32 partition is divided into 4K clusters, which produce less waste and can save tens to hundreds of megabytes on large drives. FAT32 will be available only in the OSR2 version distributed with new PCs.

Most of the new version's improvements focus on Microsoft's Holy Grail-the Internet. In addition to including a copy of the company's Internet Explorer 3.0 browser, OSR2 bundles a new Internet e-mail module for Windows Messaging (the in-box formerly known as Exchange-see this month's Bugs and Fixes for the details). Other additions include stand-alone Internet mail and news readers, the NetMeeting Internet telephony application, and content filters that let parents protect their kids from online smut. OSR2 provides a connection wizard that enables you to set up an account with an Internet service provider in your area, using a credit card. Many of these Internet tools will not appear in the retail version of OSR2.

OSR2 offers numerous smaller enhance-



WINDOWS NT 4.0 MULTITASKS PROGRAMS more smoothly and safely than Windows 95, says 3-D designer Mark Huppertz.

Code-named Merlin and due out this fall, the new OS/2 Warp will include technology available to Windows users only at extra cost—notably voice recognition, which lets you operate programs and dictate a document by speaking into a microphone. Merlin also adds built-in support for

Java applets, and an e-mail client based on Lotus's Notes groupware package. As before, OS/2 will be able to run DOS and Windows 3.1 programs—but not Win 95 programs.

#### **LOOKS LIKE WINDOWS 95...**

THE CURRENT VERSION of Windows NT has one major

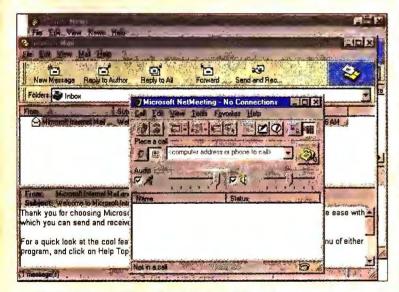
liability: It looks and acts like Windows 3.1. And although NT 3.51 lets you use long file names, it's built around Program Manager and File Manager, two crude Windows 3.1 tools for managing programs, documents, and other files. It also lacks some Windows 95 conveniences such as the ability to drag programs and documents onto the desktop, or click the right mouse button to see a context-sensitive menu of command options.

NT 4.0 addresses some of these issues. Its new interface is the same one Windows 95 uses: Say good-bye to Program Manager and File Manager, and hello to Start Button, My Computer, Taskbar, Network Neighborhood, and Briefcase. Windows NT 4.0 also includes the Windows Messaging email client (formerly known as Exchange), Windows 95's Paint and HyperTerminal applets, and an improved help system. In most respects, this environment is much

serial ports include plug-andplay installation of peripheral devices and the ability to connect multiple devices to a single connector. At a recent trade show, vendors displayed a range of USB peripherals, among them keyboards, joysticks, telephones, monitors, and speakers. The speakers may herald the end of the sound card; the all-digital design eliminates the need for an add-in card to convert digital signals from the PC into analog signals for the speaker. —R. R.

# **TidBytes**

A New Notebook From Gateway: The Solo 2100 notebook not only accommodates two batteries or a CD-ROM drive and a battery, it also has better screen resolution than its predecessors. Pricing begins at \$2699 for a Pentium-100 system with an 11.3-inch dual-scan SVGA display and a 540MB removable hard drive. Packard-Bell's Desktops: The Platinum Series PCs feature videoconferencing, VocalTec's Internet Phone software, gameoriented 3-D graphics, and a module that provides push-button control over telephony, CD audio playback, and the TV tuner. Prices without monitor will run from \$1500 to \$3000. Compag's Home Systems: Enhancements in new Presarios will resemble those in Packard Bell's Platinums. However, the Presario features will appear in a wider variety of systems. Prices range from \$1699 to \$3499. ■



INTERNET TOOLS: The Windows 95 update sports new Internet mail and news readers, as well as a telephony application called NetMeeting.

ments. The Display Properties dialog box now lets you change color depth without restarting, and it also adds the 3-D screen savers familiar to Windows NT users. Dial-up scripting, formerly a separate utility you had to download or install from

the Windows 95 CD-ROM, is part of every Dial-Up Networking connection's Properties sheet. You also get two more communications programs formerly available only via download: Wang's TWAIN-compatible Imaging program for scanning, annotating, and faxing documents, and the AnswerStation answering-machine software. Power management now extends to PC Card modems, but there's still no support for the Universal Serial Bus, a high-speed serial port expected on new PCs (USB support is expected in the fall).

Another nice inclusion is Drive-Space 3, the enhanced disk-compression utility that was a key reason for purchasing the company's

Plus add-on. Microsoft says it will release as many as three more service upgrades before the next major release of Windows-code-named Memphis-ships sometime in 1998. -Scott Spanbauer



# WINDOWS TAKES CARE OF BUSINESS Corporate buyers prefer Windows 3.1 and NT Corporate reseller and dealer sales 47% WINDOWS 3.1 1% OS/2 .5% MAC OS 10.5% DOS 14% WINDOWS 95 27% WINDOWS NT Source: Computer Intelligence StoreBoard Channel Tracking Study for April 1996

more inviting than that of Windows 3.1. Still, if you dislike certain Windows 95 features, such as its much-criticized Explorer file manager, you won't be any more pleased by what NT 4.0 offers.

NT 4.0 does omit a few of Windows 95's amenities. Most significantly, it lacks support for configuration of Plug and Play peripherals. For now, adding peripherals to an NT system is usually much more arcane than with Windows 95. In addition, the operating system lacks built-in power management, so notebook users may find that their batteries drain far more rapidly than with Windows 95. Microsoft does not plan to add these two features until NT's next major makeover sometime in 1998, although some notebook manufacturers intend to add their own power-management utilities before then.

#### ... WORKS LIKE NT

NT 4.0 MAY HAVE adopted Windows 95's outer shell, but underneath it's still an operating system designed for advanced users, especially those whose PCs are connected to networks. Much more than Windows 95 does, it also strives to make life easier for your IS department, with such features as the User Manager-a sophisticated passwordprotection system that can assign differing levels of ac-

cess to users who share the same PC. Network managers charged with implementing an intranet will also like NT 4.0's new Peer Web Services, a basic World Wide Web server feature designed to distribute Web pages over a local area network.

You needn't be an IS professional to appreciate Windows NT's emphasis on preventing crashes, minimizing damage when crashes do occur, and determining what caused them. "I can keep two or three copies of AutoCAD open alongside Photoshop and switch between them without my PC blowing up," says NT 4.0 beta tester Mark Hupwhat happened and make sure your data's safe, a maneuver akin to a police officer sealing off a crime scene. More technical users can also call on a rich set of diagnostics and other tools for tracking down the cause of a crash.

## COMPATIBILITY CONSTERNATION

NT 4.0 IS VERY FINICKY about the hardware and software it works with. While Windows 95 can use old DOS and Windows 3.1 device drivers as well as new 32-bit ones, NT 4.0 needs its own NT-specific 32-bit drivers. Microsoft provides a large collection with the OS itself and is encourag-



PROCEED WITH CAUTION: Microsoft's NT 4.0 lets you run many but not all DOS, Windows 3.1, and Windows 95 applications.

pertz, a partner and designer in Ventenas Computer Systems Engineering, a company in Albuquerque, New Mexico, that specializes in 3-D animation. "And if one application does go down, the others are okay."

To avoid the problems that cause crashes and data loss, the OS carefully monitors applications and device drivers as they access a PC's hardware. It also puts programs in separate chunks of memory so they can't bother each other. When an application malfunctions and you press <Ctrl>-<Alt>-<Delete> to recover, it gives you a bevy of options: Besides shutting down a single application or the entire system, you can instantly password-protect the PC until you've had a chance to analyze ing the development of more, but they're not yet plentiful. Also, just because a computer or peripheral works with other versions of Windows doesn't mean it will operate with NT 4.0. (The OS comes with a list of products that Microsoft has tested and found compatible.) "There's a lot of hardware not on the list that does work with NT," says George Roettger, a technical advisor on Compu-Serve's NT forum. "But if it's not on the hardware compatibility list, it's a gamble."

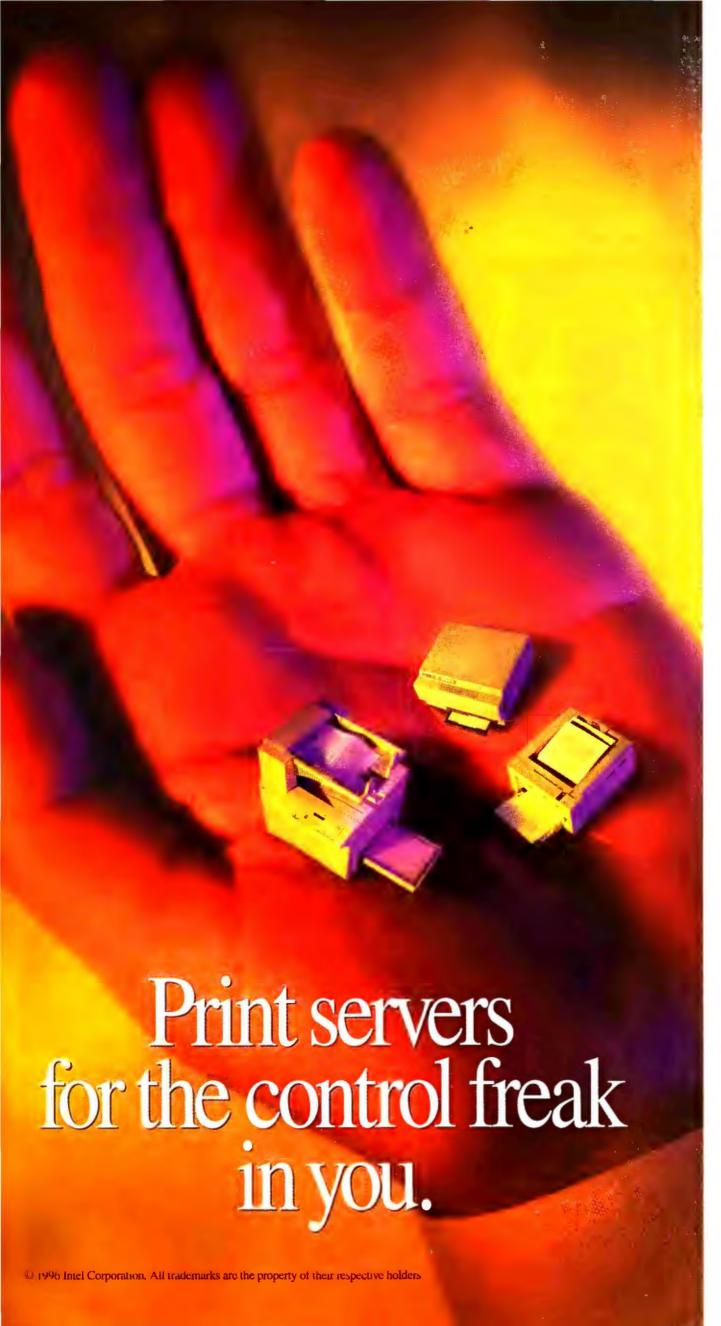
Compatibility with software applications is also far from universal. The beta version of Windows NT 4.0 comes with a list of Win 95, 3.1, and DOS applications that may present difficulties, ranging from minor malfunctions to a total inability to run. Numerous

# Windows NT 4.0 Upgrade

TEMPTED BY WINDOWS NT Workstation 4.0's improvements? Before making the move, take a look at your current PC setup and determine how well suited it is to NT.

YOUR PC: The upgrade is most likely to go smoothly if your computer is on Microsoft's Hardware Compatibility List; an NT 4.0specific version of the list is available at http://www.microsoft.com. YOUR PERIPHERALS: NT 4.0 needs its own drivers; even earlier NT ones may not work. Your printer and other devices must be supported through drivers from the OS or the device manufacturers. YOUR SOFTWARE: Check with the vendors of all your vital apps to make sure these programs will run with NT 4.0; if not, ask about the vendors' plans to make them do so. If your business runs custom applications, test them for compatibility with NT 4.0. YOUR CURRENT OPERATING SYSTEM: NT 4.0 installs nicely over Windows 3.1, but Windows 95 users who move to NT will need to

reinstall their applications before they'll run with NT.







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PROUD PARTNER

150 Smithsonian significant third-party Windows 95 applications, such as Lotus's SmartSuite 96 and Corel's WordPerfect Suite 7, are on this list. Even Microsoft applications aren't immune: The list warns of possible dis-

play glitches with Word 7 and Excel 7. And as with earlier versions of NT, most communications and utilities packages will not work unless they were designed for NT.

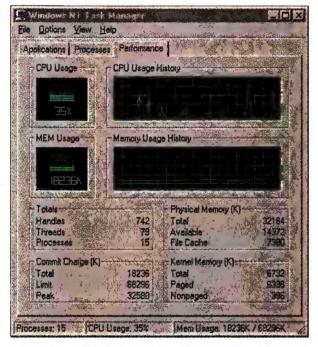
In many cases, these incompatibilities may be short-lived. Both Corel and Lotus plan to have NT 4.0 versions of their software suites ready at

about the time the OS becomes available. Other software vendors may quickly fall into line: "It's inevitable," predicts Dwight Davis, editorial director at the industry newsletter *Windows Watcher*, recalling that many developers learned a hard lesson during the rocky transition from DOS to Windows 3.0.

# HARNESSING THE PENTIUM PRO

resource-hungry operating system, but with PC prices in free fall, its requirements aren't as daunting as they once were. Microsoft recommends that you run NT 4.0 on a PC with at least a 60-MHz Pentium processor and 16MB of RAM. We put the OS through its paces on a Dell Dimension Pentium-75 with 16MB of RAM and were happily productive in a variety of 16- and

32-bit applications. However, with CAD and serious graphics, you'll probably want more than 16MB, says Phil Holden, a Microsoft product manager. Adobe, for instance, recommends a minimum 16MB of



POWER USERS CAN DIAGNOSE SYSTEM ILLS using NT 4.0's feature-filled Task Manager.

RAM if you use Photoshop with Windows 3.1 or 95, but it suggests 32MB for NT users.

To see the operating system at its best, you may need a PC sporting the latest technologies, such as a Pentium Pro processor and a 128-bit graphics adapter. Unlike Intel's 486 and standard Pentium processors, the Pentium Pro is opti-

mized to run 32-bit code. (NT has always been a pure 32-bit operating system, unlike Windows 95, which retains some 16-bit code.) Microsoft has also beefed up NT 4.0 to enhance performance on PCs with fast graphics subsystems.

We can't make any sweeping statements about NT 4.0's performance until we have the final version, but our informal tests hint at exciting possibilities. On a Dell OptiPlex 200-MHz Pentium Pro PC with 32MB of RAM and a 128-bit graphics card, we used Picture Publisher 6.0 to load a whopping 72MB PhotoCD image into memory and display it on screen. This task took about 2 minutes using Windows 95, versus only about 1 minute using the prerelease version of NT 4.0. Opening the image in NT 4.0 on our Dell Pentium-75 system was also quicker than in Windows 95, but the difference was much less striking.

#### **WIN NT VERSUS WIN 95**

DESPITE NT 4.0's Windows 95-like makeover, many PC users will still be better served by the real thing. Between its Plug and Play features, greater

### Windows NT Workstation 4.0

Microsoft

800/426-9400

List price: less than \$300 (price not set at press time)

READER SERVICE NO. 839

compatibility, and readily available drivers, Windows 95 is simpler to get up and running, particularly if you plan to add peripherals and software not designed for NT 4.0. That means Windows 95 is probably the choice for home and small-office users who must maintain their own PCs.

Of course, if you work in a large company, responsibility for most hardware and software worries probably lies in the collective lap of your IS department. As a result, you may find that NT 4.0 has become your designated OS, regardless of your personal preference. Once you're sure that NT will work smoothly with your PCs, peripherals, and application software, such a fate shouldn't be anything to fear: NT 4.0 is shaping up to be an OS that should keep both you and your business's full-time technical gurus reasonably happy.

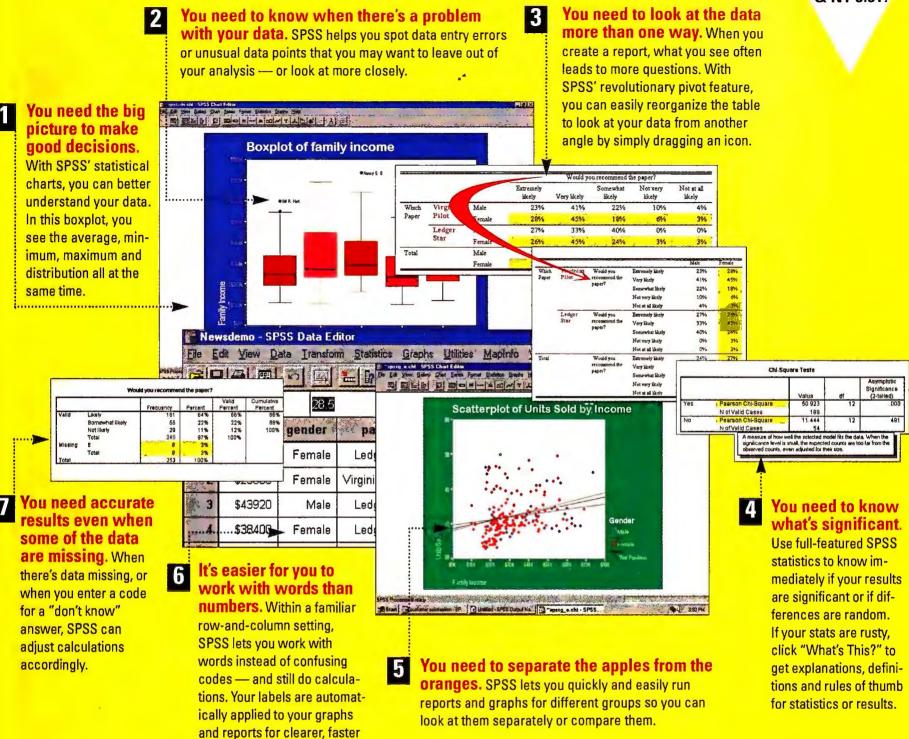
-Harry McCracken

WHICH TO PICK? Operating system choices continue to evolve.		Minimum recommended configuration		Application support				Applications, features included				
Yes O No		PAM (Mg)	Pocessor		Windows 3,1	Windows	Boch	Villand Asia	"ession	Peer to a	Orking a	Web browser
Applications	In short	PAM	20	500	Wino	Wino	8000	35	E-mail	199	100	Neg Mes
Windows 3.11	Familiarity, low hardware demands keep OS popular.	4	386SX	•	•	0	•	•	01	O1	0	0
Windows 95	Mainstream 32-bit version has some 16-bit code.	8	386DX	•	•	•	•	•	•	•	0	O²
Windows NT Workstation 4.0	Friendlier interface, still per- snickety about compatibility.	16	Pentlum-60	•	•	<b>●</b> 3	•	•		•	0	•
OS/2 Warp Merlin <sup>4</sup>	IBM's new 32-bit OS adds voice recognition, Java.	245	Pentium-905	•	•	0	•	0	•	•	•	•

<sup>1</sup> Windows for Workgroups 3.11 includes e-mall and peer-to-peer networking. <sup>2</sup> Not included in current retail version; will be part of OSR2 version shipped with new PCs beginning in October. <sup>3</sup> Can run most Win 95 applications that display Microsoft's Designed for Windows 95 logo. <sup>4</sup> Beta version of new OS/2 Warp is code-named Merlin; final name was not set at press time. <sup>5</sup> If voice recognition is not used, minimum is 486DX2-66 with 12MB of RAM.

# 7 secrets you need to know about your data

All new for Windows 95 & NT 3.51!



"It's fast, powerful, robust and a joy to use." - Windows Sources, April 1996

"The premiere statistical-analysis package for Windows 95."

presentations.

- PC Computing, April 1996

"Users will want this program for extending analyses when their spreadsheets run out of steam." - *PC Magazine, April 1996* 

**SPSS gives you Real Stats. Real Easy**. SPSS is a complete tool kit of easy-to-use statistics, graphs and reports that will help you unlock the secrets hidden in your data. Enter your data or directly import it from spreadsheets, databases or ASCII files. SPSS is used for:

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this summer launch-

es a generation of

Deskpro PCs that use what the

firm dubs Intelligent Manage-

ability to protect data from

Intelligent Manageability

combines desktop and LAN

hardware and software utili-

ties to help prevent unautho-

rized data access, detect disk

or system failure, and manage

PCs remotely over the net-

theft and corruption.

# Compag's New Deskpro Line Has Crash Detection

work. It is the distinctive feature of Compaq's new lineup in which the entry-level Pro-Linea series, midrange Desk-

Deskpro XL series are redesigned and renamed under a simplified naming scheme. The new lines target the same markets but

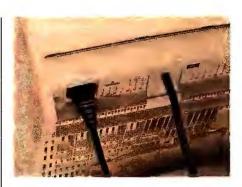
will be called the Deskpro 2000, 4000, and 6000 series, respectively. We took one of the first arrivals out for a spin-a 200-MHz Pentium Deskpro 2000 that should cost less than \$2789 without a monitor-and found it to be a solid performer.

The Deskpro 2000 value line starts at about \$1100 for a 100-MHz Pentium version. Midlevel models offer a range of Pentiums from 120 MHz to 200 MHz. The entry- and midlevel Deskpro 2000s come preloaded with both Windows 3.1 and 95; you choose which to install during

the setup process. High-end Deskpro 2000s run Windows NT on either 180-MHz or 200-MHz Pentium Pro chips. Top-of-the-line systems should cost about \$3400.

Our PC WorldBench tests of the 200-MHz Pentium Deskpro 2000, with 32MB of EDO RAM and a 256K secondary cache, showed performance slightly above average for similarly configured systems (see test report) and better than systems with more cache. Our test unit features a 1GB Ouantum Fireball hard drive, a Cirrus Logic 5436 graphics chip set with 2MB of DRAMcapable of 1024 by 768 resolution with 256 colors at an 85-MHz refresh rate—and an 8X CD-ROM drive. It accepts up to 128MB of RAM.

The Deskpro line stands out in its sophisticated management and security tools. To prevent data loss it uses Enhanced-IDE hard drives, available in 650MB to 2.5GB sizes,



A SMART PC: The Deskpro 2000, left, uses software utilities to alert you to an impending crash. Unique plugs on the V70 monitor, above, allow placement flush with a wall.

that track spin-up and seek times to detect problems before a crash occurs. When a fault is predicted, the software displays a warning and can initiate a tape backup on the PC or over the network.

To prevent data theft, Compaq provides an array of pass-

# Deskpro 2000 Model 5200/1080

PROS: Intelligent Manageability

protects PCs and data.

CONS: Average performance.

VALUE: Safety first.

Compaq Computer Corp.

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http://www.compaq.com

List price: \$2789

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# WEB BROWSER

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IT DOESN'T TAKE LONG before the thrill of going online is replaced by the anxiety of out-of-line spending.

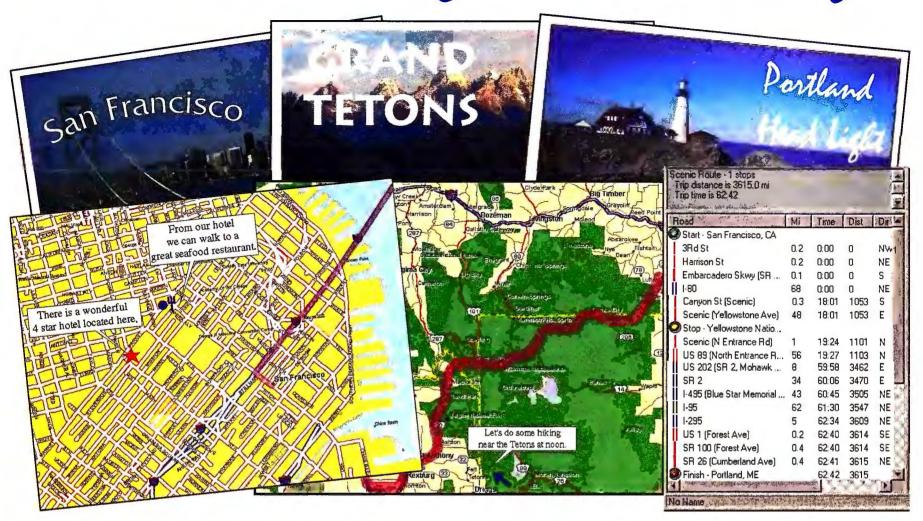
That's when it's time to turn to offline browsing software, a new breed of browser utility that lets you track your favorite sites and keep online bills in line. Typical offline browsing utilities dial in during off-peak hours, grab all the sites you want, flag those that have changed, and organize them for you. The preeminent free offline tool is FreeLoader (http://www.freeloader.com). However, it's currently compatible only with the Netscape Navigator browser. For \$50, WebWhacker (http://www.ffg.com/whacker.html) from ForeFront gives you scheduling wizards and some effective ways to organize the sites you've "whacked." Traveling Software's WebEx (http://www.travsoft.com/products/ webex) evolved from the innovative Milktruck Delivery, which Traveling recently acquired. For \$29.95, it delivers the same basic features as other offline browsers. But if you've decided to shell out some bucks for an offline utility, your best bet is probably First Floor's \$24.95 Smart Bookmarks 2.0 (http://www.firstfloor.com), which is also an excellent tool for organizing sites. In fact,



FREELOADER lives up to its name: It's distributed free and piggybacks on your browser.

First Floor built the original bookmarking functions for Navigator, and its stand-alone product also works with other browsers. Almost all these offline utilities offers a free demo, so try them all. -Richard Overton

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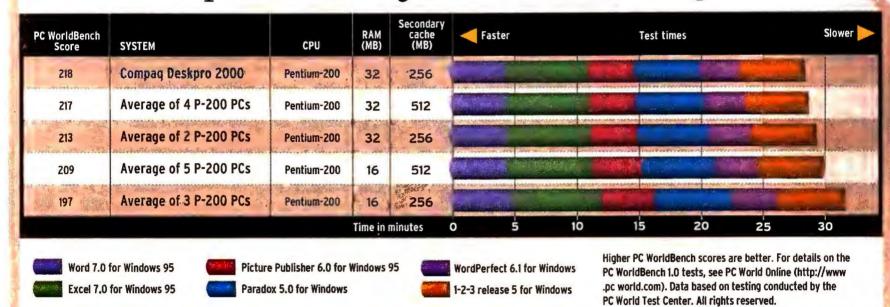
words that prevent the PC from booting from a floppy disk, disable the keyboard after a time-out, and prohibit changes to CMOS. The utilities also let you disable hard drive writes, block serial and parallel port data transfers, and even secure your system against Flash ROM updates.

All this fancy software is housed in a case that increases available slots and bays within

the same footprint of prior models. Compaq also has a new 17-inch color monitor, the V70; its street price should be \$720. -Dean Andrews

TEST REPORT

# Deskpro 2000 Performs About Average



IT DOESN'T TAKE A

CRYSTAL ball to fore-

see that color digital

cameras have a great

future among PC users. The

devices let you add photos to

documents and presentations

on your desktop and in cyber-

space. A digital camera is the

# Lowest Price Yet for a Digital Camera

ideal tool, creating quick and easy digital pictures. No film, no developing,

no scanning-it's just point, shoot, and publish.

Enter the Kodak Digital Science DC20 Camera, list-priced at a groundbreaking \$350. The DC20 is not only the least expensive digital camera on the market, it's also the most compact model we've seen (2.5 by 4 by 1.2 inches) and the lightest (4.2 ounces). It runs off a 3-volt lithium battery, comes with a serial cable for transferring the images from the camera to your PC's hard drive, and includes image enhancement software.

But the trade-off for the DC20's breakthrough price is lack of the image resolution, quality, and storage capacity found in more expensive products, such as the \$599 Epson PhotoPC. The DC20's highest resolution is only 493 by 373 pixels; the PhotoPC has a maximum 640 by 480. And it can store only 8 high-resolution images or 16 standard resolution (320 by 240) versus 16 high resolution (640 by 480) and 32 standard resolution pictures for the PhotoPC. Our biggest disappointment is the

# **Kodak Digital Science** DC20 Camera

PROS: Small and inexpensive.

CONS: Poor resolution; few options.

VALUE: You get what you pay for,

but this camera is fun and cheap.

List price: \$350

Eastman Kodak Co.

800/235-6325

http://www.kodak.com

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DC20's mediocre color rendition: Many images had muted colors, compared to the same ones taken by the PhotoPC.

Moreover, the DC20 has no built-in flash; no expandable or external memory support to increase image storage; and no AC adapter, tripod mount, or ability to use add-on lenses and filters—all provided by the PhotoPC. -Richard Jantz





AN IMAGE from the Kodak Digital Science DC20 Camera (left) pales when compared with the same image from the Epson PhotoPC.





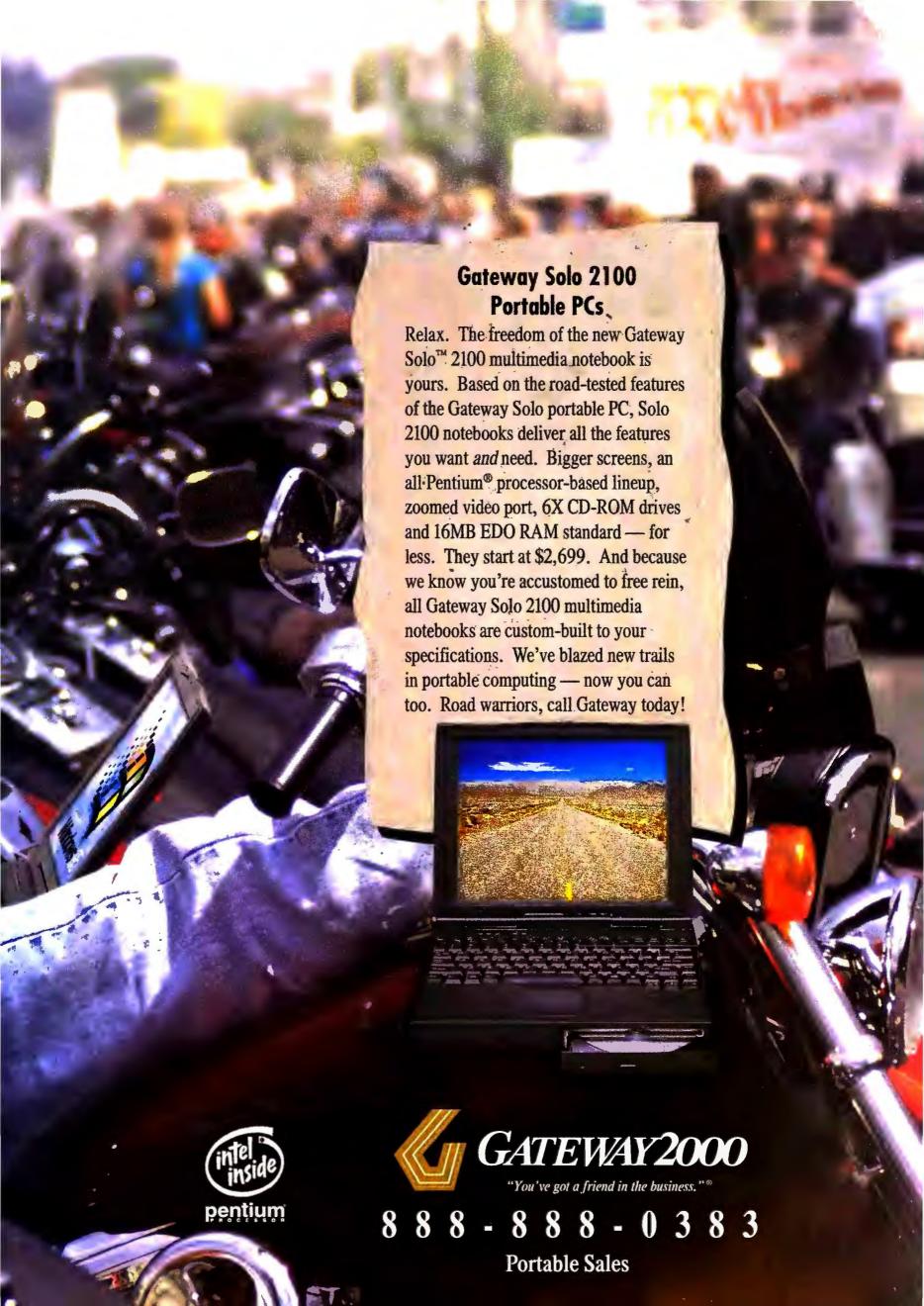






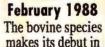
Each summer road warriors from every imaginable background throw a leg over their rumbling hogs and head for Sturgis, South Dakota. Since 1938, this small town has been the site of a huge, week-long motorcycle rally attracting free spirits from around the globe who want to explore their wild side. Bushy beards and colorful body art mingle freely with designer leather and fine jewelry. The common bond? Open road, man, open road.







More Trends from Gateway!



makes its debut in PC advertisements with Gateway's first national ad. Cows become cool.

#### July 1990

The stakes are raised in PC advertising. Gateway pioneers theme ads and easy-to-read bullet-point configurations with the "PC Saloon" ad.

#### April 1991

Gateway starts shipping PCs in cow-spotted boxes. Cow-spot fever spreads across the nation.

PCs with the "works" become the standard, as Gateway offers choice of application software on new systems at no extra charge.

# Quality That's EASY To Spot!

Gateway 2000 has been taking the guesswork out of buying PCs ever since our humble beginning in 1985. We give you all the information you need to find the right system. And great prices, quality products and outstanding service and support are the norm rather than the exception. We've also made your PC buying experience more fun by embracing our origins — Gateway was started by a couple farm boys in a barn on a Midwestern cattle ranch. In honor of these roots, 5,000 Gateway employees painted cow spots on our headquarters. No polished silver or mirrored glass here. That's not Gateway's style. After all, we were born in a barn.



#### P5-120 FAMILY PCTM

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- Altec<sup>™</sup> Lansing ACS-40 Speakers
- TelePath® 28.8 Fax/Modem for Windows
- 7-Bay Mini Tower Case
- 104\* Keyboard & MS Mouse 2.0
- Microsoft® Windows® 95
- Generations II Software Collection

\$1699

#### P5-166 FAMILY PC

- Intel 166MHz Pentium Processor
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- 256K Pipelined Burst Cache
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- 2MB DRAM, 64-Bit PCI Graphics
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Gateway Sound Card
- Altec Lansing ACS-40 Speakers
- TelePath 28.8 Fax/Modem
- 7-Bay Mini Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- Generations II Software Collection

#### P5-200 FAMILY PC

- Intel 200MHz Pentium Processor
- 32MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Vivitron17.26dp Monitor (15.9" viewable)
- Matrox® 2MB WRAM PCI Graphics
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 16-Bit Gateway Sound Card
- Altec ACS-40 & ACS-250 Speakers
- TelePath 28.8 Fax/Modem
- 12-Bay Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- Generations II Software Collection

#### G6-200XL

- Intel 200MHz Pentium Pro Processor
- 32MB EDO DRAM
- 256K Internal Cache
- Vivitron17.26dp Monitor (15.9" viewable)
- Matrox 2MB WRAM PCI Graphics
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- CD-Recordable w/ SCSI Controller
- 16-Bit Ensoniq® Wavetable Sound Ca
- Altec ACS-400 & ACS-250 Speakers
- TelePath 28.8 Fax/Modem
- 12-Bay Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition Generations II Software Collectio

\$3899 Business Lease<sup>†</sup> \$143/1

#### Professional Systems\_

#### P5-133

- Intel 133MHz Pentium Processor
- 16MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Vivitron15 .26dp Monitor (13.9" viewable)
- 1MB DRAM, 64-Bit PCI Graphics
- 1GB 10ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 7-Bay Mini Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

\$1699 Business Lease<sup>†</sup> \$63/mo.

#### P5-166

- Intel 166MHz Pentium Processor
- 16MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Vivitron17.26dp Monitor (15.9" viewable)
- 2MB MDRAM, 128-Bit PCI Graphics
- 2GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 12-Bay Tower Case
- 104<sup>+</sup> Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

\$2299 Business Lease<sup>†</sup> \$85/mo.

#### P5-200

- Intel 200MHz Pentium Processor
- 32MB Synchronous DRAM
- 256K Pipelined Burst Cache
- Vivitron17 .26dp Monitor (15.9" viewable)
- 2MB MDRAM, 128-Bit PCI Graphics
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 12-Bay Tower Case
- 104+ Keyboard & MS Mouse 2.0

\$2699 Business Lease \$99/mo.

#### G6-180

- Intel 180MHz Pentium Pro Processor
- 32MB EDO DRAM
- 256K Internal Cache
- Vivitron17 .26dp Monitor (15.9" viewable)
- 2MB MDRAM, 128-Bit Graphics
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives
- 12-Bay Tower Case
- 104+ Keyboard & MS Mouse 2.0
- MS Windows 95
- MS Office 95, Professional Edition

\$2699 Business Lease \$99/m

#### Gateway Solo™ 2100 Portable PCs\_

#### S5-100

- 11.3" DSTN SVGA Color Display
- Intel 100MHz Pentium Processor
- 16MB EDO DRAM expandable to 40MB
- 256K Pipelined Burst Cache
- 1MB EDO Video RAM Zoomed Video Port
- 540MB Hard Drive
- Modular 6X CD-ROM Drive Modular 3.5" Diskette Drive
- 16-Bit Sound & Stereo Speakers
- Lithium Ion Battery & AC Pack
- 85-Key MS Windows 95 Keyboard
- Carrying Case MS Windows 95
- MS Works 95

**\$2699** Business Lease<sup>†</sup> \$99/mo.

#### S5-133

- 12.1" Active Matrix SVGA Color Display ■ Intel 133MHz Pentium Processor
- **40MB EDO DRAM**
- 256K Pipelined Burst Cache
- 1MB EDO Video RAM 1.2GB Hard Drive
- Modular 6X CD-ROM Drive
- Modular 3.5" Diskette Drive
- 16-Bit Sound & Stereo Speakers 28.8 PCMCIA Fax/Modem
- 2 Lithium Ion Batteries & AC Pack
- 85-Key MS Windows 95 Keyboard **Carrying Case**
- MS Windows 95
- MS Office 95, Professional Edition

\$5449 Business Lease† \$195/mo. Destination Software Collection

- MS Windows 95
- MS Office 95, Professional Edition

D5-166

Accelerator w/ Cable-Ready TV Tuner

■ Intel 166MHz Pentium Processor

256K Pipelined Burst Cache

Destination 31" VGA monitor

STB® 2MB VRAM Graphics

2GB 11ms EIDE Hard Drive

TelePath 28.8 Fax/Modem

EZ Pad™ Pointing Device

■ Four-Channel RF Receiver

MS Windows 95

■ 8X CD-ROM/3.5" Diskette Drives

16-Bit Hi-Fi Wavetable Audio Card

7-Bay Charcoal-Colored PC Case

Wireless Keyboard w/ Integrated

Wireless Field Mouse® Remote

16MB EDO DRAM

## Destination™ Big Screen PCs\_

- D5-200
- Intel 200MHz Pentium Processor
- 32MB Synchronous SDRAM
- 256K Pipelined Burst Cache Destination 31" VGA monitor STB 2MB VRAM Graphics Accelerate
- w/ Cable-Ready TV Tuner
- 3GB 11ms EIDE Hard Drive
- 8X CD-ROM/3.5" Diskette Drives 16-Bit Hi-Fi Wavetable Audio Card
- TelePath 28.8 Fax/Modem
- 7-Bay Charcoal-Colored PC Case
- Wireless Keyboard w/ Integrated EZ Pad™ Pointing Device
- Wireless Field Mouse® Remote
- Four-Channel RF Receiver
- MS Windows 95
- **Destination Software Collection**

\$4399 Business Lease<sup>†</sup> \$161/1

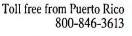




http://www.gw2k.com

\$3899 Business Lease<sup>†</sup> \$143/mo.

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#### Multimedia/Storage

- Altec<sup>™</sup> Lansing ACS-250 Subwoofer \$75 (upgrade from PCs that include Altec ACS-40 speakers)
- Altec ACS-400 Speaker System
  w/ ACS-250 Subwoofer \$120
  (upgrade from PCs that include Altec ACS-40 speakers)
- Iomega® Ditto™ 3200 Internal Tape Backup Unit \$199 3200MB with compression, nominal 1600MB

#### Networking

#### 3Com® Ethernet Adapters

- 16-Bit Triple Media Card with BNC, AUI and RJ-45 Connectors \$99
- 16-Bit Card with only RJ-45 Connector \$79

#### Software

#### ■ Kid's BackPack<sup>™</sup> III

Includes School House Rock!™: Grammar Rock™; Sesame Street: Get Set to Learn®; Math Blaster 2®: Secret of the Lost City; Imo & The King™; Putt-Putt® Goes To The Moon™; and Gateway cow-spotted backpack. \$59

■ Finance Pack (U.S. Shipment Only)
Includes Quicken® Deluxe 5, Quicken Financial Planner,™ Quicken Family Lawyer,™ and Quicken Parents' Guide To Money.™ \$69

#### Printers, Scanners & Digital Cameras

- Epson® Stylus<sup>™</sup> Color IIs Ink Jet Printer \$199
- Epson Stylus Color II Ink Jet Printer \$279
- ■Epson Stylus Pro Printer \$449
- Hewlett®-Packard LaserJet 5L Xtra Printer \$479
- Hewlett-Packard LaserJet 5P Printer \$849
- ■ Epson Action Scanning<sup>™</sup> System II \$449
  - Epson Photo PC Digital Camera \$499

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- Extended Three-Year On-Site Agreement\*
- Priority 800 Number For Access to Technical Experts
   With system purchase \$99
   Within current on-site service agreement \$129

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\*On-site service for desktop and tower systems is available to most U.S. and Canadian locations after determination by a Gateway tech that you need it. On-site service is provided by PC Technology Services, Inc. Write or call for a free copy of the on-site service agreement.

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#### **Destination Big Screen PC Option**

■ harman/kardon High-Fidelity Sound System

Seven-piece Dolby® Surround Sound Pro Logic speaker system including AVR-10 audio/video receiver with remote, subwoofer, center channel, and four satellites for the ultimate multimedia audio experience. \$699





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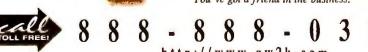
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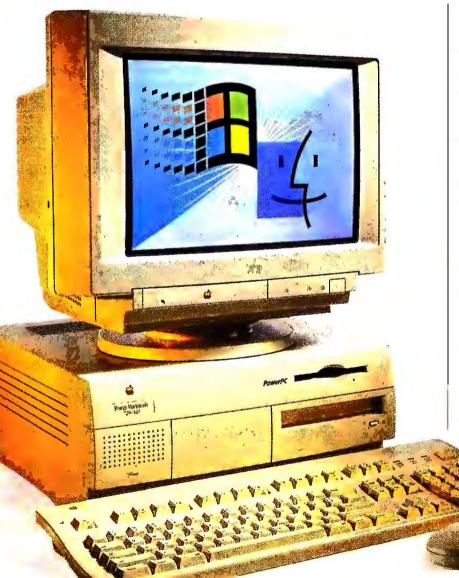








# Pentium Power Mac Box Lacks **Processing Power**



THE PENTIUM'S SLUGGISH performance detracts from the overall appeal of this double-duty Power Macintosh/PC system.

MEET THE FIRST Macintosh to come with a built-in Pentium processor card—the Power Macintosh 7200/120 PC Compatible: It lets you hedge your bets when buying an Apple computer. In one box, you've got both a fully configured, 120-MHz PowerPC 601 Mac and a 100-MHz Pentium processor. The Pentium chip resides on Apple's PC Compatibility Card, a preinstalled PCI expansion card.

To switch between operating

systems, just press <Return> and Apple's famous < Command> key together. You can even plug two monitors into the back of the Power Mac, displaying the Mac desktop on one and Windows on the other—a real convenience for cutting and pasting between the two operating system's clipboards. The Pentium and PowerPC processors work independently of one another, so you can, for instance, watch a video from a Windows 95 CD-ROM while writing in a Mac word processor.

Even better, Apple's \$2799 street price is eminently reasonable. The price doesn't include a monitor, keyboard, or Windows software;

adding those brings the cost to about \$3500. But you'd spend about \$4600 for a fully configured Power Mac and a separate Pentium system equivalent to Apple's Power-

PC-Pentium hybrid.

Two computers in one box, at a compelling price—what's not to like? Performance, for one. Based on the results of our PC WorldBench tests on a preproduction Power Mac 7200/120, we found, on average, that the computer was

about 50 percent slower than 100-MHz Pentium systems with 8MB of RAM. On the Power Mac, Windows applications and files are stored in a DOS-compatible file-effectively a partition on the hard drive. This probably accounts for the slower speed.

Second, there are differences between the Windows and Mac cultures. For instance, Windows systems ship with a two-button mouse, but the Power Mac comes with the standard one-button Mac mouse. Apple's work-around was to program the <Equal> key on the Power Mac keyboard's numeric keypad to perform the same duties as a right mouse button. But hit the <Equal> key in the numeric keypad, and you get the popup Windows menu instead of a tabulation.

Is Apple's dual-personality machine a good choice for Windows users? In most cases, probably not: PC users must make too many compromises. But for Mac users who need to run Windows software regularly, the Power Macintosh 7200/120 PC Compatible makes sense.

–James A. Martin

#### Power Macintosh 7200/120 PC Compatible

PRO: Mac with a Pentium chip. CON: Pentium underperforms.

**Apple Computer** 408/996-1010

Street price: \$2799 READER SERVICE NO. 768

74 PE WORLD SEPTEMBER 1996

# Dell, Compag Notebooks Go Modular

THE LATEST GENERATION of high-end notebooks offers desktop-level power, longer battery life, and better screens,

with a 100-, 120-, or 133-MHz Pentium processor; Dell offers a P100- or P133-MHz CPU. Both of them use lithium ion batteries, have standard ports

## COMPACT

including PC Card slots, and have integrated audio.

FLEXIBILITY

THE ARMADA 4100 notebooks from Compaq have an ultraflexible base

THE DELL LATITUDE LM (above) is loaded with multimedia extras. The speedy Compag Armada (right) is available in models ranging from 4.8 pounds (basic) to 7 pounds (loaded).

all for lower prices than just a few months ago. The biggest news, though, is that these notebooks are completely modular. But configuring one can be as confusing as selecting options for your car.

The Compaq Armada 4100 and Dell Latitude LM are similar in many ways, but they meet different needs. The Compaq is designed for on-the-go users who want maximum power and minimum weight; the Dell is aimed at those who want full multimedia capabilities. High-end Pentium processors are the norm for each. The Compaq is available

Laurianne McLaughlin and Gabrielle Mitchell

design and a wide variety of configurations. If you're looking for the lowest traveling size and weight, the basic Armada is just 11/2 inches thick and 4.8 pounds (sans the external 31/2-inch floppy disk drive). Slip a battery in the bay that's cleverly part of the notebook's handle, though, and the notebook's weight goes up to 5.1 pounds. You can keep adding features, including a snap-on 4X CD-ROM drive with a second battery bay, but you'll also add an extra halfinch to the height and up the weight to nearly 7 pounds.

The Armada comes with a center-mounted touchpad

pointing device, but you can replace the pad with a trackball. You can select an 810MB or 1.08GB hard disk.

Our tests on the top-of-theline 133-MHz Armada 4100 (with a big 11.8-inch TFT active-matrix screen) found it an impressive performer, chalking up an overall PC WorldBench score of 180 (versus an average of 153 for other 133-MHz systems). It shined in the application tests as well.

#### DELL MULTIMEDIA MACHINE

DELL CALLS ITS Latitude LM the "Multimedia Dream Machine." A removable 4X CD-ROM drive, a 128-bit PCI graphics accelerator, and a built-in 31/2-inch floppy disk drive (replaceable with a second battery) are all stan-

> dard. The Latitude is 2 inches thick and weighs about 7 pounds. Hard

drive options are 540MB, 810MB, and 1.3GB.

We looked the P-133 Latitude with a 12.1 TFT screen that offers 800 by 600 resolution at 256 colors (Compaq offers 65,000 colors). Our tests showed it to be an average performer, with an overall PC WorldBench score of 141, compared to an average of 143.

#### Compaq Armada 4100

PRO: Impressive performance. CON: Adding components drives up overall price.

Compaq Computer Corp.

800/345-1518

http://www.compaq.com

Street price: \$2599 to \$4599 READER SERVICE NO. 769

- Power Macintosh 7200/120 PC Compatible
- Compag, Dell notebooks
- FrameMaker 5, Ventura 7
- Lexmark Color Jetprinter 2050
- Plustek OpticPro 4800P
- 80 Gigatron Note It
- 80 Act 3.0 for Windows 95/NT, Lotus Organizer 97
- 84 WD Caviar AC32500, IBM DeskStar 3, Seagate Medalist 2140, Quantum Big Foot, HP SureStore 2000A
- DragonDictate 2.5. Kurzweil Voice Release 2.0, IBM Voice-Type 3.0
- 92 @workStation
- Timex Data Link 150
- ConnX marketing software
- Adobe Acrobat 3.0
- Fix-It, MicroHelp Zip utilities
- Inso Search Wizard
- 101 Survey Said for the Web
- 103 Kai's Power Goo, Squizz 1.5
- 103 Time & Profit 1.2 for Windows

#### RNET



FOR MORE PRODUCT news and the latest announcements, check out the PC

World Daily News Service at http:// www.pcworld.com/news.html.

The Armada's the logical choice for great performance and portability, but if you want the goodies all at once, the Latitude's the better choice.

—Stan Miastkowski 🕨



#### **Dell Latitude LM**

PRO: Loaded multimedia portable. CON: Average system performance.

Dell Computer Corp.

800/289-3355

Street price: \$2399 to \$3199

READER SERVICE NO. 770

# FrameMaker 5 and Ventura 7: Desktop Publishing Features Online Output

GRAPHICS WHAT DO YOU GET when huge companies merge desktop publishing software with their well-known product lines? With Adobe FrameMaker 5 for Windows 95 and Corel Ven-

Tour Date of the Part of the P

Learning Series

CHAPTER 1

Birth of Radio Communications

the new features in version 5 are compatibility with Windows NT 3.51 (and higher) and Windows 95 capabilities such as support for long file names. But one of the best reasons to choose FrameMaker is to get

its strong capacity for Ventura Navigator Publication Manager BOOK1 book1 Style □ **1** 800K1 B BLBRDCHT ■ BOOK1 BK1TOC BK1TOC 自 BK1CHP1 BK1CHP1 CALENDAR CASHRAIN MANPOINT NOTEPAD Text\_ Text

ADOBE IMPROVED FRAMEMAKER with support for HTML and Acrobat for more extensible documentation.

tura 7, you get powerful programs plus compatibility with other products in the families, such as Adobe Photoshop and CorelDraw. These updated FrameMaker and Ventura versions also have new features for online publishing.

FrameMaker 5 for Windows 95 is the first release of the program since Adobe Systems acquired Frame Technology: Adobe has improved an already good product. Among

#### Adobe FrameMaker 5 for Windows 95

PRO: Flexible and easy to use. CON: Can't embed QuickTime movies. Adobe Systems, Inc.

415/961-4400

http://www.adobe.com

List price: \$895; \$225 upgrade for FrameMaker 4, \$59 upgrade for version 5 for Windows 3.1

READER SERVICE NO. 771

**VENTURA'S NAVIGATOR looks** and works like Windows 95 for improved file management.

online document creation and distribution. The program includes Adobe Acrobat and HTML support.

In FrameMaker 5 for Windows 95, the extensive documentation guides you through building a Web site complete with graphics, hypertext links, and pop-up menus. There's new support for Object Link-

#### Corel Ventura 7

PRO: Impressive online help. CON: Hogs 140MB of hard disk space.

800/772-6735, 613/728-8200 http://www.corel.com

Pricing: \$895; \$249 upgrade for Quark, PageMaker, or WordPerfect users who upgrade to Corel suites READER SERVICE NO. 772

ing and Embedding 2.0. You can embed video and sound files by copying the file to the clipboard and using the Paste Special command. You can also edit embedded or linked objects, such as sound files. You can't embed QuickTime movies, though, as you can with the Macintosh version of FrameMaker 5.

Like FrameMaker 5, Corel Ventura 7 works well for creating long documents and online documents. Earlier versions of Ventura were criticized for lacking management and navigation controls; version 7 addresses that criticism with two new tools: Navigator looks and works like the Windows 95 Explorer; Library is a file window that lets you view all files related to a document. You can drag and drop the files to modify documents.

Also like FrameMaker 5, Ventura 7 lets you add hypertext links, sound, and video files to your document. But Ventura 7 offers a bit more flexibility and a few extra features: You can publish Java, Common Ground, and Envoy (Acrobat-like) documents. Java format, for example, lets you use pop-up windows, multiple fonts, and more in your online documents. Ventura 7 also comes with WordPerfect SGML so you can work with SGML documents or import them into Ventura 7. Quick-Time movies? No sweat, Ventura does those too. CD-ROM publishing? Corel says it will bundle Corel CD Creator with Ventura 7, although it wasn't

#### QUICK TAKES

#### **Web Site Creator** to Avoid

You don't need to know HTML to create a Web site using THISoftware's WebSite Director 1.1, but you may need considerable patience. WebSite Director 1.1 generates formatted and hyperlinked HTML pages after you fill in templates. We used a beta version of Director, which had a few problems. For example, we received an error message when we tried to activate the built-in HTML editor and insert an image. The company says the problem has been resolved in the shipping version. WebSite Director has some useful features, but we didn't like the interface. The \$149 program runs with Windows 3.1 and 95. THISoftware, 713/785-4357.

READER SERVICE NO. 782

#### **Get the Picture**

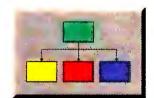
In search of the perfect clip art in a hurry? PhotoDisc may have just what you're looking for at www.photodisc.com. PhotoDisc is widely recognized for providing royalty-free digital images on CD-ROM. But it offers more than 20,000 images at its Web siteand hundreds of new pieces of art are added weekly. You can download an image for a fee of between \$9.95 and \$89.95. depending on its size. By year's end, according to the vendor, you should be able to access up to 150GB of images, PhotoDisc, http://www.photodisc.com.

READER SERVICE NO. 783

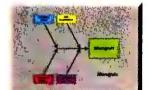
available with the beta version.

But make sure you've got room on your hard drive. Fully installed, Ventura 7 takes a whopping 140MB, compared to the mere 20MB to 30MB that FrameMaker 5 occupies.

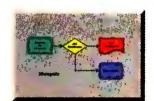
—Anne Fischer Lent



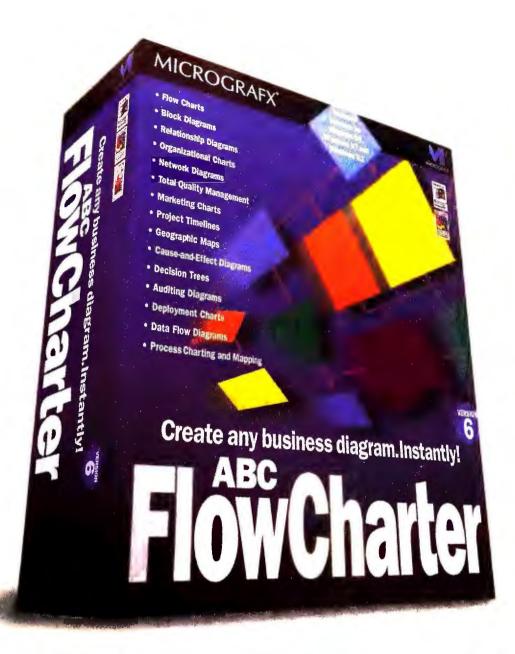
Human resource tools like organization charts and relationship diagrams

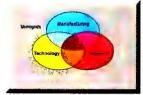


Management support diagrams like cause & effect, decision trees and timelines

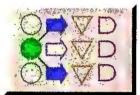


Business process re-engineering diagrams like flow charts, and data flow diagrams

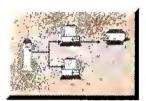




Marketing tools like venn diagrams, targets, pyramids and geographic diagrams



Total quality management diagrams like process charts and maps



IT and software design tools like network diagrams and object oriented design diagrams

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#### QUICK TAKES

## New Lexmark Printouts Even Look Good Wet

THERE'S A NEW PRICE leader in the color ink jet market: Lexmark's Color Jetprinter 2050 sells for street price of \$299—less than HP's \$309 DeskJet 68oC and Canon's \$329 BJC-4100 ink jet printers. What's more, it's the first Lexmark to use a new waterproof ink. We tested a shipping unit, and the output passed the water test. A mixed color and text page that we placed under running tap water for one full minute did not run or smear, even with some gentle rubbing.

Lexmark's 2050 provides 600-by-600-dots-per-inch resolution, for a price that's \$120 more than the 600-by-300-dpi Lexmark Jetprinter 1020. For small business or home use, the Jetprinter 2050 works quickly enough, with rated print speeds of 4 pages per minute for monochrome and 1 page per minute for color. You can print draft-quality pages at 5 ppm for monochrome and 2 ppm for color.

The 2050's text and color print quality look very good, as we have come to expect from Lexmark. We found that continuous tone images, such as scanned photographs, print particularly well.

Lexmark's bundled Workshop CD-ROM has changed significantly, as well. In addition to showing you how to install and configure your printer, Lexmark's Workshop lets you print T-shirt transfers, greeting cards, certificates, labels, and envelopes. Lexmark also provides Comic Creator, which lets you make

custom comic books using characters, props, and scenery provided—perfect for the next birthday in your office. Finally, Netscape Navigator 2.0 is also included so you can connect to the Internet.

Lexmark has launched a line of specialty media for all ink jet printers; for a limited time, a free sample pack is available by calling Lexmark Direct at 800/438-2468.

—Bill Underwood

#### Lexmark Color Jetprinter 2050

PRO: Inexpensive ink jet produces waterproof pages.

CON: None.

Lexmark International, Inc.

800/891-0331

http://www.lexmark.com

Street price: \$299

READER SERVICE ND. 773

#### Okidata's Printer Deal

An affordable option for students or the home office, Okidata's new low-price Okipage 4w ink jet printer provides good print quality and excellent speed, according to our informal tests. Offering 600-dpi resolution and 4-pages-per-minute output, the model provides laser-quality monochrome printing for about \$299. Sure, you can buy a color ink jet printer in the same price range, but you may not want to pay for the color cartridges or put up with the slower monochrome print speeds common with color printers. The Okipage 4w comes with a 100-sheet paper tray and 128K of memory-nothing fancy, but you can't argue with the price. This basic but serviceable ink jet printer is also Plug and Play compatible with Windows 95. Okidata, 800/654-3282, http://www.okidata.com.

READER SERVICE NO. 784

# Plustek's \$369 OpticPro: Solid Scanner

SCANNE PLUSTEK'S NEWEST color flatbed scanner provides two main benefits: a low price and a simple setup. With a street price of \$369, Plustek's OpticPro 4800P is one of the least expensive full-color flatbed scanners available. It scans images in 24-bit color and gray-scale modes at a native resolution of 300 by 600 dpi and supports up to

4800 dpi with software interpolation. As for installation, the scanner connects easily to your PC through the parallel port. While scanners connected via SCSI interfaces work fastest,

this Plustek unit performed

well in our informal tests. It

took us about 90 seconds to scan a 4-by-5-inch color photo. The OpticPro 4800P offers enough quality and speed for typical business uses such as scanning photos for newsletters, reports, or brochures.

This TWAIN-compatible

#### Plustek OpticPro 4800P Scanner

PRO: Low-price scanner installs easily via the parallel port.

CON: Trade-off is slow color scans.

Plustek USA

800/685-8088, 408/745-7111

http://www.plustek.com

Street price: \$369

READER SERVICE NO. 774

scanner comes with both 16bit (Windows 3.1) and 32-bit (Windows 95) drivers. To help you manage documents, there is an Action Manager program with fax and copy utilities. Plustek also bundles Recognita Plus OCR software for editing scanned text, and Image-In, a photo editing application.

Notwithstanding its rockbottom price, the 4800P has a number of useful features that make it a good match for the small office/home office. For example, a clever sliding cover hinge makes it easy to scan extra-thick originals such as a book. And the long-life coldcathode tube automatically turns off when it's inactive.

—Stan Miastkowski 🕨

PLUSTEK'S **OPTICPRO 4800P** SCANNER hooks up to the parallel port, which makes installation hassle-free.

Click Click
<Esc> @10,20
Click Click
Click <Esc>
#@!? Redraw
Click <Tab>
<Tab> 14.3
Click <Esc>
Click + Drag
Crash #@!?

Other 2D Drawing Tools

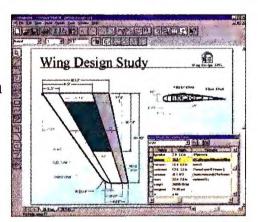
# Click Click Click Click Click

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# Draw your own conclusion.

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# Annotate Workgroup Documents With Ease

GIGATRON SOFTWARE'S Note It, a 32-bit Windows 95 or Windows NT program, features more than just the electronic equivalent of Post-it sticky notes. It also has a useful and easy set of markup tools—including highlights; time, date, and user stamps; and drawing and writing pens —that you and your work-

Note It

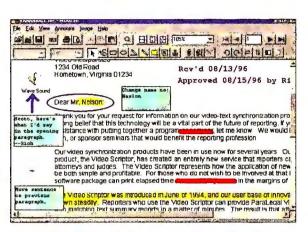
PRO: Affordable workgroup app. CON: Not for complex projects. Gigatron Software Corp. 800/909-9199, 714/261-1777 List price: \$99

READER SERVICE NO. 775

group can use to annotate documents you share from graphics, word processing, Internet (HTML), fax, and spreadsheet and other file formats.

all annotations separate from

the document being marked up, so the original is always intact. Although Note It is MAPI mail-enabled and network ready, it is not designed to compete with Lotus Notes and other heavyweight pro-



Note It keeps NOTE IT ANNOTATES documents and images with sticky notes, highlights, and other tools.

grams for team computing. If you don't need high-powered collaboration tools, the \$99 Note It is an efficient and affordable utility for any office that shares files.

—Richard Jantz

#### **QUICK TAKES**

#### New and Improved: **PCAnywhere**

Symantec's PCAnywhere32 version 7.5 is a remote control/ remote access program for Windows 95 and NT. It offers added flexibility as a 32-bit application. New features include expanded Internet connection capabilities and support for both ISDN and infrared links. The handy new AutoXfer utility gives you the capability to transfer and synchronize files between PCs automatically, as soon as you make a connection. In addition, Symantec claims improved performance due to the larger cache file. New multitasking tools let you do both remote control and file transfer at the same time. The estimated street price for a host-and-remote (two-user) package is \$149. A competitive upgrade is available for \$79.95. Symantec Corp., Delrina Group, 800/441-7234, 541/334-6054, http://www.symantec.com.

READER SERVICE NO. 785

#### **Notebook Telephony** Wizard

Connectware's PhoneWorks 28.8 to Go PC Card looks like your ordinary Type II 28.8 fax-modem card, but the headphones that come with it should tell you it does a little more than the average PC Card modem. This \$299 product offers a spate of useful telephony functions: It supports as many as 10 voice mailboxes with individual greetings, hands-free calling, links to your pager, fax on demand, and broadcast faxing. The card also works with caller ID service, though you must be at home for those features to work. This unusual PC Card modem will serve you well. Connectware, Inc., 800/357-0852.

READER SERVICE NO. 786

# Act and Organizer: First Win 95 Versions

IT TOOK SOME TIME, but Symantec has finally released a 32-bit version of Act. And version 3.0 for Windows 95 and NT was worth the wait.

#### The state of the s Act 3.0 for Windows 95/NT

PRO: Improved links to common apps; database synchronization.

CON: None

Symantec Corp.

800/441-7234

http://www.symantec.com

Street price: \$199

READER SERVICE NO. 776

Lotus Organizer 97

PRO: Windows 95 look and feel.

CON: Not worth the upgrade.

Lotus Development Corp.

800/343-5414

http://www.lotus.com

Street price: \$79, upgrade \$49

READER SERVICE NO. 777

Lotus has shipped Organizer 97, the first 32-bit version of its veteran personal information manager. However, Organizer 97 provides only minute functional enhancements.

For people working in sales or consulting, Symantec's Act contact manager is worth its \$199 street price because it tracks hundreds of names, letters, calls, and date- and timestamped notes. The program also generates custom reports, which are useful for showing clients or the boss how hard you're working. Act not only does more than most other PIM programs, it offers more customization options.

Among the best new features: Act 3.0 provides better links to word processors such as WordPerfect and Microsoft

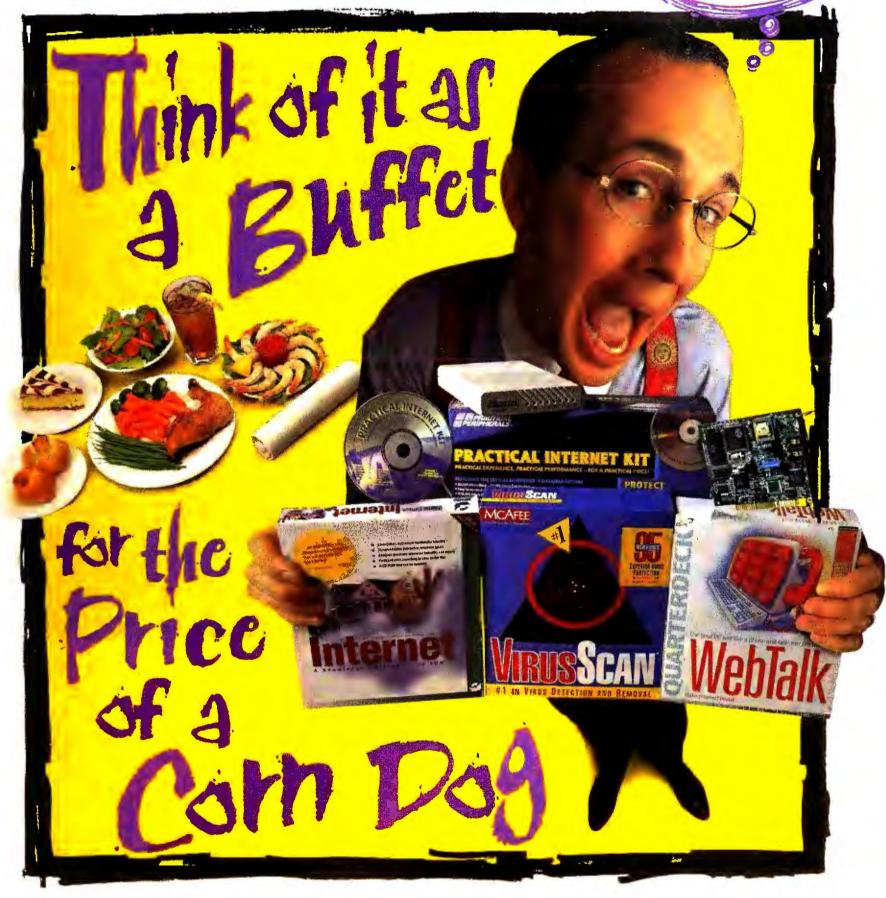
Word, plus the capability to attach letters and files to contact names. You'll find wizards that speed up work, as well as flexible new views for contact and to-do lists. Workgroups can share contact and calendar information, and track projects. Act 3.0 also delivers database synchronization features for mobile users.

As for Lotus Organizer 97, it has a Windows 95 look and feel with some minor feature changes. You'll find tweaks to the calendar (daily views now show the duration of appointments) and the notepad section (you can use OLE 2.0 to create document links). For existing users, these small improvements may not be worth the \$49 upgrade.

—Laurianne McLaughlin

# Introducing The Practical Internet Kit.





The Practical Internet Kit is the first *complete* Internet Kit to provide you with the necessary tools to fully experience, work, and enjoy the Internet. The Kit features the Practical Class 288 V.34 Data/Fax modem (upgradeable to 33.6) and an outstanding array of CD-ROM-based software. LEARN about the Internet off-line with MindQ's tutorial. ACCESS the Internet through a variety of leading service providers and web browsers including Netcom Access Kit containing Netscape Navigator™ Internet client. TALK on the Internet via Quarterdeck® WebTalk™\* PROTECT data integrity from viruses on the Internet with McAfee's VirusScan™ The Practical Internet Kit ships with Quicklink™II Data/Fax software, and is backed by 7 day technical support and a lifetime limited warranty. It's even Windows NT compatible. What a value! For more info, call 800-964-2937, ext. 290 or use PRACTIFAX at 800-225-4774 and select document 4005.



PM288 HC II V.34 Developed to deliver high quality data transmissions at speeds up to 28.8k bps V.34. For users who prefer internal modem solutions. Low cost internet package backed by a lifetime limited warranty and 7 day a week technical support.



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## IDE Hard Drives Break the 2GB Barrier

STORAGE HAVE YOU RECENTLY examined the contents of your IDE hard drive and found yourself feeling a tad claustrophobic? Chances are you've outgrown your current hard drive and need to upgrade to something roomier. Luckily, hard disk manufacturers are bringing

out larger-capacity drives with-

out inflating the price.

For an example of this, look at Western Digital's Caviar 31600, a 1.6GB drive that cost \$699 initially. This year's model, the Caviar AC32500, is a spacious 2.5GB drive that sells for just \$399. Not only do you get more room for your dollar, but you don't have to throw your old drive in the trash if you decide to upgrade. Many motherboards now support two or more IDE peripherals. When you buy a new drive, simply use the old one as a backup for important documents or as storage for files that are too large to keep on the main drive.

We examined and tested five new giant hard drives-Western Digital's Caviar AC32500, IBM's DeskStar 3, Seagate's Medalist 2140, the Quantum Big Foot, and the SureStore 2000A from Hewlett-Packard. (HP announced at press time that it would discontinue manufacturing disk drives by the end of the year.) We attached each drive to a Micron P100 Millennia with 16MB of RAM and formatted it as the primary C: drive. IBM's 2GB Deskstar 3 was the fastest drive across the board in our tests. But it was shadowed by Seagate's 2.1GB Medalist



IBM'S BIG 2GB DESKSTAR 3 drive was the fastest of the five hard drives we reviewed.

2140. Third and fourth places went to Quantum's 2GB Big Foot and Western Digital's Caviar AC32500, respectively, while HP's 2GB SureStore 2000A finished a close fifth.

#### **BIOS LIMITATIONS**

BEFORE YOU RUSH off to buy a new drive, we must tell you that possible conflicts exist between drives larger than 2.1GB and many BIOSes created between 1992 and February 1996. We've found three: First, the BIOS recognizes a maximum of 2.113GB; any additional storage on large drives is inaccessible. Second, BIOS conflicts could render useless as much as 2.1GB of your brand-new hard drive. Third (and nastiest), your PC may freeze after booting.

The good news is that BIOS manufacturers are aware of the problem and have corrected it. New systems shipping today should not be affected. If your system uses flash BIOS or a user-programmable BIOS chip, you can upgrade it (but contact your system manufacturer before attempting this

operation). If you have a nonflash or nonprogrammable BIOS, you'll need a ROM chip upgrade from your system manufacturer. Or if your new 2GB-size disk isn't letting you access all of its sectors, you might want to buy EZ-Drive, a software utility from Micro House International (800/926-8299)

that lets you take advantage of the drive's remaining space. But this product doesn't work if your computer is freezing up upon booting.

-Richard Popko

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#### **2GB IDE Drives**

PRO: Big hard drives, little prices.

CON: Can have BIOS conflicts.

#### Cavlar AC32500

Western Digital

800/832-4778

List price: \$399

READER SERVICE NO. 778

#### Deskstar 3

800/426-3333

List price: \$399

Medalist 2140

#### Seagate

408/438-8111

Street price: \$329

READER SERVICE NO. 779

#### **Quantum Big Foot**

#### Quantum

800/624-5545

Street price: \$300

READER SERVICE NO. 780

#### SureStore 2000A

#### Hewlett-Packard

800/826-4111

Street price: \$295

READER SERVICE NO. 781

#### Use TV as PC Monitor

Some people have a new, bigger monitor right under their noses, and they don't even know it. With AlTech's \$249 VSPro V64 video card inside your PC, you can hook up to a TV in order to enhance viewing of 3-D games, MPEG movies, or video conferences. (The PC hooks up to the TV as a VCR does, and a cable is included.) The card's scan converter lets the TV understand your PC's signals and uses AlTech's Flic-Free technology to make the picture stable. The card comes with 1MB of DRAM upgradable to 4MB. The only major drawback is that the VSPro V64 also acts as your graphics card, so if you've already got a great graphics board, this product's not for you. Instead, opt for one of the external, pocket-size scan converters currently on the market. AlTech Int'l. 800/882-8184.

READER SERVICE NO. 788

#### Portable Hard Drives

Your coworker asks you for a very large file. No problem: You just hand over your hard drive. The KanguruDock hard drive docking bay lets you pass around an enhanced IDE hard drive much as you would a floppy disk. Available in both an internal 51/4-inch version and an external version that connects via a parallel port, the docking bay accepts KanguruDisks that hold from a hefty 850MB (\$339) to a whopping 2.5GB (\$699) of data. And KanguruDocks are reasonably priced: List price is \$59.95 for the internal bay, \$79.95 for the external model. A SCSI version is in the works. according to the vendor. Interactive Media Corp., 508/429-9070, http://www.kanguru.com. READER SERVICE NO. 789

# → IT SHOULD LOOK BEAUTIFUL. OUR ENGINEERS HAVE SPENT THE LAST 28 YEARS POLISHING IT. ←



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Circle 237 on reader service card



pentium

How embarassing. You buy a new notebook, then find out you could have had better. Or paid less. Or both. The AST Ascentia™ P, on the other hand, is jam-packed with some of the hottest technology around- from a 133 MHz Pentium processor to our swappable SmartBay drive. Yet it still has a starting price of just \$3499\*. You'll even receive the personal attention of a reseller and AST's 24-hour support. So with the Ascentia P, the only thing on your face will be a big, fat smile. Just call 800-876-4AST, or visit us at http://www.ast.com.



Ascentia P 133 - 120 MHz Pentium processors, 12.1" or 11.3" diagonal SVGA TFT screens, up to 40 MB RAM, up to 2.1 GB hard drives, SmartBay modular 6X CD-ROM and floppy drive, 28.8 modem, SmartPoint Touchpad, and Lithium Ion battery. J

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Where things are

Circle 6 on reader service card

# Dictation Software: Improved, but Not Perfect

SINCE OUR LAST LOOK at dictation software ("What You Say Is What You Get?" January 1995), a lot has changed, but

Print Navigation Commands,

CALL FOR HELP: The Cue Card produces a list of possible commands.

some things remain the same.

In just under two years, these products, which let you enter text and data into your PC verbally, have dropped about \$300 while becoming more powerful. But after examining new Windows 95 versions from the category leaders, we found they are still a tad tricky to learn and use, and with prices at about \$700

#### DragonDictate 2.5 for Windows

PRO: Navigation features can duplicate mouse movements.

CON: Errors are difficult to correct.

Dragon Systems Inc.

800/825-5897

List price: \$695

READER SERVICE NO. 819

#### Kurzweil Voice Release 2.0 for Windows

PRO: Modeless dictation and navigation facilitate many tasks.

CON: Confuses commands with text input.

Kurzweil Applied Intelligence

800/380-1234

List price: \$695

READER SERVICE NO. 820

they are still not optimum replacements for your keyboard and mouse.

The input software is designed to let you dictate your

> way through applications such as those included in the major suites from Microsoft, Lotus, and Corel. Though installation was generally easy, learning to perform

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VOICE MOUSE: Dragon's Mouse Grid feature lets you direct the cursor more accurately via numbered regions.

basic tasks took as long as 2 hours. But from that point, the products generally handled word processing tasks with aplomb: We were dictating simple sentences at up to 60 words per minute with minimal errors.

Like their predecessors, these products offer navigation features that let you bark commands in order to perform tasks that typically require a mouse, such as opening menus or moving the cursor. Still, in informal tests with cc:Mail and Excel, we found the products tricky to use. (They include macro features that can simplify navigation tasks.)

#### VoiceType 3.0 for Windows 95

PRO: Allows more natural dictation. CON: Demands a lot of hardware and patience.

IBM

800/825-5263

List price: \$699

## CATEGORY LEADERS

DragonDictate 2.5 for Windows was the easiest to install, learn, and use (we saw a beta version). New users will appreciate the short on-screen instructions for correcting words it fails to recognize. (Making corrections is critical when using dictation products because the process teaches the software to recognize a word

the next time it hears it.)

DragonDictate also includes some unique navigation features. The on-screen Mouse Grid makes it easy to maneuver the pointer. The Grid divides the screen into

numbered areas. This feature let us easily compose and respond to e-mail in cc:Mail version 2.0 for Windows, something that was more difficult with the others.

Like Kurzweil Voice, DragonDictate learns to recognize a mistaken word only if you stop dictating and correct the error. (You can dictate without stopping and correct mistakes later, but you lose the chance to "train" the software.)

Kurzweil Voice Release 2.0 for Windows (we saw a shipping version) integrates navigation and dictation into a single mode, so you can dictate text, issue a command to move the cursor, for instance, and then go back to dictating. Because of this facility, it was the best product for entering data into a spreadsheet. It's also the only one in its price category that can recognize up to 40,000 words right out of the box. (But it's a memory hog, requiring 16MB of RAM on

## QUICK TAKES PIM With a World View

Most personal information managers don't go on holiday. Almanac does, though-in both Gregorian and Jewish calendar mode. This \$39.95 shareware application with scheduler, phone book, and to-do list uses a monthly calendar view as its home base (daily views are also available). Almanac tracks more than 50 time zones so you can define events in their local times and be punctual for that meeting in Istanbul. The program also lets you add holidays and special dates using templates. Almanac is available for Windows 3.x, 95, and NT. Impact Software, 800/777-7687.

READER SERVICE NO. 833

top of what your operating system requires.) On the downside, the software sometimes confused navigation commands with text we entered.

We had mixed feelings about IBM's VoiceType 3.0. In our informal testing of a shipping copy, it was the fastest and most accurate. It also lets you dictate an entire document-completing your thoughts without interruption-then go back and make corrections that train the software to recognize problem words. However, it was the toughest to install and learn. We had to call tech support just to get the microphone working. In addition, Voice-Type has the stiffest hardware requirements: IBM recommends a 90-MHz Pentium and 256K of secondary cache. The other products ran fine on our 75-MHz Pentium system.

All the products claim to work with 16-bit Sound Blaster-compatible sound cards.

—Randy Ross

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Dept. P3



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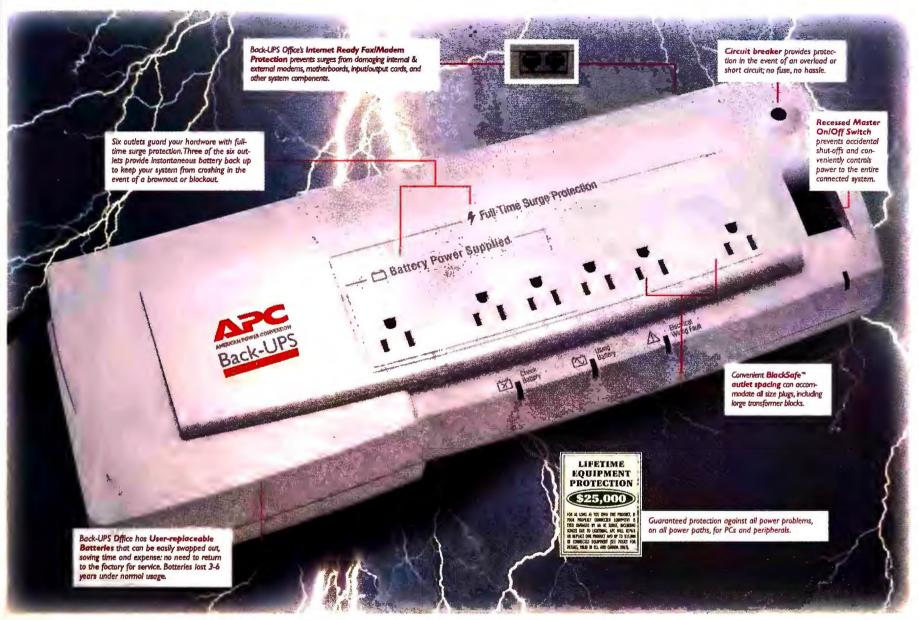
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Internet, or locks your keyboard before

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#### QUICK TAKES

**Enforced Ergonomics** 

Magnitude's ErgoSentry software attempts to make you take reg-

ular work breaks-but we didn't

like the way these seventh-

inning ergonomic stretches

played out. Granted, we did look

at a beta version of this pro-

gram, but we were put off by its

intrusive approach. We found

the program would freeze the

cursor when keystrokes or

mouse movements exceeded

our preset maximum. (The com-

pany says the final version cor-

rects this.) It alerts you to take

breaks with repetitive pop-ups

of irrelevant quotes and clip art.

For us, ErgoSentry quickly

became ErgoNuisance. The pro-

gram works with Windows 3.1,

95, or NT, and is \$45 per user.

Magnitude, LLC, 908/879-4303.

READER SERVICE NO. 834

# **Network Computer Cuts Corporate Costs**

A NETWORK COMPUTER promises an irresistible combination of low price, simple setup, and powerful connectivity. HDS Network Systems' @workStation is an NC appealing to the corporate set with a built-in ethernet connection and a POSIX-based operating system that lets users run apps from a Windows NT server. The system also uses HDS's Java-enabled browser, Explorer, for Internet access.

Like other NC products, the @workStation cuts costs by moving storage and processing burdens to a remote server. With a 33-MHz Intel i960 RISC processor and 42MB PC Card hard drive, the @work-Station can run as a standalone Internet machine. The system we tested costs \$1500 and comes with 32MB of RAM, a 17-inch Nokia Trinitron monitor, keyboard, and mouse. A video camera and software provides video conferencing over the network. The lowest-end system, which features just 4MB of RAM and a 17-inch gray-scale monitor, sells for \$750.

Setting up the @workStation can be tricky. As an NT client, the system must be configured with the usual array of network settings—a task best left to IS pros. Other-

#### @workStation

PRO: Corporate-minded network computer doubles as Internet device. CON: Pricey for a PC replacement.

**HDS Network Systems** 

610/277-8300

Street price: \$1500

READER SERVICE NO. 821



THE @WORKSTATION CAN run NT applications and access the Internet for as little as \$750.

wise, the @workStation does its job smoothly: Applications such as Microsoft Excel and Access ran without a hitch over a dedicated ethernet network, and we were able to switch between our NT ses-

HDS netOS environment easily. While HDS's graphical UNIX interface takes some getting used to, we found it easy to navigate, and the HDS Explorer browser-which is not related to Microsoft's Internet Ex-

plorer—let us view all the graphics and HTML layouts of Web pages. However, the browser software and Java applets loaded slowly, probably due to the less-than-mighty ig6o CPU.

If you run an IS department and need to install thousands of workstations on a corporate network, then check out the

sion and the

@workStation: It can save you a bundle. But for stand-alone desktops, the market is still too young to make this NC a smart buy.

-Michael Desmond

## Put Your PIM on Your Wrist

"DO YOU HAVE an appointment?" my doctor's receptionist asks in a crisp, businesslike tone. I glance at my Timex Data Link 150 watch, tap a button a couple times and reply matterof-factly: "Yes, at 3 o'clock." With the included Data Link 2.0 software, I can transfer information to and from Schedule+ for Windows 95: Not only can I upload appointments, anniversaries, and phone numbers, but I also can

transfer lists, five daily alarms,

and unique sounds for different alarms and ticklers.

This updated version of the Data Link Timex watch (which was first released some 18 months ago) doubles both the

#### Timex Data Link 150

PRO: Lots of room for contacts, appointments, and task lists.

CON: Single style may not suit all wearers.

Timex Corp.

List price: \$139 800/367-8463

READER SERVICE NO. 822

memory capacity—it now stores up to 150 appointments or task lists, for example—and the download speed of the original.

Data transfer is done à la Star Trek: You hold the watch face up to your computer monitor. The watch reads the data from your PC through a porthole-shaped eye on its face. The watch comes with a metal or leather wrist band, an Indiglo night-light, and a promised three-year battery life. It weighs 3 ounces, which is twice the previous weight. Even so, it still doesn't feel as heavy as my schedule.

—Michael S. Lasky ▶



# CRASHIELD ALONE COULD COVER THE COST OF WINPROBE 95

# (JUST THINK OF THE REST AS A BONUS)

#### Prevent Crashes and Fatal Errors Automatically

How many times has Windows 95 crashed on you? Can you *really* afford the downtime? Well, your worries are over at last. Because WINProbe 95's unique CrashShield works in the background, and intercepts fatal errors *before* they occur – and *before* you lose your work. But that's only the beginning of what WINProbe 95 has to offer you . . .

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You'll slash up to 50% off your PC repair costs by using over 200 comprehensive diagnostics – including non-destructive stress testing, automatic test logs and

preventive maintenance. So, go ahead and run at peak performance! Test your system completely from within Windows, and get the answers you need to solve Windows 95 hardware problems in a flash.

#### Clean Up and Edit the Registry Safely

Reduce your start-up time and increase efficiency overall by scanning for invalid Windows 95 entries, and removing them easily and safely. Use WINProbe 95's *exclusive* Registry Guru™ to make editing your INI files and the Registry a snap!

#### **Optimize Your PC's Performance**

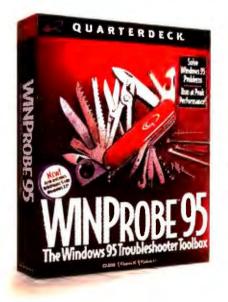
Control and improve system performance quickly and easily. Use WINProbe 95 to determine and re-assign individual application priorities, and speed-up important jobs. Plus, <u>only</u> WINProbe 95 features exclusive automatic recovery of lost or fragmented resources and memory!

#### Access Our Exclusive Knowledge Base

When Windows 95 help just isn't enough, simply click on the Knowledge Base. It offers a wealth of multimedia tune-up tips and how-to information on upgrading and repairing your computer.

#### Solve Problems Easily

Take control of your system! Quarterdeck's new WINProbe 95 is a state of the art, easy-to-use toolkit. You'll increase your productivity, and cut your downtime dramatically. To obtain WINProbe 95, your very own Windows 95 system toolkit, just visit the store nearest you – or simply call 1-800-683-6696!



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# NEW PRODUCTS

# Easy Direct Marketing With ConnX

MOST SMALL BUSINESSES and home offices rely on direct marketing. But finding the names and addresses you need can be difficult, if not impossible. Business ConnX and Neighborhood ConnX, two new products from Serious Business Software, attempt to meet the direct-mail needs of small businesses. While Busiinformation to several databases or print directly to mailing labels. You can also just browse the names.

Naturally, this kind of information comes at a price. Viewing the data is free, but there is a charge (in the form of "credits") for each name you actually export or print. You get \$50 worth of credits free with Business ConnX, which

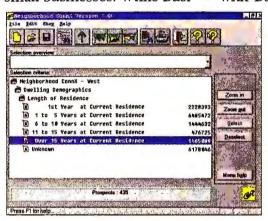
> buys you about 500 names. The more detailed the information, the more credits you use.

> Neighborhood ConnX works exactly the same way, except that it supplies the names of individuals, not businesses. You can narrow its universe of 90 million

households to your target population by searching for stats on home ownership and estimated household income, as well as eight other parameters.

Quarterly updates are available for both Business ConnX and Neighborhood ConnX through a yearly subscription of \$154. Small businesses will appreciate having access to such tools and data.

-Shane Mooney



THE CONNX SOFTWARE is easy to use, and can help take the guesswork out of finding your business's target demographics.

ness ConnX focuses on information relating to about 11 million U.S. businesses-including such data as company size-Neighborhood ConnX concentrates on consumer statistics.

To look for prospective customers in Business ConnX, you begin by choosing a type of company or a location. Then you work on narrowing the data by TRW credit rating, number of employees, and sales volume, as well as several other criteria.

We found this process to be surprisingly straightforward and simple, even without ConnX's helpful interactive tutorial. Once we refined our efforts to the most likely candidates, we could export the

#### Business ConnX, **Neighborhood ConnX**

PRO: Accessible information for small businesses.

CON: Per-address price seems high. Serious Business Software, Inc.

813/288-8548 List price: \$189

READER SERVICE NO. 823



# CleanSweep®95 is the first 32-bit uninstaller.

# We also believe it's the only uninstaller worth looking at, period. But you don't have to take our word for it.

"Because [the competition] has a weaker Windows cleanup module, I continue to recommend CleanSweep 95..."

INFOWORLD, JAN 22,'96

"...CleanSweep 95 is an essential purchase for anyone...with Windows 95."

PC MAGAZINE, JAN 9,'96

"Quarterdeck's CleanSweep gets the User's Choice Award for uninstaller software."

JERRY POURNELLE, BYTE, APR '96

"CleanSweep 95's user interface is still the simplest and most intuitive of all the commercial uninstallers PC Week Labs has seen."

JIM RAPOZA, PC WEEK, NOV 6, '95

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more!

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# Acrobat 3.0 Adds Interactive Elements, Browser Support

PUBLISHING

WANT TO EXPORT your business documents to the World Wide Web without using an HTML editor? With Adobe's new Acrobat 3.0 software, you can easily post documents created with standard word processing, spreadsheet, and presentation software without losing the documents' original look and feel. Moreover, an integrated form feature lets you add radio buttons and fillin fields, such as list boxes, so users can enter data directly or access it from any linked database. And Acrobat now comes with macros for Microsoft Word and Excel (for Windows 95) that create a function in your File drop-down menu for one-click Portable Document Format file output.

With the latest version of Acrobat, PDF documents can be embedded directly in an HTML page using the HTML <EMBED> tag; you don't need to download a separate Acrobat viewer to read them. You just fire up your browser (Internet Explorer or Netscape Navigator version 2.0 or higher), and voilà—there they are!

Tired of waiting for graphics-heavy Web pages to download? Acrobat 3.0 also adds a feature that lets users retrieve and view documents one page at a time, with text rendered first, while larger objects such as graphic images are downloaded in the background and rendered later.

An Acrobat 3.0 demonstration showed that forms and dynamic controls are easy to integrate into the PDF file

format using Adobe's proprietary tools to create them. With forms, you can add text fields, list boxes, radio buttons, and check boxes to otherwise static pages, maintaining extensive control over the appearance and behavior of the various form elements. Dynamic controls, such as buttons and live areas, can execute any menu item and perform a variety of actions, from navigation to playing movies and sounds.

Acrobat 3.0 supports Quick-Time (Macintosh and Windows versions) and AVI (Windows) movie formats. It also comes with the Acrobat Capture plug-in that lets you scan and convert paper documents into PDF files. The plug-in preserves the exact format and page layout of the original document, including the text and graphics. If a scanned word is not recognized, the program replaces it with a bit-mapped image of the word and places ASCII text behind it so it remains searchable. For automatic batch processing and reviewing capabilities, however, you'll have to use the full Acrobat Capture 1.01, which retails separately for \$895.

—Samantha Parent

#### Adobe Acrobat 3.0

PRO: Popular browsers support PDF files, online viewing is faster. CON: None.

Adobe Systems Inc.

800/272-3623

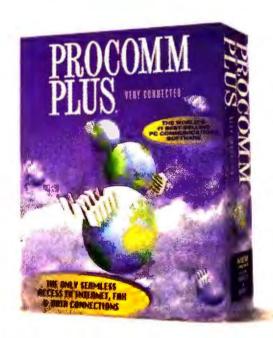
List price: single-user license \$295, ten-user license \$1595

READER SERVICE NO. 824



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# New Troubleshooter Fixes Windows 95 Hardware and Software Problems

Haluwai

1F YOUR TIME is money, Vertisoft's Fix-It, a new Windows 95 troubleshooting utility, could pay for itself in a hurry. Like CyberMedia's First Aid 95 application, Fix-It helps you resolve software conflicts, tunes up PC performance, and provides crash protection.

#### Fix-It

PRO: Tracks down and fixes several hardware and software problems.

CON: Incorrectly names Shortcuts.

Vertisoft Systems, Inc.

800/466-5875, 415/956-5999

Street price: \$50

READER SERVICE NO. 825

However, Fix-It also troubleshoots hardware configurations and supports over 1000 applications.

Although the beta version of Fix-It we reviewed was not complete, the program successfully sniffed out several problems. Fix-It found an incorrectly configured hardware device, then linked the device to Win 95's Device Manager to correct the error. Fix-It also discovered several applications with conflicts or missing files (such as .exe and .dll files we had temporarily removed or zipped), as well as other apps guilty of incom-

plete installations. You can click an on-screen tab to view details of each problem and its solution.

Fix-It isn't perfect. It didn't give me a chance to back out when it replaced several Shortcuts with the wrong names, and it had trouble recognizing an installed CD-ROM drive. I'd also like to see Vertisoft use its World Wide Web site to provide instant updates to the program. Still, based on our preliminary tests, Fix-It looks like a useful, affordable program for solving Windows 95 problems.

—Richard Jantz

#### **OUICK TAKES**

#### Performance Review

One of the best-selling performance review software products has been improved with new management tools and suggestions. Performance Now, out in a new Enterprise Edition, lets managers in medium- and large-size organizations work together to set and measure goals and share employee reviews. The \$249 program features new management-oriented performance categories, coaching ideas, and improved security. Performance Now also lets you extract performance review data for human resources applications or spreadsheets, making it useful for comparing departmental performance across your organization. KnowledgePoint, 800/ 727-1133.

READER SERVICE NO. 835

# **Better ZIP Apps**

MICROHELP AND SOFTWARE Builders have extended the already ubiquitous ZIP utility. MicroHelp Zip integrates with Windows 3.1's File Manager and 95's Explorer to offer a full drag-and-drop interface. A viewer lets you peek at the contents of a file without unzipping it. The \$29.95 MicroHelp Zip also supports the TAR and UUEncode/UUDecode compressed file formats that you'll often find on the Internet. Software Builders' \$39.95 NetZip utility gives you a drag-and-drop interface for ZIP and TAR files on your PC and, more notably, comes with a Netscape plug-in and Java applets that let you preview the contents of Zip files before you download them. MicroHelp, 800/777-3322, http://www .microhelp.com.

READER SERVICE NO. 826 Software Builders Int'l, 800/432-0025, http://www.softwarebuilders.com.

READER SERVICE NO. 827

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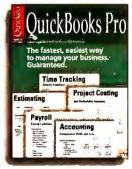
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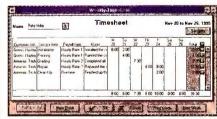
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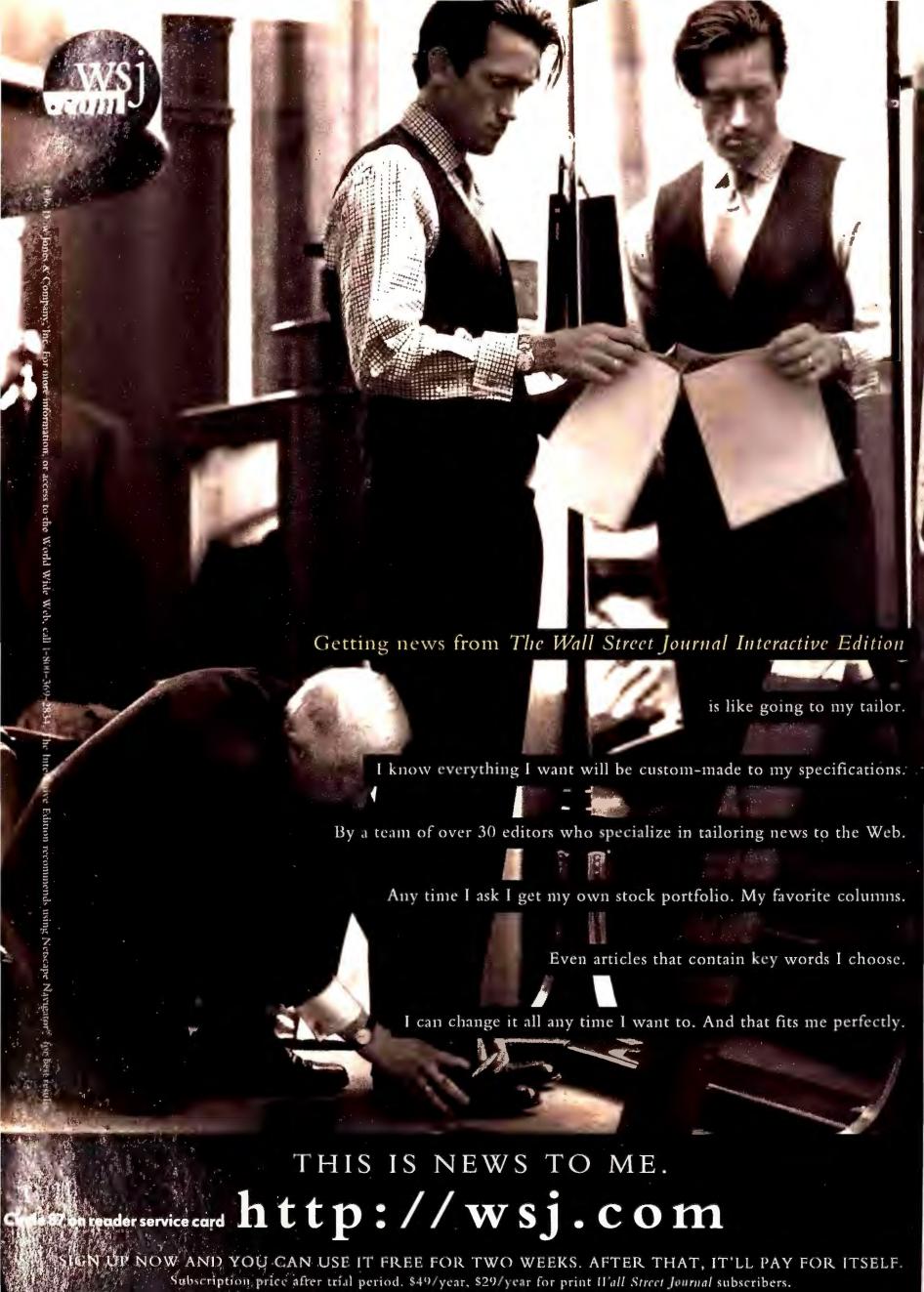




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FROM THE MAKERS OF QUICKEN®



# Inso Search Wizard Provides **One-Stop Web Searching**

WITH THE PROLIFERATION of search engines on the World Wide Web, checking each one for the information you need can be time-consuming. Inso Search Wizard, a one-stop clearinghouse for searches, addresses this problem by working in conjunc-

Inso Search Wizard

PRO: Super search engine.

CON: Fine-tuning parameters can

he laborious.

Inso Corp.

http://wizard.inso.com

Pricing: free

READER SERVICE NO. 828

tion with eight of the Web's more popular search engines.

To get basic stock-market information, for example, we did a preliminary search on AltaVista. What came up were pointers to financial stocks and bonds, as well as to sites of a more sexual nature. But Inso Search Wizard walked us through a few steps that helped refine and narrow our search. Then the program accessed several engines (Alta-Vista, Excite, Infoseek, Lycos, Magellan, Open Text, Web-Crawler, and Yahoo), correctly entered our parameters into each, and displayed each



THE INSO SEARCH WIZARD works with eight popular Web search engines to find information quickly and efficiently.

engine's icon along with a search summary. Clicking on one of the icons gave us access to that engine's results.

Even if you rely on one

favorite search engine, Inso Search Wizard is a great way to efficiently find the information you need.

-Shane Mooney

# Survey Says

Survey Said for the Web 5.3 lets you design forms or questionnaires for the World Wide Web. Respondents access the material via your Web page; they can view it using any browser. It's possible to create a variety of questionnaires, including a satisfaction survey, an order form, or a scheduling request survey, with this \$995 program that runs under Windows 3.x, Windows 95, or Windows NT.

You can structure your questions in a number of ways, then analyze the responses by category, quantity, rank, frequency, or other methods. Results can be displayed using more than 25 different graphs. A free Survey Said demo let me generate an HTML version of a sample survey form and view it in my browser. You can check out the demo at http://bicnet.com. Marketing Masters, 414/490-8770.

READER SERVICE NO. 829

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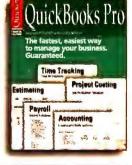
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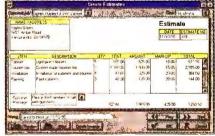
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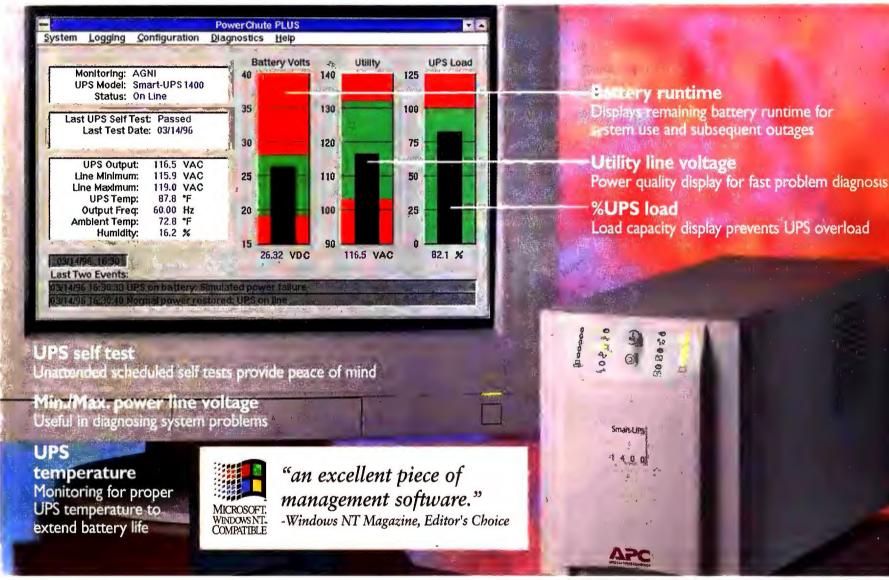


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sive protection against the single largest cause of NT data loss—power problems. APC's PowerChute® plus for Windows NT and APC Smart-UPS combine to give you the power management features necessary to make SURE you're protected.

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> MATRIX-UPSTM & Accessories Modular UPS for client/

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#### **Goofy Graphics Made Easy**

IMAGINE GRAPHICS programs that let you distort a photo as if it were Silly Putty. In a nutshell, that's what MetaTools' Kai's Power Goo and

#### Kai's Power Goo

PRO: Entertaining image effects.

CON: None.

MetaTools, Inc.

800/472-4025

Street price: \$49.95

READER SERVICE NO. 830

Squizz 1.5

PRO: Plug-in for distortion effects.

CON: Works only with plug-in apps.

The Human Software Co.

408/399-0057

List price: \$99

READER SERVICE NO. 831

Human Software Co.'s Squizz 1.5 can do. With either of these affordable and easy-to-use programs you can add special effects to bit-mapped images.

Kai's Power Goo features a sleek, colorful interface. Just load a photo, click an effects tool, and select the part of the image-such as a person's eyes—that you wish to smear, bulge, or twirl into a subtle or more mischievous contortion.

You can save the image, or combine several images into a morphlike movie, which you can save as an AVI video clip. Goo also has tools that let you blend two pictures together. The \$49.95 Goo comes with a library of stock photos.



FUNHOUSE MIRROR EFFECTS are easy to add with Kai's Power Goo.

Unlike the stand-alone Goo package, the \$99 Squizz is a graphics plug-in filter that works only with plug-in-compatible applications, such as Adobe Photoshop and Corel Photo-Paint. Squizz doesn't do as many tricks as Goo-no movies or picture blends. But there are enough tools to let

you squeeze and twist images to your heart's delight. It has more professional-level features than Goo, such as a grid mesh and RGB and CMYK color editing modes.

With either product you can create fantastic images, but Goo is more entertaining.

-Richard Jantz

#### **Small-Biz Billing**

PROFESSIONALS WHO rely on billing time to make a living should check out Time & Profit 1.2 for Windows. It takes on most of the organizational headaches associated with tracking billing records. Time & Profit integrates and automates client records and calendar, billing, and accounting functions. The program also allows one-button billing and printing of invoices and statements. With these steps built into the program, Time & Profit should let you spend less time keeping records and more time doing billable work. Time & Profit does accounting in the background automatically, letting you move on to other tasks. The product lists for \$269. BytePro, 800/713-5322, 714/622-0884.

READER SERVICE NO. 832

For more information about a product, contact the manufacturer or circle the number on the reader service card.

#### "Did I really make any money on that job?"

That's only one of the things you know with QuickBooks' Pro, an entirely new kind of software that perfectly integrates time tracking, estimating, job costing, invoicing and payroll with the #1 selling accounting software, QuickBooks.

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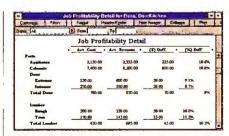
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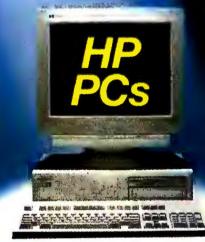


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  for parts and labor

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- 1,000MB\*\* SCSI-2 high-performance
- PCI Matrox Millenium graphics card with 3D acceleration and 2MB WRAM pgradable to 4MB or 8MB
- 7 mass storage shelves (5 front accessing
- 6 expansion slots: 3 PCI, 1 PCI/ISA combo and 2 ISA
- PI NIC with up to 100 Mb/s throughput
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- L000MB\*\* Enhanced-IDE hard drive
- PCI Matrox Millenium graphics ard with 3D acceleration and 2MB WRAM, upgradable to 4MB or 8MB
- 7 mass storage shelves (5 front cessible)
- 1 expansion slots: 3 PCI, 1 PCI/ISA • mbo and 2 ISA
- Integrated 16-bit audio and 4X CD-RON
- Microsoft Windows NT 3.51 or IBM

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# Helpful hint: Rip out and pin up next to Compaq and IBM ads.

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Screen shot examples from MechWarrior 2

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# 111VES BEHIND RATINGS BEHIND THE

THINK 8X DRIVES ARE TWICE AS FAST AS 4X? THINK AGAIN. OUR TESTS OF 21 CD-ROM DRIVES AND MINICHANGERS SEPARATE THE REAL THING FROM THE PRETENDERS.



#### FARRANCE

THESE DAYS, IT'S HARD to imagine a serious computer user who doesn't need a CD-ROM drive. Even if you don't play games or use references like Microsoft Bookshelf, you still have to install and upgrade software. And in case you haven't noticed, today's apps are big. It takes a lot longer to install Office Pro 95 from 24 floppy disks than from a single CD-ROM. But not all drives are created equalthere are critical differences you need to know about. If you go about buying a CD-ROM drive the same way you shop for a new toaster, you'll likely get burned. For this special report, we reviewed 21 single-disc and minichanger CD-ROM drives, including some of the fastest available. (All are internal models except for one minichanger.) For the single-disc drives, we concentrated on 8X and 6X drives and exclud- 🕨

> PHOTOGRAPHS BY DANIEL FURON



How much do these differences mean to your everyday work? Plenty: CD-ROM business tasks, such as installing software, giving slide-show presentations, and running apps from disc, all benefit from the fastest drives you can buy right now (see the Test Report). However, if commercial titles run well on your cur-

couldn't best our 4X Mitsumi.

rent drive, don't expect much improvement. Publishers master these apps to the lowest common denominator so they'll run on slower drives.

We also reviewed five CD-ROM minichangers, all 4X models (the fastest available at press time). These units cost more than most single-disc drives, but they should interest those who frequently switch back and forth between CD-ROMs, as they hold multiple discs and do the switching for you (see "Let Your Changer Do the Swapping").

No discussion of CD-ROMs today would be complete without a serious look at DVD-ROM—which essentially will be a bigger and better CD-ROM. So we've included "DVD: One Giant Step for CD" to fill you in.

For easy comparison, we've also included a chart on the following pages that allows you to compare prices along with other factors critical to your buying decision. It ranks the top ten single-disc drives and all five minichangers separately in order of overall value, and includes comments on each product. For easy reference, we've included our own

grades on price, performance, ease of installation, and ease of use. Other info—such as average access time, built-in buffer size, mean time between failures, and length of warranty—comes straight from the vendor.

#### WHAT'S THE DIFFERENCE?

on your needs. CD-ROM drives come in two flavors: Enhanced IDE drives are inexpensive and the best choice for most users. SCSI drives cost more; typically they're used by businesses and in shared LAN applications. EIDE CD-ROM drives, often called ATAPI (for AT Attachment Protocol Interface) drives, come only as internals, so you'll need a free accessible 5½-inch drive bay.

If you're adding an EIDE drive and your PC is just a couple years old, you can probably hook the drive to a secondary IDE adapter on your motherboard. Otherwise, you'll need an EIDE card, which many of the drive kits include.

SCSI drives, such as the two Plextor models in this review, are more expensive. Few motherboards include integrated SCSI, so you'll have to make sure you have a SCSI adapter. But as with other SCSI peripherals, it's possible to hook up as many as seven SCSI devices to each adapter card. That saves PC slots and makes SCSI CD-ROM drives the best choice for server-based network hookups. (EIDE drive hookups are limited to two per connector.) For top performance, you can combine SCSI drives with a fast bus-mastering PCI controller. Bus-mastering adapters have their own processors to take care of delivering data from the CD-ROM to memory. That leaves the CPU free to do other work.

All the drives seem well built, but some designs do stand up better to hard use. SCSI drives typically require a special CD-ROM holder called a caddy. Caddy feeds are sturdier but less convenient than the motorized tray feeds found on most EIDE drives. Caddies also protect discs from dust and fingerprints. Finally, if you lack a free bay, SCSI external models are available for about \$100 more than comparable internals.

#### BEST BUYS

THERE'S SOMETHING HERE for everyone: The number one Diamond Multimedia 8X CD-ROM Upgrade Kit is faster than any of the other EIDE drives. For \$249, it includes Compton's Interactive Encyclopedia 1996 and the ISA adapter that older

PCs will need. At \$604 and \$464, the uncompromising Plextor 8Plex and 6Plex SCSI drives are priced beyond the budgets of most individuals. But their top performance, two-year warranty, and bundled PCI SCSI card make them the best choice for business and network use. The \$199 Teac CD-58E 8X CD-ROM Drive Kit is a good performer that accommodates older PCs with an ISA EIDE card. The same price will snag you our fifth Best Buy, the GoldStar GCD-R580B, a quick, no-frills 8X EIDE drive that's good for personal use.



THE PLEXTOR 8PLEX SCSI DRIVE (right) is fastest and most expensive with its Adaptec
PCI card. The Diamond Multimedia EIDE drive (left) combines good speed and a lower price.

Thanks to the generally clear instructions that came with each single-disc drive, all the installations were quite easy. At press time there was still no official Plug and Play spec for IDE devices. But almost all the EIDE models worked with Windows 95's automated built-in CD-ROM support. With earlier versions of Windows, you'll always have to install a separate software driver. The Plextor SCSI kits require installation of both an adapter card and drivers, but all the included hardware supports SCSI Plug and Play and worked without a hitch.

#### **BUYING THE BEST**

WE CHOSE OUR BEST BUYS based on price, performance, ease of use, and service policies. Our number one choice is the Diamond Multimedia 8X CD-ROM Upgrade Kit. For \$249, this 8X EIDE drive is hard to beat, and it outperformed every other EIDE drive we tested. The bundled Compton's Interactive Encyclo-

pedia 1996 is a nice extra, and an ISA adapter is thrown in. (Don't confuse this product with the much slower 8X Diamond Multimedia Upgrade Kit that was being sold last fall.)

Plextor's 8Plex and 6Plex drives earn the next two Best Buys. The best choices for business and network use, they earn their stripes with top-notch performance and attractive two-year warranties. Plextor's bundled Video CD With MPEG software driver allows you to play video CDs. And each kit includes an excellent 32-bit Adaptec AHA-2940 PCI host adapter. At \$604 for the 8Plex and \$464 for the 6Plex, neither will fit the budget of the casual buyer. Although they're available without adapters for \$399 and \$279 respectively, the PCI card contributed strongly to their first- and second-place speed ratings.

Our last two Best Buys are affordable EIDE drives. The Teac CD-58E 8X CD-ROM Drive Kit is a bit slower than the

Diamond. But for \$199, Teac throws in audio CD player software along with an ISA interface card. The GoldStar GCD-R580B 8X model uses the same drive mechanism as the number one Diamond, but it performed less quickly. The \$199 price buys you just the drive and its drivers with no software freebies or interface card.

#### **TESTS THAT WORK**

THE PC WORLD TEST CENTER designed its benchmarks to reflect the demands of real work and determine the drives' ultimate capabilities. The 8X drives are new enough that we could find no commercial application that could really test their video capabilities. So we asked the Intel Architecture Development Lab to master a video test to our specifications using a 4X transfer rate and the company's Indeo compression code. The clip ran at 30 frames per second, and the system had to take on a tremendous decod-

#### CD-ROM DRIVES AND MINICHANGERS

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	SINGLE-DISC INTERNAL DRIVES	Street price (5/21/96)	Drive speed	Comments	Price rating	Overall performance rating	Ease of installation	Ease of use
1	Diamond Multimedia Kit*	\$249	8X	Fast EIDE drive comes with encyclopedia.	average	good	very good	outstanding
2	Plextor 8Plex*	\$604²	8X	Ultrafast with included PCI card, great for heavy use.	very expensive	outstanding	very good	very good
3	Plextor 6Plex*	\$4642	6X "	With the PCI card, it's almost as fast as the 8Plex.	expensive	very good	very good	very good
4	Teac CD-58E Drive Kit*	\$199	8X	Good performance for the price, plus ISA card.	inexpensive	good	very good	outstanding
5	GoldStar GCD-R580B*	\$199	8X	Fast and well priced, but comes with no extras.	inexpensive	good	very good	outstanding
6	Teac CD-56E Drive Kit	\$179	6X	Good performer for the money, includes ISA card.	inexpensive	satisfactory	very good	outstanding
7	Mitsumi FX800	\$199	8X	Good price/performance balance.	inexpensive	satisfactory	very good	outstanding
8	NEC MultiSpin 6V	\$99	6X	Not fast, but it's an NEC and the price is great.	very inexpensive	poor	very good	outstanding
9	Mitsumi FX600	\$149	6X	Fair price/performance balance.	inexpensive	poor	very good	outstanding
10	Toshiba XM 5602	\$170	6X	Well made, but the tech support hours are short.	inexpensive	POOT	very good	outstanding
	MINICHANGERS							
1	Nakamichi MJ 4.4	\$279	4X	Convenient slot feed, as fast as some 6X drives.	average	poor	very good	very good
2	Alps CD544C	\$260	4X	Uses a disc magazine, had some installation woes.	average	poor	poor	good
3	Pioneer DRM62AX	\$329	4X	You'll have to add the cost of a SCSI adapter.	expensive	poor	poor	good
4	Turtle Beach TBS 3000	\$249	4X	Holds only three discs, but has full audio controls on front.	average	POOL SOME AND	very good	good
5	NEC MultiSpin 4X4	\$279	4X	NEC says upgraded driver should make it perform faster.	average	unacceptable	very good	very good
n.	# Back Day 10 house on Chineses.				Andrew State of the State of th			1

ing workload. If a drive demanded too much help from the CPU, the system dropped an unacceptable number of frames, and the video display would become jerky. By counting the dropped frames, we were able to measure which drives are best for video play.

We also timed a Corel Pro Photo CD slide show to see how quickly each drive could page through photographic images. This fairly difficult test is a very real-world measure of the performance you can expect when displaying slides during a presentation. The next benchmark used Microsoft Bookshelf 95 to perform a simple text search. Then to get a sense of how much time could be saved installing a business application suite using a fast drive, we installed Lotus SmartSuite 96 from CD-ROM.

Some software apps load automatically when you insert their discs. We sampled this auto-run capability using TurboTax 95, measuring the time elapsed from loading the disc in the drive until the program's welcome screen appeared. To complete our TurboTax 95 test, we ran the program from the CD-ROM.

The two Plextor drives were fastest overall. And as with the other fast drives, they were fairly consistent on all benchmarks. On the tough video test, their bus-mastering adapters took over, efficiently controlling the data transfer and allowing the system CPU to handle the video decompression. The result for the 8Plex was the only perfect video score, and the 6Plex was nearly as good. In contrast, most of the drives reviewed here dropped over a third of the frames; the Diamond Multimedia is the only other drive that dropped less than a tenth of the clip's total frames.

The Plextor drives also went to the head of the class on the Corel Pro slide show. The relatively easy Bookshelf text search produced very even results, and all the drives performed acceptably.

On the SmartSuite installation, you might expect an 8X drive to outperform a 4X two to one. But more than the transfer rate comes into play, as a good share of the time is spent writing to the hard disk. So the variation between the fastest drive (the Plextor 8Plex) and the slowest (the NEC MultiSpin 4X4 minichanger) was only about 25 percent.

The TurboTax 95 test showed a diversity of results that didn't always correlate with the drives' performance on other benchmarks. On the auto-run part of the test, the Plextor 6X and 8X drives, the Teac 6X drive, and the Alps 4X minichanger all finished in 8 seconds or less, whereas the 4X Pioneer minichanger took 24 seconds to accomplish the same task. Running TurboTax from the CD-ROM itself, the fastest drives completed this part of the test in 20 seconds or less (down to a low of 13 seconds by Mitsumi's FX600). The slowest, the Creative Blaster CD 6X, took 45 seconds.

		FEAT	U R E	5			SE	RVICE	AND	SUPP	QRT
Interface	Interface card included	Bundled application software	Average access time (ms)	Built-in buffer (K)	Win 95 plug and play	Mean time between failures (1000 hours)	Warranty (years)	Weekday support (hours)	Repair turnaround (days)	Phone	Reader service number
EIDE	•	Compton's Encyclopedia 1996	150	256	•	125	1	14¹	3	800/468-5846	601
SCSI	•	Video CD With MPEG	115	256	0	100	2	11	7	800/475-3986	602
SCSI	•	Video CD With MPEG	145	256	O	100	2	11	5 <b>7</b>	800/475-3986	603
EIDE	•	audio CD player	140	256	•	100	1	93	10	800/888-4923	604
EIDE	0	-	150	256	t is to not a grown	50	1	9	7	800/243-0000	605
EIDE	•	audio CD player	140	256	AND	50	1	93	10	800/888-4923	606
EIDE	0	Disc Detective	150	256	•	50	1	10 <sup>a</sup>	7	800/648-7864	607
EIDE	•	-	145	128	•	100	1	12.53	10	800/615-5566	608
EIDĒ	0	Disc Detective	180	128	•	50	1 🐩	10 <sup>3</sup>	7	800/648-7864	609
EIDE	0	-	135	256	•	100	1	7	-	800/334-3445	610
EIDE		e and antition of the transition of the description in the antition control to the control to th	250	128	0	100	PRIVITA AND FRA	10	3	800/421-2313	611
EIDE		MultiPlayer	210	128	0	50	1	12 <sup>3</sup>		800/825-2577	612
SCSI	0	_	150	128	0	50	1	11 3	5	800/444-6784	613
EIDE	•	50 shareware, CD Sampler	200	256	0	-	2	7	5	510/624-6200	614
EIDE	•	_	250	128	0	50 *	1	12.53	10	800/615-5566	615
Yes	O No										

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#### A CD-ROM DRIVE IN EVERY PC

YOU'LL SEE SOME FAMILIAR names that didn't earn Best Buys. Teac's \$179 6X EIDE drive came close at number six; it's just a little slower than Teac's 8X, with identical features. The seventhplace 8X Mitsumi FX800 wasn't quite as fast as Teac's 6X. But for \$199, Mitsumi throws in its Disc Detective audio soft-

ware for premastering CD-CD-ROM hybrid discs to tape. Mitsumi's similar \$149 6X FX600, which doesn't perform as well, takes the ninth spot. NEC's good reputation and a tantalizing \$99 price should help a lot of buyers overlook the MultiSpin 6V's undistinguished performance. Landing in eight place, it includes an EIDE card. Another bargain, the \$79 Aztech Zeta 6X EIDE model, will interest many buyers, but it didn't perform as well as our 4X comparison drive. The tenth-place 6X Toshiba XM 5602 is a serviceable, well-made EIDE drive. It comes with Toshiba's impeccable reputation but no extras for \$170.

After the Aztech, which almost made our chart, the value level plunges.

#### Let Your Changer Do the Swapping

DO YOU FIND YOURSELF using the same few CD-ROMs over and over? If so, a CD-ROM minichanger could save you some disc shuffling. These handy devices are CD-ROM drives that hold three to six discs at a time, so your kids won't get peanut butter on your Quicken Deluxe every time they want to play The Magic School Bus.

We reviewed five minichangers: Turtle Beach Systems' \$249 TBS 3000, Pioneer's DRM62AX SCSI changer (\$329 with no SCSI adapter), the \$260 Alps CD544C, the \$279 Nakamichi MJ 4.4, and the \$279 NEC MultiSpin 4X4. The Turtle Beach holds three discs, the Pioneer six, and the others four. All the changers are EIDE internals except the Pioneer, which is a SCSI external. The Nakamichi is the only one good enough to merit consideration; it outperformed all but two of the 6X single-disc drives we reviewed. At press time the fastest minichangers still used a 4X drive mechanism-although Nakamichi planned to have a more expensive SCSI 8X model out by midsummer. Four of the five changers had performance inferior to our 4X Mitsumi CRMC FX400E comparison drive's. Ironically, the NEC, which uses the Nakamichi mechanism (but NEC's driver). was the slowest. NEC said an updated driver-which arrived too late for performance testing-would fix the problem.

#### **KEEPING TABS ON DISCS**

WE FOUND ONE COMMON SOURCE of frustration: When we rotated in a new CD-ROM, we had to keep track of which drive Windows 95 assigned the program. And every time we reinserted a disc, we had to put it in the same internal position. Otherwise, we got 'Not Found' when trying to load. Pioneer's driver allowed access to all the CD-ROMs under one drive letter-as will NEC's updated driver.

The four-disc Nakamichi and NEC changers came with clear foldout instructions and stood out for ease of installation. The threedisc Turtle Beach TBS 3000 minichanger's documentation isn't as good, although the product was almost as easy to install.

On the other hand, setting up the shoebox-size external Pioneer DRM62AX SCSI changer had us grabbing for the Maalox. In a classic example of catch-22, we found we had to load a driver from our Windows 95 CD-ROM-but without the drive installed we couldn't access the disc. So we had to install one of our other CD-ROM drives, copy the needed driver, then install the Pioneer unit. The DRM62AX ran smoothly once it was installed.

The Alps CD544C also presented some challenges. Alps recommends using the bundled EIDE adapter, but even when we tried to disable the motherboard's secondary IDE adapter, our PC couldn't find the drive under Windows 95. We backtracked and used the secondary IDE adapter, and installation proceeded—though we had to download a new driver to correct a drive-addressing glitch.

#### **SLOTS WORK BEST**

THE DRIVES TAKE VARIOUS approaches to accepting discs. The Alps, Pioneer, and Turtle Beach use a magazine you preload and insert. The Nakamichi and NEC load and unload discs through a slot. They all worked, but we liked the convenience of the Nakamichi and NEC the best and the Alps's somewhat awkward magazine the least.

The Pioneer's six-disc capacity is impressive. You load each CD into a magazine with finger tabs staggered for pulling out each disc. In contrast, the magazines on the Alps and Turtle Beach units have their tabs lined up, so it's harder to get to the middle discs. The Turtle Beach features full audio controls on its front-a nice touch.

We did like these changers, despite their lackluster performance. But with the rapid move from 4X to 6X and 8X in single-disc drives. we suggest waiting for changers with faster mechanisms. The faster (and more expensive) 8X SCSI version of the Nakamichi MJ 4.4, the best of this group, should be available by the time you read this.









HOW DO YOU FEED A MINICHANGER? The Nakamichi (upper left) has no magazine-you just slide discs one at a time into its loading slot. The Pioneer (upper right) uses a blg six-disc magazine with convenient staggered finger tabs. The Turtle Beach (lower left) and Alps (lower right) use three- and four-disc magazines, respectively.



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56i	15" FST (13.6" VIS)	.28mm dot	1024x768 @ 80 Hz NI
56m <sup>†</sup>	15" FST (13.6" VIS)	.28mm dot	1024x768 @ 80 Hz NI

† Built-In stereo amplifier and speakers. \* Requires DDC compatible video card. Microsoft and Windows 95 are registered trademarks of Microsoft Corporation







The Creative Blaster CD 8X EIDE drive ! has just 6X-level performance at the \$250 price of an 8X. Even the bundle of Grolier's Multimedia Encyclopedia, a couple of racing games, and an EIDE card couldn't sell us on this one. We have similar feelings about Philips's Six Speed CD-ROM Drive. Philips has a solid reputation as a developer and manufacturer, and its two-year warranty is exceptional. But this slow 6X EIDE performer includes no software bundle or even an interface card to justify its \$250 price. The last three EIDE drives—an 8X from Chinon and two 6Xs from Turtle Beach Systems and Creative Labs-simply cost too much (at about \$200) for their slow performance.

#### **LOOKING AHEAD**

BY THE TIME YOU read this, 6X and 8X CD-ROM models will be predominant. (Some dirt-cheap 4X bargains will be available, though we wouldn't suggest you buy them.) But at press time 8X drives were still a bit hard to come by. In fact, some of the biggest vendors, such as NEC, Philips, Sony, and Toshiba,

#### DVD: One Giant Step for CD

NOW THAT CD-ROMS have become indispensable, keep your eyes peeled for the next generation: DVD. Digital video is the driving force behind this new technology, but the same discs will also be used for impressive new DVD-ROM apps. The CD-size discs will pack a formidable 4.7GB-enough to fill seven standard CD-ROMs. Publishers promise silky smooth full-motion video that fills up your whole screen, plus a slew of reference works, training apps, and, yes, games, chock-full of video clips, pictures, and sound.

DVD-ROM drives should play all current audio and video CDs along with today's commercial CD-ROMs. The true transfer rate for CD-ROMs will be about 3X; the drives will get an effective throughput of 9X from DVD-ROMs. But DVD-ROM drives won't read discs written on CD-Recordable drives.

The high capacity alone attracts publishers. Some games, such as Wing Commander IV, now require as many as six CD-ROMs. DVD-ROM developers plan first to enhance popular CD-ROMs with more video and sound. But at press time the DVD spec wasn't yet formalized, and copy protection issues remained unresolved. Still, Activision, SoftKey, and others were readying DVD-ROM releases.

There's general agreement that DVD-ROM will supplant CD-ROM, but even Toshiba predicts the full transition will take at least a couple of years. Some PC industry heavyweights are already laying out their DVD-ROM game plan. Compag vice president Laurie Frick says her company is committed to making DVD-ROM standard on its high-end PCs by late 1997. But the first EIDE DVD-ROM drives may

cost consumers up to \$800, so Plextor general manager Dave Butler has reservations about their quick adoption in business: "We don't think the typical business user is likely to buy a pricey DVD-ROM drive until significant business applications are available."

#### MOVIES ON DVD

THE FIRST DVD PRODUCTS may be strictly for entertainment. At press time movie moguls were hoping to release DVD video discs before year's end. Warner alone has promised to make 50 DVD movies available to play on the first set-top home video units from Toshiba and others. (These set-tops will also play audio CDs but not DVD-ROMs.) Studio execs were tight-lipped about prices. But with the first Toshiba set-top players starting at around \$599, DVD looks like an expensive, nonrecordable alternative to the VCR.

But DVD will really improve on video CDs, which have room for about 70 minutes of VHS-quality video and near-CD sound. DVD has room for over two hours of digital video, CD-quality surround sound, multiple language tracks, subtitles, editor's notes, and cast bios. And no longer will you need multiple discs for most movies.

Eventually, DVD disc capacity will grow, first to dual-layer 8.5GB discs and then to double-sided discs holding an amazing 17GB, DVD-Recordable could arrive as early as next year. But even the recordable drives won't have the rerecordable flexibility of a VCR. Ultimately it will take at least a couple of years for a rewritable DVD to make you cart your trusty VCR off to the attic.







IN TIME, DVD MAY SEND CD-ROM THE WAY OF THE MODEL T. Toshiba should be first to market with its set-top DVD video player (right). It will allow you to view movies-such as Warner Brothers' Free Willy 2-in stunning digital video. The DVD player will play audio CDs, but if you want a drive that does it all, including running DVD-ROM and CD-ROM apps, you'll need a PC-based DVD-ROM drive (left).



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#### TEST REPORT

#### Plextor 8X and 6X Drives Win on Speed

There's more to CD-ROM performance than speed designations: The best 6X drive outperforms most 8Xs.



Corel Pro Photo CD slide show

Bookshelf 95 text search

SmartSuite 96 installation

TurboTax 95

Drives are arranged in order of overall performance from best to worst, based on the normalized, weighted scores from five tests. 1 Frames dropped out of 2194 total.

HOW WE TEST We use Compaq Deskpro P-133 PCs with Plug and Play BIOS, Windows 95, 16MB of RAM, a Matrox MGA Millennium graphics card, and a Creative Labs Sound Blaster AWE32 sound card. Each drive and adapter (if applicable) is installed according to the vendor's instructions. Corel Pro Photo CD slide show (26 percent of weighting): We time the display of a slide show of 100 photos. Bookshelf 95 text search (4 percent): We time the search for a text string. SmartSuite 96 installation (11 percent): We time installation of SmartSuite 96 from its CD-ROM. TurboTax 95 (22 percent): We time the automatic start-up from insertion until the welcome screen is displayed. Then running the program from the CD-ROM, we measure the time it takes to load. Video clip (37 percent): Using Win 95's Media Player, we run a 73-second video clip mastered to play 30 frames per second at a 4X transfer rate (600 K/sec). We count the number of frames dropped. Higher overall performance scores are better. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

didn't have 8X models ready for review.

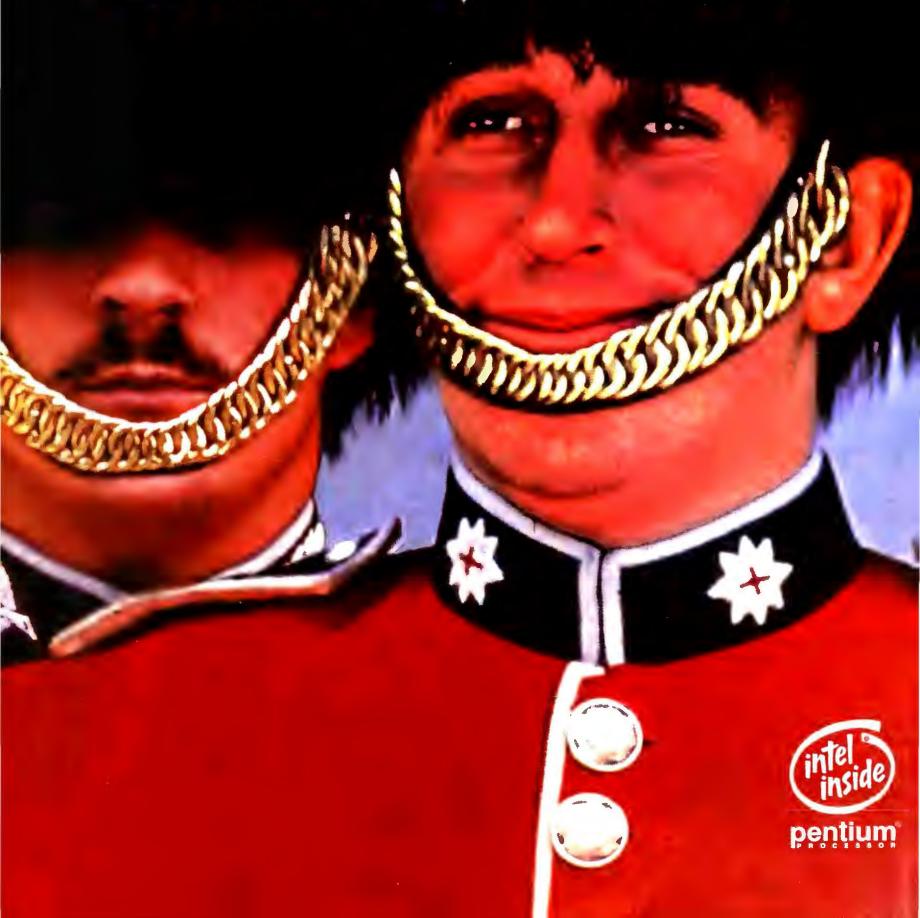
CD-ROM drives won't rest on their 8X laurels. At press time Pioneer and Pinnacle Micro had each announced products with claimed 10X throughput, and manufacturers are projecting 12X drives for next year. But considering our experience with this review, we remain skeptical of any performance claims until we test the products.

Theresa W. Carey is a freelance writer and consultant, and the founder of Alta Business Solutions in Palo Alto, California. Rex Farrance is a senior associate editor for PC World. Test design and testing by Susan Silvius and Dave Casini of the PC World Test Center.

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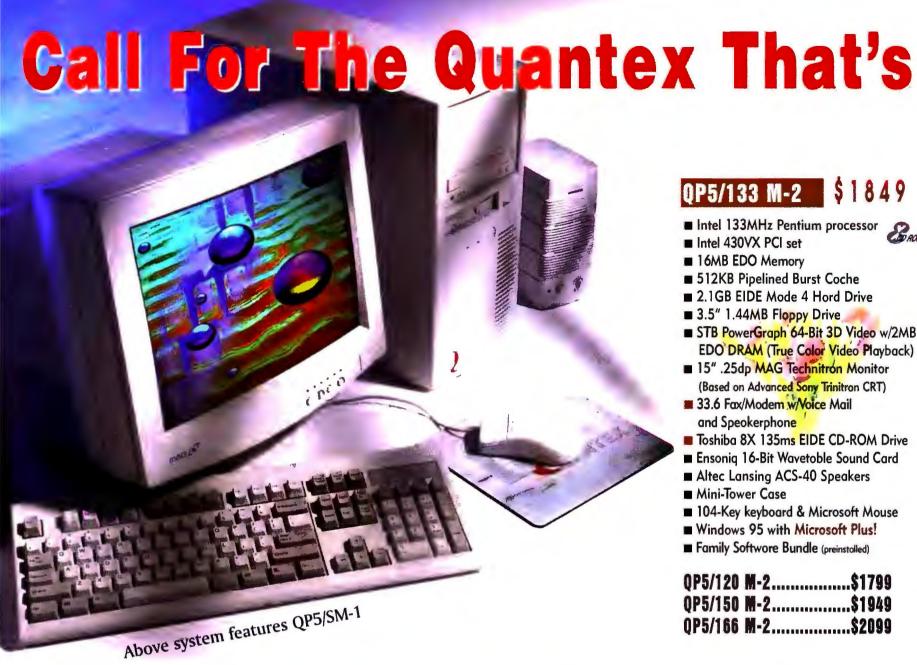


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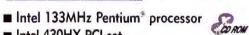
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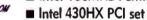


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Can Corel's supercheap, Internet-savvy WordPerfect Suite 7 beat Microsoft Office 95 and Lotus SmartSuite 96 at their own game?

> Edited by Harry McCracken and Cathy Kenny

REMEMBER Let's Make a Deal? Picking a new Windows 95 application suite is kind of like being a game show contestant. Do you swap your nice but unspectacular Windows 3.1 suite for one of the Windows 95 suites concealed behind door number one, two, or three? Or are you better off sticking with the product you already have?

As each of the three major Windows 95 suites have shipped, we've compared them to each other and to their old Windows 3.1 versions. In December 1995 we discovered that the suite behind door number one, Microsoft Office 95, was a nice improvement in some ways, but not compelling enough to make upgrading a must. In May we reviewed the suite behind door number two. Lotus Smart-

Suite 96. It offers powerful workgroup features, plus friendly database and group-scheduler programs. But its Word Pro is so slow and 1-2-3 so outdated that we had to recommend Office 95.

Behind the third door is Corel Word-Perfect Suite 7, the last major office suite to make the move to Windows 95. The successor to Novell's 16-bit PerfectOffice, this package offers a huge assortment of nice applications at a tantalizing price. The \$269 street price gets you its core applications: the WordPerfect 7 word processor, Quattro Pro 7 spreadsheet, and Presentations 7 presentation program, plus Starfish's Sidekick 95 personal information manager, CorelFlow 3 for flowcharting, Envoy 7 for electronic document publishing, the Netscape Navigator 2.01 Web browser, the Dash-

# COREL TAKES ON MICROSOFT



board 95 desktop utility, and a generous helping of clip art and fonts. And the competitive upgrade is only \$99—less than half what you'd pay to upgrade to Office 96 Standard Edition.

As if that weren't enough software in one package, Corel offers a \$499 version called Corel Office Professional that includes everything that comes with WordPerfect Suite, plus Borland's Paradox database, Novell's GroupWise e-mail and scheduling program, and Corel's own CorelDraw graphics application and Info-Central PIM. The Pro suite wasn't ready in time for our review, but it should be available when you read this.

#### DIFFERENT USERS, DIFFERENT BEST BUYS

NOW THAT ALL THREE of the new Windows 95 suites are here, we've picked two Best Buys: Corel WordPerfect Suite and Microsoft Office 95. If you're a Novell PerfectOffice user, the new features in WordPerfect and Quattro Pro, along with the additional applications, are more than enough to justify the Word-Perfect Suite upgrade—as long as you have a fast 486 or Pentium system with at least 16MB of RAM. (Anything less, and the applications are too slow.) Easy-to-use Internet tools also make

WordPerfect Suite the best choice at the moment for those who expect their suite to be conversant in the ways of the World Wide Web; and given its low price, it's a great deal for anyone who's trying to outfit a PC with good software on a tight budget.

We chose Microsoft Office 95 as a Best Buy for a whole different set of reasons. At a street price of \$440 (upgrade \$219), it's expensive, but the overall quality of its major applications is easily the highest: Word is the best word processor and Excel the best spreadsheet, and the PowerPoint presentation package and Schedule+ PIM aren't too far behind Lotus SmartSuite's Freelance Graphics and Organizer. Office 95 is also the fastest Windows 95 suite, and its unique Binder is a valuable tool for combining material from several apps into a single master document.

Lotus SmartSuite is still the odd suite out, despite having several high-grade applications—Approach, Freelance Graphics, and Organizer—and much better workgroup features than the competition. The trouble is that SmartSuite doesn't yet come with a 32-bit edition of Lotus's 1-2-3 spreadsheet, so it still feels like a work in progress. Also, its Word Pro word processor lagged behind Word and WordPerfect in both speed and features.

#### Best Buys: Office 95 and WordPerfect Suite 7

WANT THE BEST OVERALL WINDOWS 95 OFFICE SUITE, regardless of price? Microsoft Office 95 gets our nod as a Best Buy for the high quality of its applications, especially Word and Excel. But if cost is a major factor in your buying decision, consider our other Best Buy, Corel's WordPerfect Suite 7, which provides a remarkable range of apps for a dirt-cheap price. Lotus SmartSuite 96's slow word processor and outmoded spreadsheet keep it out of the running for now.



#### Corel WordPerfect Suite 7



#### WHAT'S HOT

Low cost, high value: For as little as a \$99 competitive upgrade, you get bushels of useful software.

Tops for cybersurfers: Internet features include an outstanding Web page editor.

QuickTask automation: Clever helpers steer you through everything from tracking investments to designing a greeting card.

#### **WHAT'S NOT**

Mediocre performance: Even the 16-bit PerfectOffice is faster at some tasks.

Erratic Integration: Core applications work well together, but secondary programs don't. Group unfriendly: It has the weakest collaborative tools-and lacks group scheduling altogether.

#### **PRICING**

Street price: \$269; competitive upgrade

Core! Corp., 800/772-6735 http://www.wordperfect.com Reader service no. 814

#### Lotus SmartSuite 96

#### WHAT'S HOT

Collaborative clout: Best features by far for users who work together on documents.

First-rate presentation and PIM apps: Freelance makes quick work of screen shows, and the 16-bit Organizer remains the most inviting address book-calendar.

Approach is standard: There's no need to buy a costly "Pro" suite to get a database.

#### **WHAT'S NOT**

1-2-3 needs updating: A 32-bit version won't arrive until later this year.

Slow word processor: Word Pro suffers from molasseslike performance.

Parsimonious phone support: Only the first 60 days are free; Corel and Microsoft offer lifetime free help.

#### PRICING

Street price: \$399; competitive upgrade

Lotus Development Corp., 800/343-4514 http://www.lotus.com Reader service no. 815

#### Microsoft Office 95



#### WHAT'S HOT

World-class word processor and spreadsheet: Word and Excel take

top honors in these two vital categories.

Relatively good performance: Office is the quickest of the three Win 95 suites.

Easy integration: The Binder lets you combine material from all the Office 95 apps.

#### WHAT'S NOT

High price: Both SmartSuite and WordPerfect Suite are much less expensive.

Fewest extras: Office 95 doesn't provide much more than its four core programs.

Lacks standard Internet features: Most Web tools are add-ons.

#### PRICING

Street price: Standard Edition \$440; competitive upgrade \$219

Microsoft Corp., 800/426-9400 http://www.microsoft.com/msoffice

Reader service no. 816

For information about all suites, circle reader service no. 913.

#### SOFTWARE THE COREL WAY

COREL, WHICH ACQUIRED PerfectOffice from Novell in March 1996, has been quick to put its own mark on the redubbed suite. Best known for its feature-rich CorelDraw graphics package, the company has added so many new items that you would need more than 400MB of free disk space to install everything, compared with about 89MB for Microsoft's suite and 140MB for Lotus's; a more typical installation will eat up about 200MB.

WordPerfect Suite is full of useful software, but Corel hasn't melded all of these appealing apps into a coherent whole. As we discuss in "WordPerfect Suite Integration: A Mixed Bag," this product really consists of a well-integrated suite of three core applications-WordPerfect, Quattro Pro, and Presentationsaccompanied by a bundle of stand-alone programs. A more bizarre imperfection is that the suite's manual refers at length to a Workflow Manager feature that's designed to let you route documents around a network. This sounds like it might give Smart-Suite's groupware tools a run for their money. The problem is that Corel decided to remove Workflow Manager at the last moment and has no plans to restore it in the future.

#### WHERE'S THE SPEED?

OFFICE 95 IS the fastest 32-bit suite we've tested, but that's not saying much. None of the suites made striking speed gains on their 16-bit predecessors, except in a few isolated areas such as Office 95's and SmartSuite's much faster presentation printing. Corel's Presentations 7 prints only marginally faster than before—the biggest reason why WordPerfect Suite is the slowest of the suites we reviewed. The news is also bleak for current Novell PerfectOffice users: On a Pentium or 486DX2-66 system with 8MB of RAM, the 32-bit WordPerfect Suite is slower than the 16-bit PerfectOffice, whether you're running PerfectOffice under Windows 3.1 or Windows 95. With 16MB of RAM, WordPerfect Suite gains a modest edge over its 16-bit forebear under Windows 3.1.

It's a shame that WordPerfect Suite isn't faster and a bit more polished. We'd also like to see Corel promote the Sidekick 95 PIM to full status as a better-integrated core application. But considering the good quality of most of its programs, its lead in Internet functions, and its affordable price, WordPerfect Suite will fit many users' needs.

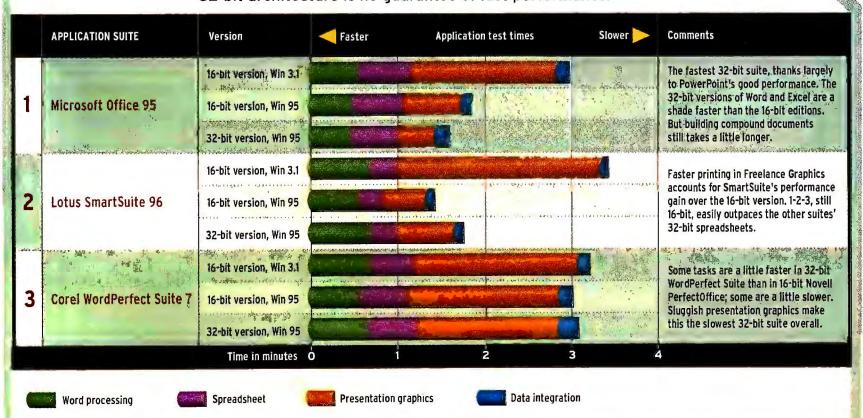
#### WHAT'S NEXT IN SUITES

WORDPERFECT SUITE MAY BE the newest suite in town, but that won't last for long. As we go to press, Lotus and Microsoft are readying the next versions of their suites for release by the end of 1996. Lotus's new version of SmartSuite will finally incorporate 32-bit editions of 1-2-3 and the Organizer PIM. And based on the previews we've seen, Microsoft's Office 97 may provide stiff competition for WordPerfect Suite's Internet features: It adds a slew of new Internet tools and replaces Schedule+ with Outlook, a new workgroup information manager with Web features.

#### TEST REPORT

#### Windows 95 Software Suites

32-bit architecture is no guarantee of fast performance.



HOW WE TEST Tests were conducted on a Micron Millennia Pentium-90 with 16MB of RAM, an 850MB hard disk, and a Diamond Stealth64 graphics controller with 2MB of RAM. Tests were performed by hand. Timing ended when we regained control of the cursor. WORD PROCESSING: We loaded a 50-page document and performed formatting, editing, and searching tasks; the printing test timed output of a 20-page document. SPREADSHEET: We loaded a file composed of 10 linked worksheets. We then changed a cell value and timed how long it took for a linked cell on another sheet to recalculate. We also sorted a 2000-record table and filtered the table for a 50-record subset. PRESENTATION GRAPHICS: We loaded a 45-slide presentation and loaded a slide with a linked spreadsheet. We then viewed the slide show on screen and printed a 45-slide presentation with no build effects. DATA INTEGRATION: Operations included editing a spreadsheet link from within a word processing document and importing a 50-record subset from a 2000-record database file. Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Both Corel and Lotus are also planning innovative offshoots from their suites for 1997. Corel is working on a version of its suite written entirely in the Java programming language; it's meant primarily for use on a number of upcoming low-cost computers that don't work with Windows, but can run Java apps. Lotus, which has criticized the huge size of today's suites, is introducing Lotus Components, a series of compact applets with fewer tools than their suite equivalents. The first ones are designed for use with the company's Notes groupware system, but Lotus plans to release more general-purpose ones eventually.

Will these future products really impact the way you write business documents, crunch numbers, put together slide shows, or keep your schedule under control? Stay tuned for our reports in future issues of PC World.

Jeff Bertolucci, Richard Jantz, and Peter Scisco are freelance writers. Cathy Kenny is an associate editor, Harry McCracken a senior associate editor, and George Campbell and Richard Scoville contributing editors for PC World. Performance testing conducted by Kevin Mitchell and the PC World Test Center.



#### **WORDPERFECT 7: SAME** FEEL, NEW FEATURES

WHAT'S HOT: Draggable guidelines and other formatting tools, easy Web page editing, fast QuickFinder file

searching, real-time spelling checker, improved revision tools.

WHAT'S NOT: Slow performance, clumsy style editor, no autoformat feature.

WordPerfect users have waited longer than anyone for a Windows 95 version of their favorite word processor. Those devotees will find that although WordPerfect 7 maintains the basic personality of earlier versions, it's full of clever new features. The changes aren't radical enough for it to overtake Microsoft Word 7.0 as best all-around Win 95 word processor, but WordPerfect 7 is certainly a worthwhile upgrade for users of version 6.1, as long as they've got Pentium PCs with 16MB of RAM.

Upgraders and other prospective WordPerfect 7 buyers should note that Corel has stopped selling it as a stand-alone product,

> except under special licensing agreements for corporate users.

#### The Top Applications in the Suites

Among the biggest considerations in choosing a suite are the specific applications you spend most of your time working in. Tempted to buy your favorite apps and assemble your own suite? Even at discounted street prices, doing so could cost you more than \$1000. Our ratings cover the three basic suites, not the additional features found in Microsoft's Office 95 Professional or Corel's Office Professional 7.

Application	Rankings and comments
Word processing	BEST: Word 7.0 (Office 95). Still has a clear lead in features, ease, and speed. RUNNER-UP: WordPerfect 7 (WordPerfect Suite 7). THIRD PLACE: Word Pro 96 (SmartSuite 96).
S <mark>preadsheet</mark>	BEST: Excel 7.0 (Office). The most impressive blend of usability and advanced number crunching. RUNNER-UP: Quattro Pro 7 (WordPerfect Suite). THIRD PLACE: 1-2-3 version 5.01 (SmartSuite).
Presentation graphics	BEST: Freelance Graphics 96 (SmartSuite). Smart- Masters let you quickly assemble a slick show. RUNNER-UP: PowerPoint 7.0 (Office) THIRD PLACE: Presentations 7 (WordPerfect Suite)
Database	Approach 96 (SmartSuite). Friendly and fairly powerful, it's the only database included with an entry-level suite.
Personal information management, group scheduling	BEST: Organizer 2.1 (SmartSuite). A bit long in the tooth, but it's powerful, and its notebook interface is easy to use.  RUNNER-UPS (tie): Sidekick 95 for PIM functions (WordPerfect Suite); Schedule+ 7.0 for group scheduling (Office).
Other applications	BEST: WordPerfect Suite, no contest. It gives you flowcharting, electronic publishing, a Web browser, and other nice extras. RUNNER-UP: SmartSuite. THIRD PLACE: Office.

#### **NEW FORMATTING AND EDITING** TOOLS

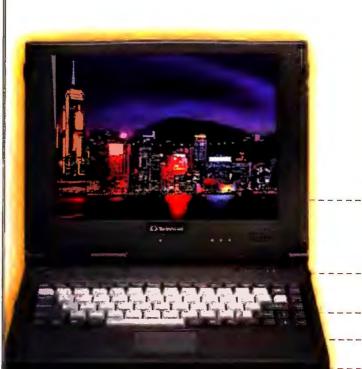
UNLIKE LOTUS'S WORD PRO, WordPerfect doesn't introduce fundamental design changes. Still, as soon as you load the program, you'll notice enhancements aimed at making formatting and editing easier. The new Guidelines feature shows margin, table, and column positions as dottedline overlays on your document. You just drag the lines to reposition them; the new dimensions appear as you drag. Neither Word or Word Pro provide a similar tool for changing margin settings.

Another innovative touch: A small icon called a QuickSpot appears next to text, tables, graphics, and other elements as you move the cursor over them. Click on a QuickSpot to pop up an all-in-one toolbox for formatting the item. Word 7 doesn't have such a feature, and Word Pro's floating InfoBox, while very useful, is so large that it gets in the way at times.

WordPerfect now checks your spelling as you type. Misspelled words are underlined with wavy red lines just as they are in Microsoft Word. To correct the misspelling, you just right-click the mouse and choose the correct spelling.

As with WordPerfect Suite's other core programs, WordPerfect 7 sports top-notch tools for creating and editing World Wide Web pages. A QuickTask expert walks

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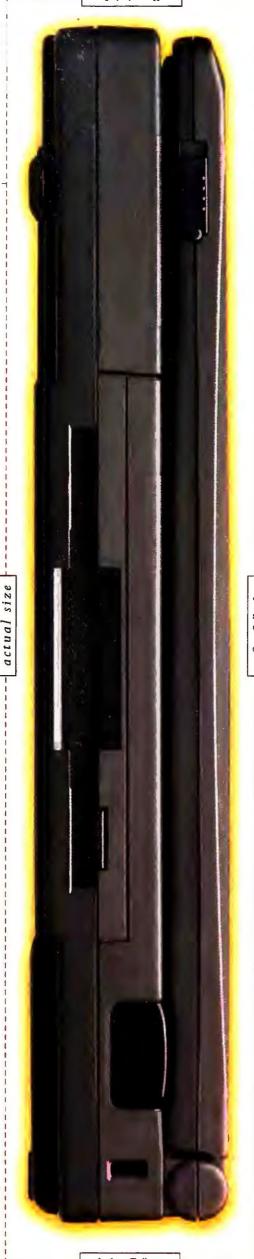


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you through creating basic Web pages and shields you entirely from the complexities of HTML coding; or you can convert any existing document into a Web page. You can also open existing Web pages within WordPerfect and add links to Web addresses within any document.

#### **OLD FEATURES MADE BETTER**

THE UNIQUE QUICKFINDER full-text searching system now uses Windows 95 multithreading so it can index files unattended in the background. Once your hard disk has been indexed, searching is remarkably fast; the range of options, including the ability to search for synonyms of words in a document's text, beats those in Word and Word Pro.

Table tools, always one of WordPerfect's strong points, now give you the ability to rotate text in cells, with the cell automatically adjusting in height. Word can't do this at all, and Word Pro forces you to set the table height manually.

#### **ROOM FOR IMPROVEMENT**

WORDPERFECT'S TOOLS FOR EDITING paragraph styles remain clunky: They force you to use arcane codes, and you can't preview the end results. There's no equivalent to Word's AutoFormat feature or Word Pro's Check Format tool, both of which analyze documents and apply formatting for you. You can use its grammar checker to perform some of the same tasks, but it's a slower and less straightforward solution.

Workgroup users will find that WordPerfect 7 has better collaborative tools, but it still can't match Word and lags far behind Word Pro. Individual editors can mark up the same file using different colors, and there's a new highlighter tool. However, security controls for specifying who can edit a document are limited, and the program lacks the routing features that are described in its documentation; Corel dropped them at the last moment.

On the performance side, the application runs acceptably on a fast Pentium PC, especially if you have 16MB or more of RAM. But WordPerfect 6.1 users who upgrade to this version in hopes of better overall speed will be disappointed: In our benchmark tests, some tasks, such as loading a document, were quicker, but

TEST REPORT



**WORDPERFECT'S NEW FORMATTING TOOLS include** draggable guidelines and all-in-one formatting toolboxes that are specific to the object you are editing.

others, including search and replace, had slowed down. Word-Perfect 7 is considerably slower than Word 7.0, but it beats Word Pro by a narrow margin in most areas.

#### THE BOTTOM LINE

EVEN WITH THE PERFORMANCE hit, upgrading to version 7 makes sense if you're a dedicated WordPerfect user and your PC is up to the task: The new editing, formatting, and revision-marking features are reason enough. But for those who aren't already committed to WordPerfect, Microsoft Word 7.0 is clearly the top choice among Windows 95 word processors; it's got a blend of features, usability, and performance that neither WordPerfect nor Word Pro can match. —George Campbell



#### **QUATTRO PRO 7: EXCEL GAINS** A RIVAL

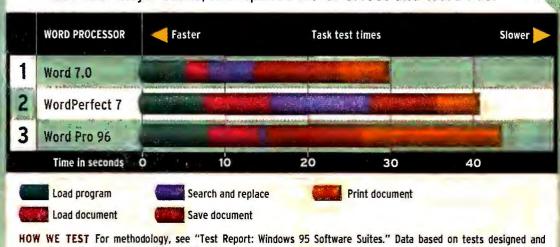
WHAT'S HOT: Formula Composer, which makes constructing formulas easy; Web connectivity, a mapping utility, and a slide-show producer.

WHAT'S NOT: Slow recalculation, clumsy Data Modeling Desktop, insufficient workgroup tools.

Quattro Pro has suffered its share of travails. Its ownership has changed hands three times in rapid succession, and it's never gained the name recognition of Excel or 1-2-3. But the new Windows 95 release of this stalwart spreadsheet packs excellent value. With a bevy of new functions and more graphics tools-plus Internet connectivity—it ranks a close second to Excel overall and finishes far ahead of 1-2-3 release 5's poor third-place showing. Quattro fans should upgrade—as long as they already have fast PCs with at least 16MB of RAM.

#### Word 7.0 Is Fastest

For most major tasks, it outpaces WordPerfect and Word Pro.



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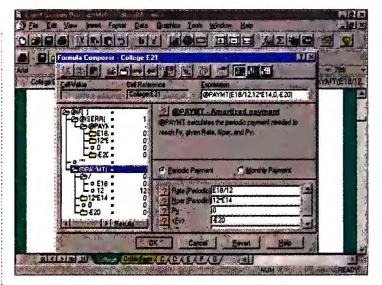
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A SPREADSHEET'S MISSION is to analyze and present data. Although Excel remains the analytic champion, Quattro Pro 7 is no slouch. It has more than a hundred new functions, adding valuable tools such as subtotals and array functions to create live frequency distributions and to calculate the return on nonperiodic cash flows. Another compelling feature is the Formula Composer, which lets you view a formula in outline form, with individual expressions displayed hierarchically so you can see how they work. For our money, this is the first formula construction aid that really works.

Graphics have always been a Quattro Pro strong suit, and the program's unique slide-show capability has emerged as a presentation tool, complete with customizable page layouts and transition effects. The program also has a mapping module that lets you display your data geographically: It's a bit more capable than 1-2-3's mapper but less versatile than Excel's.

World Wide Web integration is now a fundamental part of Quattro Pro. The most intriguing Web feature is the ability to create spreadsheet formulas that pull data from a Web page. You might use this trick to set up financial calculations that use prices from a sales catalog stored on the Web.

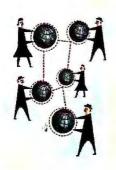


**COMPLEX FORMULAS ARE EASY TO CONSTRUCT and** decipher with Quattro Pro's new Formula Composer.

#### WHAT'S MISSING

FOR ALL ITS VIRTUES, Quattro Pro falls short of Microsoft Excel 7 in some important respects. For instance, Excel's Outlines, Subtotal Wizard, and AutoFiltering commands have no real equivalent in Quattro Pro. In other cases, Quattro's implementation of a

#### WordPerfect Suite: Your Best Bet for the Net



WITH THE CURRENT EXPLOSION of interest in all things online, the big three suite developers have been scrambling to enable their applications for the Internet by adding World Wide Web browsers, the ability to save files for easy posting on the Web, and tools for embedding links to Web sites in documents. Which current Windows 95 suite provides the best Internet

features? Corel's WordPerfect Suite 7 wins hands down, with an easyto-use yet sophisticated set of Internet tools.

WordPerfect Suite comes with Netscape Navigator 2.01, the world's most popular Web browser. (Note: International Data Group, PC World's parent company, is a minority shareholder in Netscape Communications.) It integrates Navigator with its other applications in several ways. For example, you can launch the browser from an icon in WordPerfect, Quattro Pro, or Presentations, or summon an automated QuickTask that uses Navigator to retrieve Wall Street data, which you can then analyze in a Quattro Pro spreadsheet.

Office 95 now includes Microsoft's Internet Explorer browser but doesn't go nearly as far in linking it with the suite's other applications. And while Lotus's SmartSuite comes with a browser from Internet service provider Global Network Navigator, the browser's setup program lets you connect to the Net via GNN only.

#### Internet Without Agony

IF YOU WANT TO CREATE WEB PAGES, any of the three suites can handle the job-but WordPerfect Suite offers the widest range of possibilities. (See our reviews of WordPerfect, Quattro Pro, and Presentations for details on what you can do.) In particular, WordPerfect's Web-page QuickTask is a much better introduction to creating basic Web sites than anything that Word and Word Pro have to offer.

Both WordPerfect Suite and SmartSuite offer a big advantage over Office 95: All of their Internet capabilities work right out of the box. Microsoft shipped its suite in August 1995 before it had finished the Internet features. Although Office 95 now ships with an add-on Internet Assistant for Word, you have to download a confusing array of additional utilities from the company's Web site, including separate Internet Assistants for Access, Excel, PowerPoint, and Schedule+.

Another feature of WordPerfect Suite that the other packages can't match is its QuickConnect utility. QuickConnect automatically scours the communications software on your hard disk, collecting data such as your Netscape Navigator Bookmarks and CompuServe Information Manager Favorite Places. It then provides a convenient scrolling list of all your favorite online haunts. Click on any location, and it launches the appropriate service and takes you there.

In short, WordPerfect Suite is currently your best choice for Internet access, but this situation could change quickly. For starters, Microsoft is planning to add lots of new Internet features to its next version of Office, which is due late in 1996. This upgrade will incor-



**WORDPERFECT SUITE'S QUICKCONNECT** automatically keeps track of your favorite Web, CompuServe, and AOL locations.

porate all of the Internet Assistant add-ons as standard features. And though Lotus has not disclosed its Internet plans for future versions of SmartSuite, it's highly likely that Lotus will also try to challenge WordPerfect Suite's reign as the champ of cyberspace, —Jeff Bertolucci

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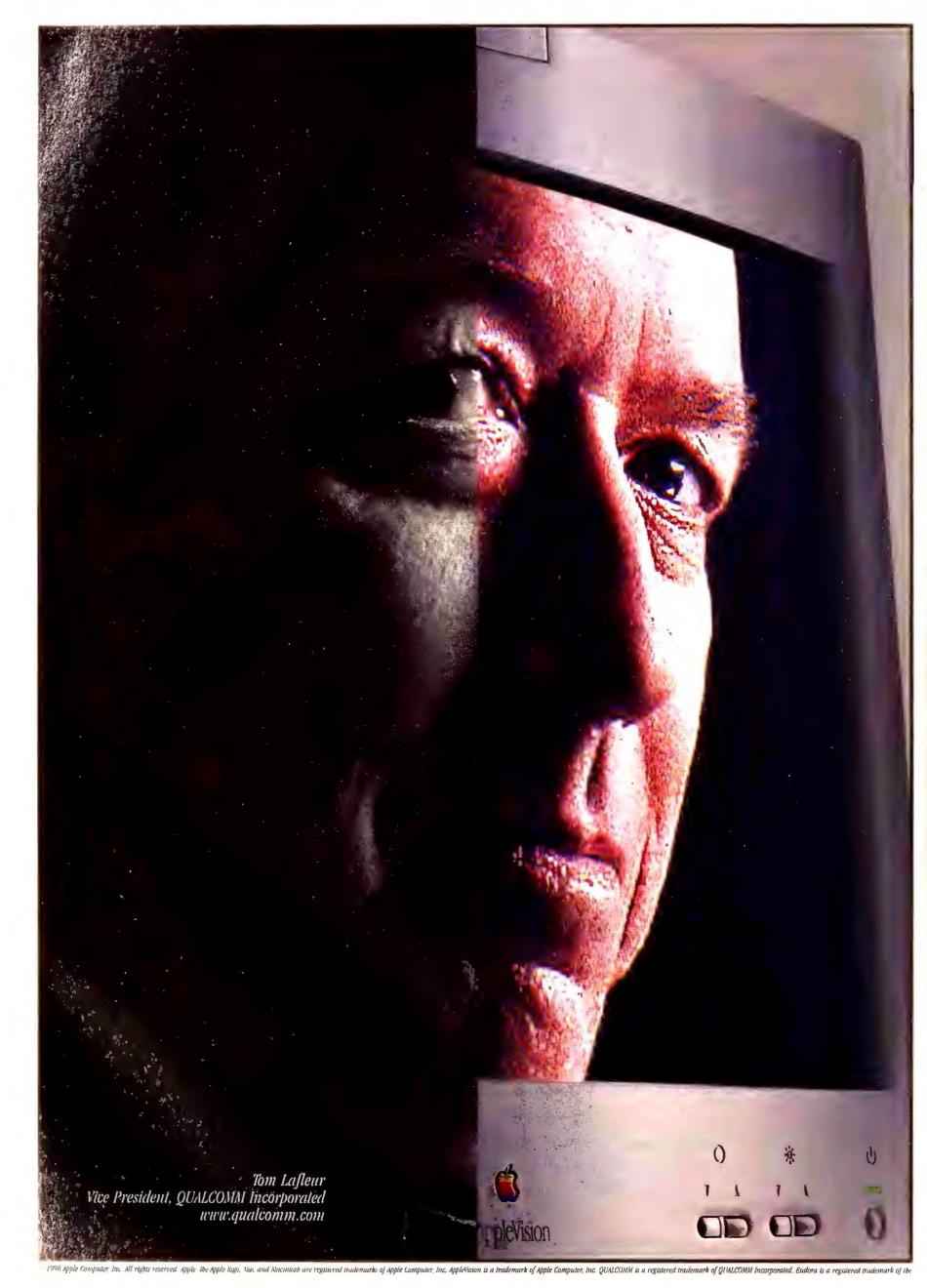












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feature is just not as thorough as Excel's. Quattro's Data Modeling Desktop, which lets you summarize a list of data in cross-tabular fashion, is really no match for Excel's Pivot Table command; the Data Modeling Desktop is a separate application that offers only clumsy connections back to the source data.

Another area where Quattro Pro fails to deliver is in workgroup features: 1-2-3 is still the spreadsheet to beat in this arena. As with Excel, in Quattro Pro you can send only an entire workbook via e-mail; you can't select a particular sheet or range. And unlike both its competitors, Quattro Pro doesn't let you route a workbook to a sequence of users; you can send it only to a group of users all at the same time.

In our performance tests, the 32-bit Quattro Pro 7 was slightly slower than the 16-bit version of Quattro running under Windows 3.1. Following in the unfortunate tradition of its predecessor, version 7 recalculated spreadsheets very slowly compared to 1-2-3 and Excel. However, it handled other tasks quickly enough (on a Pentium or 486DX2-66 PC with 16MB of RAM) to finish in a near-tie with Excel 7.0 for overall performance. Ironically, Lotus's lowly 16-bit version of 1-2-3 was much faster than the 32bit Excel and Quattro Pro.

#### WHEN TO CHOOSE QUATTRO PRO

QUATTRO PRO 7 will be welcomed by current users, but if you're an Excel aficionado or even a 1-2-3 pioneer, don't bother switching. Excel still maintains a lead over Quattro Pro, and 1-2-3 users will want to stick around for Lotus's 32-bit version of its spreadsheet, due to hit the market this fall. But if you need a low-cost alternative to Microsoft Office 95 and Excel, Quattro Pro-part of Word-Perfect Suite—is your best bet. Corel also sells it as a stand-alone package for a street price of about \$66. —Richard Scoville



#### PRESENTATIONS 7: **BETTER DELIVERY, WEAK PERFORMANCE**

WHAT'S HOT: Internet features, screen show enhancements.

WHAT'S NOT: Poor performance, so-so content templates.

Want to create slide shows that you can put on the Web for the whole world to see? The strong Internet features of Presentations 7 may make it the package for you. But if ease of use and performance are more important, the Win 95 versions of Lotus's Freelance Graphics and Microsoft's PowerPoint are better choices.

Presentations 7 retains some unique features from previous versions, including professional-strength drawing and bit map-editing tools. The most notable improvement in this version is that it can publish presentations in HTML format so you can incorporate them into Web sites. With a few simple clicks you can convert your slide shows into single, multiple, or frameenhanced Web pages with graphics.

The program's screen-show effects have been bolstered, too, with the addition of object and text animation, more transitions, and interactive links; for example, you can play a sound or video clip or launch other applications. However, adding these effects isn't nearly as quick and easy as it is in PowerPoint.

#### PRESENTATION HELP WANTED

OF COURSE, THE REAL GRUNT WORK in producing a presentation is putting the content together, arranging its order, and rehearsing the show. Unfortunately, life in the trenches hasn't gotten much

#### WordPerfect Suite Integration: A Mixed Bag



LIKE A TEAM OF CIRCUS ACROBATS, a software suite is supposed to be a tightly knit family that juggles data back and forth in perfect harmony. And if you judge only WordPerfect, Quattro Pro, and Presentations, WordPerfect Suite 7 keeps pace with the competition for overall integration. These three apps have similar interfaces and share many features, including the QuickFinder search tools, Envoy electronic publishing, and a help system that lets you

find answers by posing plain-English questions ("How do I format a table?"). Learn any one of these programs and you're well on your way to knowing the others-a key virtue of any office suite.

WordPerfect Suite doesn't include an equivalent of Microsoft's Binder, the Office 95 feature for combining material from several applications into a single compound document. But since Word Perfect, Quattro Pro, and Presentations (as well as the CorelFlow flowcharting program) all provide good support for OLE 2.0, it's reasonably easy to share data between them. For instance, bringing some numbers from a Quattro Pro spreadsheet into a Presentations slide show is as simple as highlighting the desired range in Quattro and dragging it onto your Presentations slide.

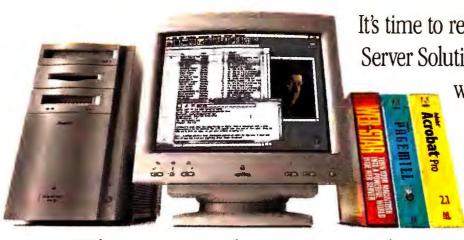
The core programs also give you QuickTasks, a set of wizard-style automated helpers that you select from one easy-to-use browser. Each QuickTask launches one or more applications and steers you through a project, such as creating expense reports, investment summaries, greeting cards, or even Web pages.

#### **Not So Suite**

ONCE YOU VENTURE OUTSIDE the confines of its core applications, WordPerfect Suite is a hodgepodge. All of the bonus programs are second-class citizens: User Interfaces and menu structures differ; and you don't get any special tools for sharing data between programs. Of course, all Windows software behaves enough alike that it's not too hard to get up to speed with the secondary apps, and you can always use the Clipboard to exchange data.

Ultimately, there's no clear integration leader among the three suites. The data-exchange tools don't differ radically from suite to suite, and each product has at least one unique and useful trick up its sleeve. In a perfect world, you'd be able to buy a single office suite that offered WordPerfect Suite's QuickTasks; Office 95's Binder; and SmartSuite's SmartCenter, the most functional and friendly toolbar for launching applications and performing other suite tasks.

# START REPLACING WALLS WANT WANT WANT WALLS WANT WANT WANT WANT WANT WANT WANT WAL



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ways to transform your company.

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easier for Presentations 7 users. For example, nothing new has been added to PerfectExpert, Presentations' automatic content feature; it still provides suggestions on only four topics. In contrast, Freelance now offers canned content on more than 30 topics. Still missing is a rehearsal mode for practicing your delivery and timing—an invaluable feature that both Freelance and PowerPoint provide. We've also seen better cross-application integration: You can't quickly export speaker notes and slides into a WordPerfect document, as you can from PowerPoint to Word.

Worst of all, our performance benchmarks reveal that Presentations 7 doesn't seem to benefit much from 32-bit processing. Printing is a particularly sore point: When we told Presentations to print our test slides on a Pentium with 16MB of RAM, it took more than a minute before we regained control of the PC. By comparison, Freelance took less than 20 seconds, and Power-Point took just a second and a half. Whether we used a 486 or Pentium PC, with either 8MB or 16MB of RAM, we found that Presentations is slower for many tasks than its 16-bit predecessor.

### FREELANCE GRAPHICS KEEPS ITS LEAD

OF THE THREE SUITE-BASED presentation programs, Freelance Graphics 96 is still the best all-around choice. Its unique teamcomputing tools also make it the best option when several users need to collaborate on a slide show. PowerPoint 95 is a great pick for creating lively screen shows, and it's a close second to Freelance Graphics. As praiseworthy as Presentations 7's Internet features and graphics-editing tools are, its poor performance and outdated presentation-authoring options leave this upgrade in third place. Corel also sells Presentations 7 as a stand-alone product for a street price of around \$66. —Richard Jantz



# SIDEKICK, DASHBOARD, AND THE KITCHEN SINK: ON THE OUTSIDE LOOKING IN

WHAT'S HOT: Sidekick is a capable stand-alone PIM; WordPerfect Suite

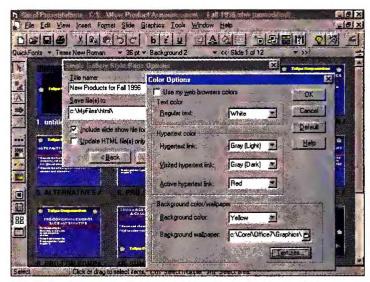
includes a variety of other useful software.

WHAT'S NOT: Applications suffer from a lack of integration; Sidekick has no workgroup scheduling.

With most suites, once you get past the word processor, spreadsheet, presentation package, and PIM-and perhaps a database—you've seen just about everything. Not so with WordPerfect Suite 7, which includes not only Starfish's Sidekick 95 PIM but also a smorgasbord of other tools and utilities. Most of these apps do what they're supposed to; if you look at them simply as a diverse library of items at a rock-bottom price, you'll likely come away satisfied. But it's unfortunate that these programs aren't more closely interlinked: By today's standards, a bunch of appealing software on a CD-ROM does not a suite make.

### OUT WITH THE OLD, IN WITH THE NEW

ONE OF THE BIGGEST CHANGES in WordPerfect Suite is that PerfectOffice's InfoCentral, a powerful but complex personal infor-



WITH PRESENTATIONS' SLICK INTERNET TOOLS, you can convert slide shows into Web pages, complete with control over colors and graphics, and publish them to your Web site.

mation manager, has been passed over in favor of Sidekick 95, a traditional PIM that competes more directly with Schedule+ and Organizer. It doesn't, however, offer their group-scheduling features for networked users; for those, you'll need Corel Office Professional, which comes with Novell's capable GroupWise e-mail and scheduling client.

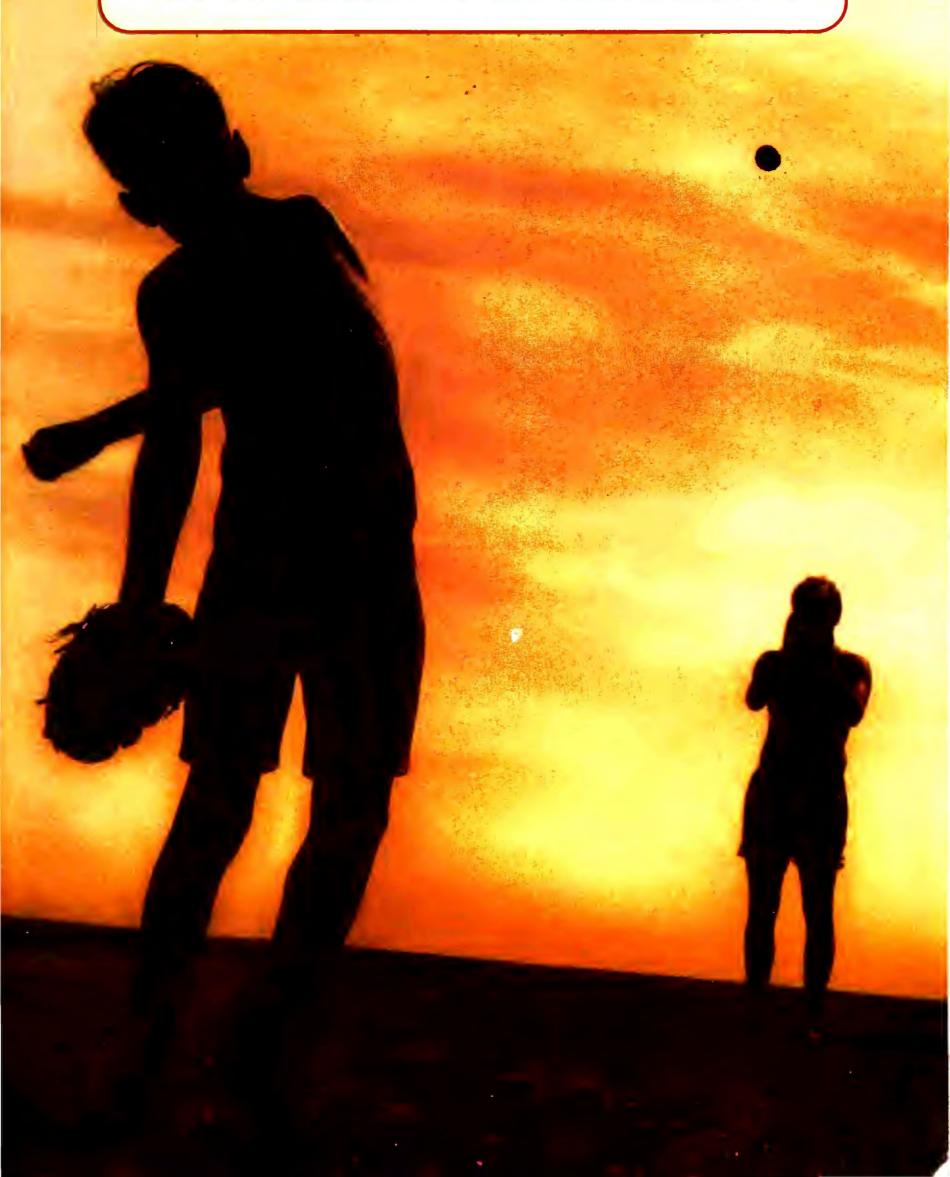
Sidekick's simple interface and versatile tools make it a good choice for individuals who need to manage their appointments, to-do lists, and other personal data. Unlike many PIMs, it lets you create templates to hold all kinds of data in addition to addresses, and also includes an expense tracker for logging expenditures on the road. But where Sidekick gets short shrift is in the way it's ignored by WordPerfect Suite's other applications. For instance, while Office 95 lets you insert address data from Schedule+ into Word 95 documents, WordPerfect expects you to use Address Book—a separate application—instead of Sidekick.

Another unexpected change is that the Desktop Application Director toolbar, better known as DAD, is no longer a customizable, floating home base for all your suite-related activities. It now sits anchored to the Windows 95 Taskbar and merely acts as a launch pad for some, but not all, of the suite's applications. You also get Dashboard 95, a desktop manager that provides quick access to applications and files and monitors system resources and print queues. You can replace the new DAD by duplicating its functions in Dashboard, or you can just use DAD, but we can't figure out why you'd want to use both.

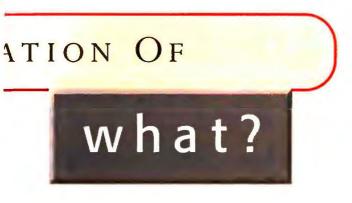
### A GRAB BAG OF EXTRAS

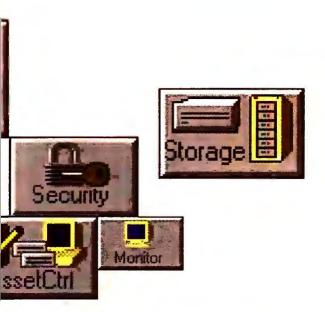
WORDPERFECT SUITE ALSO INCLUDES a few tools that have no competitors in the other suites. CorelFlow is a program that lets you create flowcharts and other business diagrams. With Envoy, an electronic publishing application similar to Adobe's Acrobat, you can create document files that can be shared with other users who don't have the originating program. Also included is IBM's VoiceType Control software, which lets you execute commands in some applications by talking into a microphone attached to your sound card. It's an interesting option, but when we used it with several mass-market microphones, it did only a so-so job of understanding our instructions. —Peter Scisco

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Has It Changed Your Life Yet?

<sup>\*</sup>Price shown is estimated street price. Dealer prices may vary.

<sup>\*\*</sup>Features vary by model. †Monitor not included.



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without having to compress the image, which most other projectors require.

But there's a lot more to the MP8650 than bright, ultra-sharp images. It's easy to use and set up — just plug and play. It's portable enough for road shows. Plus it's packed with all the advanced features you need, including two computer and two video inputs. PC and Macintosh compatibility; audio and monitor outputs and more.

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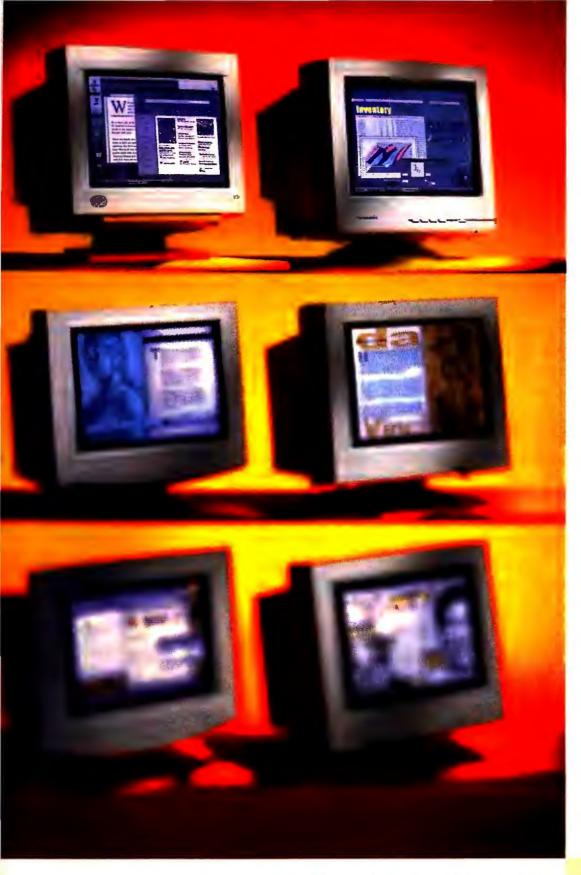
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YOUR PARENTS WERE RIGHT. Watching too much TV is bad for your eyes. The same thing holds true for monitors. If you work late, surf the Internet, or play games, by the end of the week, that really adds up. Is the monitor you're using up to par?

We've rounded up 25 17-inch monitors that claim to offer sharper displays, meet stricter emission standards, and use more accurate controls than earlier models. All these monitors are Plug and Play compatible, sport more image controls than before, and can refresh at higher rates so you see less flicker. A low-end 17-inch model still costs over \$600, but this year that same money buys many features found in last year's high-end models. The most expensive unit here is \$1159, compared to over \$1400 last year.

# More for the Money

Four reasons to **upgrade** to a big monitor: more screen area, more detail, less flicker, less hassle. We rate 25 leading 17-inch models to find the best deals for work and play.

Unlike with a TV, monitor measurements are not for the screen size you see. The "17 inches" refers to measurement across the diagonal of the full tube, including what's covered by the bezel. Most 17-inch monitors average 15.8 inches across the screen's diagonal. The smallest screens we measured—15.4 inches on Mitsubishi's Diamond Scan 17HX and Techmedia's TCM-1700G —were over 9 square inches smaller than the largest screens (15.9 inches) from Continental, Gateway 2000, IBM, LG Electronics, Philips, ViewSonic, and Wyse.

If you're still not sure about upgrading to a bigger screen, think about what you'd use it for. If you use your computer occasionally to type a letter or play games, a 17-inch monitor may be a waste of money. But if you're constantly scrolling the screen to see everything in a window, or shuffling through layers of applications and documents, a 17-inch monitor is worth the extra cost about \$200 more than a cramped 15-inch unit. Smaller monitors

may peak at 800 by 600 resolution, but 17-inch models can comfortably handle 1024 by 768 or higher. You can see almost two-thirds more, which translates to at least five more spreadsheet rows and columns, or up to eight more lines of text.

### **FULL-JURY TESTS**

WE SUBJECTED each unit in this review to a new suite of jury and instrumentation tests. After consulting with dozens of monitor engineers at a recent PC World monitor summit. we've improved the way we test in order to give you a better idea of how a display will perform on your desk.

For starters, we've doubled the number of judges by includ-

ing five ordinary users to make sure we're looking at screens as a typical user would under average, yet controlled, fluorescent office lights. We've also doubled the number of typical work documents we study to gauge text and graphics quality. For text, we checked if letters and numbers were as legible in the center as they are on the edges of the screen. For graphics, we scrutinized four color images: a pack of Olympic runners, a shot of glazed fruit, a park scene, and a Web page. Beyond overall picture sharpness, we looked for realistic skin tones, accurate colors, and subtle details in highlight and shadow areas.

All the monitors were tested at 1024 by 768 resolution with a 75-Hz refresh rate. To ensure objectivity, we covered the bezels to hide brand names, and we tested the products on nonmetallic racks to avoid electromagnetic interference. We also ran instrumentation tests to confirm the manufacturer's claims and to make sure a unit wasn't defective. However, these special tests are not part of our image scores, which are based solely on visible qualities seen by our jury.

What we found wasn't surprising. No monitor is perfect. For razor-sharp text and brilliant graphics, IBM's P70 looked the best. Sony's Multiscan 17seII and Continental's Digiview 1709D were next best for sharp text, while Packard Bell's 3020 SL and Panasonic's PanaSync S17 rivaled the IBM for truest graphics. We were least impressed by the fuzzy letters and dull images on the MAG DX17T, the Techmedia TCM-1700G, and the CTX VL700.

### EYESTRAIN, EMISSIONS, AND FLICKER, OH MY

A BIG CONCERN is eyestrain caused by slow screen refresh. Most people notice flicker if the refresh rate is below 70 Hz (redrawing the screen 70 times per second). All the monitors here refresh at 75 Hz or greater; rates above 85 Hz are necessary only for high-end CAD. And despite the hype about Plug and Play monitors, you can't use Win 95 to change refresh rates: You need the latest drivers from your graphics card maker. All monitors reviewed here comply with the MPR-II standard, which lim-

its potentially harmful screen emissions to under 20 inches. Ten of the units meet TCO's

# stricter 12-inch shielding limit.

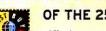
# LOOK BEFORE YOU BUY SEE THE TOP 10 Monitors

chart on page 237 for a summary of this month's rankings. To keep you informed, every four months we'll compare newer 17-inch models against the ones reviewed here and update the results. Because of our new test suite, prior monitor rankings cannot be compared to this new format. To read an expanded version of this article, visit PC World Online at http://www .pcworld.com/t10monitors.

Shopping for a new monitor isn't easy. All the latest features can make a product look great on paper, but seeing it with your own eyes is the best way to judge if it's right for you. If you buy direct, get the salesperson to let you set up the monitor before you purchase it. Most of these units use on-screen menus, which sounds like a great idea but in reality may complicate a simple task such as changing contrast or brightness. If you buy a monitor through the mail, check the box for signs of mishandling before unpacking it. Monitors aren't as rugged as they look. Also, pay close attention to the warranty—it's a measure of a company's confidence in its product.

Owen Linderholm is a freelance writer and editor. John Goddard is a staff editor for PC World. Testing by Susan Silvius and Jeff Kuta of the PC World Test Center.

For more information about all products in this article, circle reader service no. 910.



BEST BUYS



OF THE 25 MONITORS we tested, 2 stand out with terrific image quality, features, and support policies: the IBM P70 (left) and the Panasonic PanaSync S17 (right). Let-

ters and images look sharp on IBM's \$899 P70. Its .26mm Trinitron tube, easy-to-decipher on-screen menu scheme, and big 15.9-inch screen make for comfortable viewing. If you're on a tighter budget, your second Best Buy bet is the \$699 Panasonic PanaSync S17.



### **1** IBM P70

PROS: Best text and graphics, large 15.9-inch viewable screen size

CONS: Two faint lines across screen



IT'S RARE for a monitor to excel at displaying both text and graphics.

IBM's \$899 P70 is an exception. This Best Buy monitor provides terrific picture quality. The .26mm stripe pitch Trinitron tube trounced the competition the largest displays in this review.

And at 1024 by 768 resolution, the P70 comfortably refreshes at 85 Hz, effectively eliminating any perception of flicker.

Flipping open the control panel cover reveals a row of nine buttons along the bottom of the screen bezel. The buttons are clearly labeled and easy to use. Adjusting basic settings such as contrast and brightness takes no more than two button clicks—just press a button, and an adjustment gauge appears. A truckload of advanced controls, such as trapezoid and image tilt, are logically organized in the menus. The P70 also meets the strict TCO spec for low emissions. And the full three-year warranty, with free onsite service and 24-hour toll-free technical support, is great. Plain and simple, the IBM P70 has the best screen quality of all the 17-inch monitors in this review. IBM, 800/426-7255, http:// www.pc.ibm.com

### 2 Panasonic PanaSync S17

PROS: Very good text and graphics, affordable

CONS: On-screen menu icons difficult to decipher



FOR \$200 LESS than the IBM, we expected the \$699 Panasonic PanaSync S17 to have a lower display quality. But the text samples we saw on Web pages and Windows

documents were very sharp. Colors also looked bright and accurate—particularly the flesh tones. This light-gray monitor uses a .27mm dot pitch tube capable of an 85-Hz refresh rate at 1024 by 768 resolution.

The Panasonic's button controls are simple enough: four push

buttons—one to activate the menu, two to scroll up and down the menu list, and one to make a selection. But the on-screen menus are displayed as a set of almost hieroglyphic icons. Some, like brightness, are obvious, but we would not have guessed that a diamond with an arrow pointing left means reset the picture to default settings. That gripe aside, this is a terrific monitor. Its full three-year warranty, around-the-clock toll-free support, low price, and attractive display quality earn the PanaSync S17 a Best Buy. Panasonic, 800/742-8086, http://www.panasonic.com

READER SERVICE NO. 790



with superb text and graphics A SHARP PICTURE put both of these monitors on the Top 10. For detail, but the P70's 15.9-inch crunching numbers or viewing graphics, the Continental Digiview diagonal screen makes it one of 1709D (left) and Packard Bell 3020 SL (right) deliver.

# 3 Continental Digiview

PROS: Excellent for reading text, very good graphics, easy to adjust

CONS: Power switch located on back of monitor, two faint lines across screen

THE CONTINENTAL DIGIVIEW 1709D does an impressive job with both text and images. Whether you're typing business letters or designing graphics, the picture is almost as crisp and accurate as 'what you get with the IBM P70.

The Continental Digiview has basically the same tube, design, and controls as the Wyse Tech-

nologies WY-17PS. But at \$799, it's \$120 less than the Wyse model. Overall, the Continental is the better deal.

The Continental shares with the Wyse an unusual control system. It has a flat, mushroom-shaped master control button with two smaller buttons on the right side of the case, plus a dial under the bezel. To use the on-screen menus, you have to click the master control button, then spin the dial to cycle through each menu. Clicking the master button again selects the menu item. Another turn of the dial makes the adjustment. It takes a little practice, especially if you're left-handed. Fortunately, adjusting contrast and brightness requires just two clicks.

Like all other monitors reviewed here, the 1709D is energy efficient, but what looks like a power button on the front just puts the unit into sleep mode (it still draws power). The real on/off button is on the back. Aside from that, the Digiview's large 15.9inch viewable screen, sharp .25mm stripe pitch Diamondtron tube, and ample controls make it a good choice. Continental Technologies, 818/854-8288, http://www.digiview.com

READER SERVICE NO. 791

### 4 Packard Bell 3020 SL

PROS: Low price, great-looking text and graphics

CONS: One-year warranty, no image tilt or reset controls, requires repeated button pushing to maneuver through the on-screen menus

THIS LIGHT-GRAY AND STYLISHLY CURVED monitor was a surprise in many ways, since Packard Bell is better known for its

> aggressive pricing and less-than-superior quality. At just \$660, the 3020 SL is one of the least expensive monitors in this review, but we didn't expect the text and graphics to approach that of the number one Best Buy IBM P70. Fine type looked sharp even in the corners, and it was easy to see picture details in the shadows and bright spots where other monitors had trouble. What's more, we noticed that the screen was uniformly bright.

> So what's the problem? Despite its good looks, this Packard Bell lacks some important features and controls—such as tilt and reset found in nearly all monitors. Maneuvering



THE ONE-BUTTON CONTROL on the Continental Digiview 1709D looks odd, but it works well with the on-screen menus. Wyse's WY-17PS also sports this control.

	MONITORS	Street price (5/31/96)	Tube manufacturer	Max. refresh rate at 800 x 600 (Hz)	Max. refresh rate at 1024 x 768 (Hz)	Viewable screen diagonal (inches)	Dot or stripe pitch (mm)	Width x depth x height (inches)	Maximum horizontal scan rate (kHz)
1	IBM P70*	\$899	Sony	85	85	15.9	stripe .26	15.9 x 17.7 x 16.8	85
2	Panasonic PanaSync S17*	\$699	Matsushita	108	85	15.7	dot .27	16.1 x 17.5 x 16.4	69
3	Continental Digiview 1709D	\$799	Mitsubishi	120	101	15.9	stripe .25	16.1 x 17.2 x 17.1	82
4	Packard Bell 3020 SL	\$660	Hitachi	75	75	15.7	dot .28	16.7 x 17.8 x 16.4	69
5	Samsung SyncMaster 17GLsi	\$910	Samsung	120	105	15.8	dot .26	16 x 17 x 17.1	85
6	Wyse Technologies WY-17PS	\$919	Mitsubishi	120	101	15.9	stripe .25	16.1 x 17.2 x 17.1	82
7	ViewSonic PT770	\$899	Mitsubishi	120	101	15.9	stripe .25	16.1 x 17.2 x 17.1	82
8	Dell UltraScan D1726T-HS	\$799	Sony	135	105	15.7	stripe .25	15.9 x 17.7 x 16.8	85
9	Mitsubishi Diamond Scan 17HX	\$849	Mitsubishi	130	105	15.4	dot .26	16.1 x 16.7 x 16	82
10	Sony Multiscan 17sell	\$1159	Sony	120	100	15.7	stripe .25	15.9 x 17.7 x 16.8	85
	* Best Buy	¹ Three-year	warranty if purc	chased with Packa	rd Bell PC.	See To	p 10 chart, page	e 237.	

through the on-screen menus with the four control buttons was cumbersome. And if you don't buy the monitor with a Packard Bell PC, your warranty drops from three years to only one. The 3020 SL is not the best choice if you're upgrading your monitor, but it's comforting to know that you'll get a good monitor if you buy a PC from this company. Packard Bell, 800/733-5858, http:// www.packardbell.com

READER SERVICE NO. 792

### **5** Samsung SyncMaster 17GLsi

PROS: Very good text, extensive on-screen menus, easy to adjust

**CONS:** Ordinary graphics quality

NUMBER CRUNCHERS AND DESKTOP PUBLISHERS will appreciate the very crisp text detail on the Samsung SyncMaster 17GLsi, but if you're a power graphics user, the Samsung is not the best choice. Our judges felt it had only average graphics quality because subtle details in highlights and shadow areas were a tad less visible than on other monitors. This unit boasts a .26mm dot pitch and can refresh as high as 105 Hz at 1024 by 768 resolution. At 15.8 inches, the viewable screen size is fairly large.

A bevy of high-end screen controls earned the Samsung the highest marks for features and ease of use. Below the screen is a drop-down control panel with eight white and four blue buttons.

Touch the white button for brightness, and the exact adjustment level appears on screen. There's no need to hunt through menus. The four blue buttons let you maneuver through onscreen menus where more advanced controls for nearly every image aspect are stored, including a rare control that lets you keep an old screen in focus. Despite disappointing graphics quality, the SyncMaster is aimed at high-end CAD/CAM and desktop publishing types who can deal with an equally high \$910 price. Samsung, 800/933-4110, http://www.samsung.com READER SERVICE NO. 793

**BUTTONS ALLOW RAPID ACCESS** to sophisticated controls on the Samsung SyncMaster, but be careful not to hit the wrong button.

### **6** Wyse Technologies WY-17PS

PROS: Very good graphics, large 15.9-inch viewable screen, easy to adjust CONS: Power switch is on back of monitor, two faint lines across screen

NO TWO MONITORS ARE ALIKE, RIGHT? Right. At \$919, this .25mm stripe pitch Diamondtron monitor from Wyse seems identical to the number three Continental Digiview. Overall image quality was impressive on both, but text was sharper on the Continental. Graphics quality was about even. So what's going on? To borrow a phrase from the automobile industry, mileage may vary, even among monitors. Both vendors use the same parts, but engineering tweaks and different components around the tube produce varied results. Both have identical specs, use the same odd master control button to move through on-screen menus, and have a power-down switch on front; to turn off the monitors, you need to reach around back. But the Wyse is lower on the chart because it costs \$120 more than the Continental. Wyse Technologies, 800/438-9973, http://www.wyse.com

READER SERVICE NO. 794

### **7** ViewSonic PT770

PROS: Very good text, high refresh rate, easy to adjust

CONS: Two very faint lines visible across screen

WHETHER YOU'RE reading a long report or studying the small

type in the footnotes, the \$899 ViewSonic PT770 is very good at displaying text crisply, and scanned photos were rendered with good detail and realistic color quality in our tests. However, other monitors higher up the chart displayed graphics better.

The PT770 has a .25mm stripe pitch Diamondtron tube and a high refresh rate of 101 Hz at 1024 by 768. It offers a full range of adjustment options in the on-screen menus. However, our judges felt that the four-button controls on the bezel were awkward.

The ViewSonic PT770 is a nice monitor, but

### CONTROLS 0/0 0/0 0/0 0/0 9/9 0/0 0/ 0/0 0/0

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Warranty (years)	Technical support (hours)/toll-free	Weekend support
3	24/•	•
3	24/ ●	•
3	8/●	0
11	24/ ●	•
3	24/ ●	•
3	9/ ●	0
3	11/0	0
3	24/ ●	•
3	8.5/ ●	0
3	15/ ●	0

for the same price you can get the number one Best Buy IBM P70. ViewSonic, 800/888-8583, 909/869-7976, http://www viewsonic.com

READER SERVICE NO. 795

O No

Yes

### 8 Dell UltraScan D1726T-HS

PROS: Good text and graphics detail, simple to adjust, high refresh rate CONS: Two faint lines across the screen, no manual degauss

THE NEW DELL ULTRASCAN has the same trait common to all Trinitron-based monitors—it does a better-than-average job with both text and graphics. In our tests, numbers and spreadsheet

cells were sharp, and scanned images looked bright and accurately colored.

This \$799 monitor is one of the few on the Top 10 chart that doesn't force you to hunt through on-screen menus to find specific controls. Adjusting the UltraScan's picture is simple. At first the drop-down control panel looks like a befuddling array of buttons, but each one is clearly labeled and easy to use. Simply touch a button, and the corresponding adjustment bar appears. You can change levels using the two adjust buttons. Dell even includes a moiré control-a feature Sony doesn't usually include on its Trinitron tubes-so you can remove swirly interference patsuch as illustrations or CAD/CAM drawings.

The UltraScan also meets the tough TCO emissions standard, and refresh can be set as high as 105 Hz at 1024 by 768 resolution. Dell backs up the monitor with a full three-year warranty and 24-hour toll-free tech support. All that adds up to a good deal for the price. Dell Computer, 800/289-3355, http://www.dell.com READER SERVICE NO. 796

### **9** Mitsubishi Diamond Scan 17HX

PROS: Extensive and easy-to-adjust on-screen controls, high refresh rate CONS: Mediocre text focus, small 15.4-inch screen, two lines across screen

> THIS \$849 MITSUBISHI Diamond Scan packs lots of high-end controls, but our judges pointed out areas of slightly unfocused text and hazy graphics. As a result, this .26mm dot pitch unit takes ninth place on the Top 10 Monitors chart.

> To the 17HX's credit, we liked how easy it was to adjust. Press the center of the bezel below the screen, and a wide control panel drops down. Inside are four buttons that work well in tandem with the on-screen menus. Changing contrast and brightness takes no more than two button clicks each, and more advanced controls—including trapezoid and keystone—are easy to find in the menus.

Mitsubishi also includes software for correcting



terns from busy images that ELEGANT CONTROLS (clockwise from upper left): Samsung SyncMaster have lots of intersecting lines, 17GLsi, Wyse WY-17PS, ViewSonic PT770, and Dell UltraScan D1726T-HS.

color quality and adjusting image geometry so the display stays accurate. Despite all these extras, we expected a bigger and better picture for the high price. Mitsubishi Electronics, 800/843-2515, 714/236-6352, http://www .mela-itg.com

READER SERVICE NO. 797

# **10** Sony Multiscan

PROS: Terrific text quality, above-average graphics detail, low emissions

CONS: Very expensive, two faint lines

visible across the screen

IF MONEY WERE NO OBJECT, and image quality and features were all that mattered in a monitor, then the Sony Multiscan 17seII would score higher. But at \$1159, this is the most expensive monitor of the bunch. If you read a lot on screen or labor over spreadsheets, you'll find that the text quality on this Sony rivals that of our Best Buy from IBM. In our tests, Web page graphics



THE SONY MULTISCAN 17sell (left) and Mitsubishi Diamond Scan 17HX (right) have top-dollar prices that land them low on the chart.

Control button overload? The ten buttons below the screen look somewhat crowded, but they're clearly labeled and work well with the on-screen menus. Pushing a button activates an on-screen bar graph that shows the exact adjustment level, so there's no need to

looked vivid and color photo de-

tails were accurately rendered,

though not as well as on the IBM.

other hand, the 17seII lacks a manual degauss button and common advanced controls for fixing

hunt through menus. On the

trapezoid or keystone distortion. Nonetheless, if you need a monitor that can display high-definition graphics, the 17seII's 15.7inch viewable screen can refresh as fast as 100 Hz at 1024 by 768 resolution. If you must have Sony, the Multiscan 17seII is worth a look, but for \$260 less, the IBM P70 is a better deal. Sony, 800/352-7669, http://www.sel.sony.com

READER SERVICE NO. 798

### **Snapshots**

These monitors were also tested this month but didn't score high enough to make the Top 10.

### AcerView 78ie

DECISIONS, DECISIONS. If you opt for the 78ie with an Acer system, you're covered for three years, but if you buy it separately for \$829, coverage is only one year. How does it perform? Spreadsheets were crisper than average, but graphics were hazy on several of our test screens. Also, the 15.6-inch diagonal screen size is small. Acer includes a minimal four-button control panel for navigating through onscreen menus, but the button clicking is cumbersome. To its credit, the 78ie meets the strict TCO emissions standard and can refresh at 85 Hz at 1024 by 768 resolution. Acer America Corp., 800/733-2237 READER SERVICE NO. 799

### ArtMedia TX-1864

FOR \$788, WE EXPECTED a better picture from the ArtMedia TX-1864. It has a .25mm stripe pitch Trinitron tube, a 75-Hz refresh rate at 1024 by 768, and a 15.7inch viewable screen size. Text looked okay, but graphics were dull. The onscreen menus work well in tandem with the control buttons below the screen, but we couldn't get as full a range of contrast and brightness levels as we could with other monitors. ArtMedia, 800/278-6334 READER SERVICE NO. 800

### CTX VL700

IF IMAGE IS EVERYTHING, then the CTX VL700 is in trouble. Fuzzy text and lackluster graphics earned it poor ratings from our judges. The VL700 uses a .28mm dot pitch tube and has a standard refresh rate of 75 Hz at 1024 by 768 resolution. The on-screen menus were awkward at times, but adjusting contrast and brightness required no more than two button clicks each. At \$659, the CTX VL700 ties the MAG InnoVision DX1795 for the lowest price here, but you certainly get what you pay for. CTX International, 800/289-8808

READER SERVICE NO. 801

### Gateway 2000 Vivitron 1776

HOW DOES Gateway's standard 17-incher (15.9-inch viewable) measure up? Refresh rates are within spec—76 Hz at 1024 by 768 resolution—and colors were bright on the .26mm Trinitron screen, but text and graphics detail weren't quite Top 10 quality. The monitor also lacks on-screen controls, but ten buttons make it easy to fine-tune the picture. For \$699 you get a fine monitor, but for the same price our Best Buy from Panasonic is a better deal. Gateway 2000, 800/846-4208

READER SERVICE NO. 802

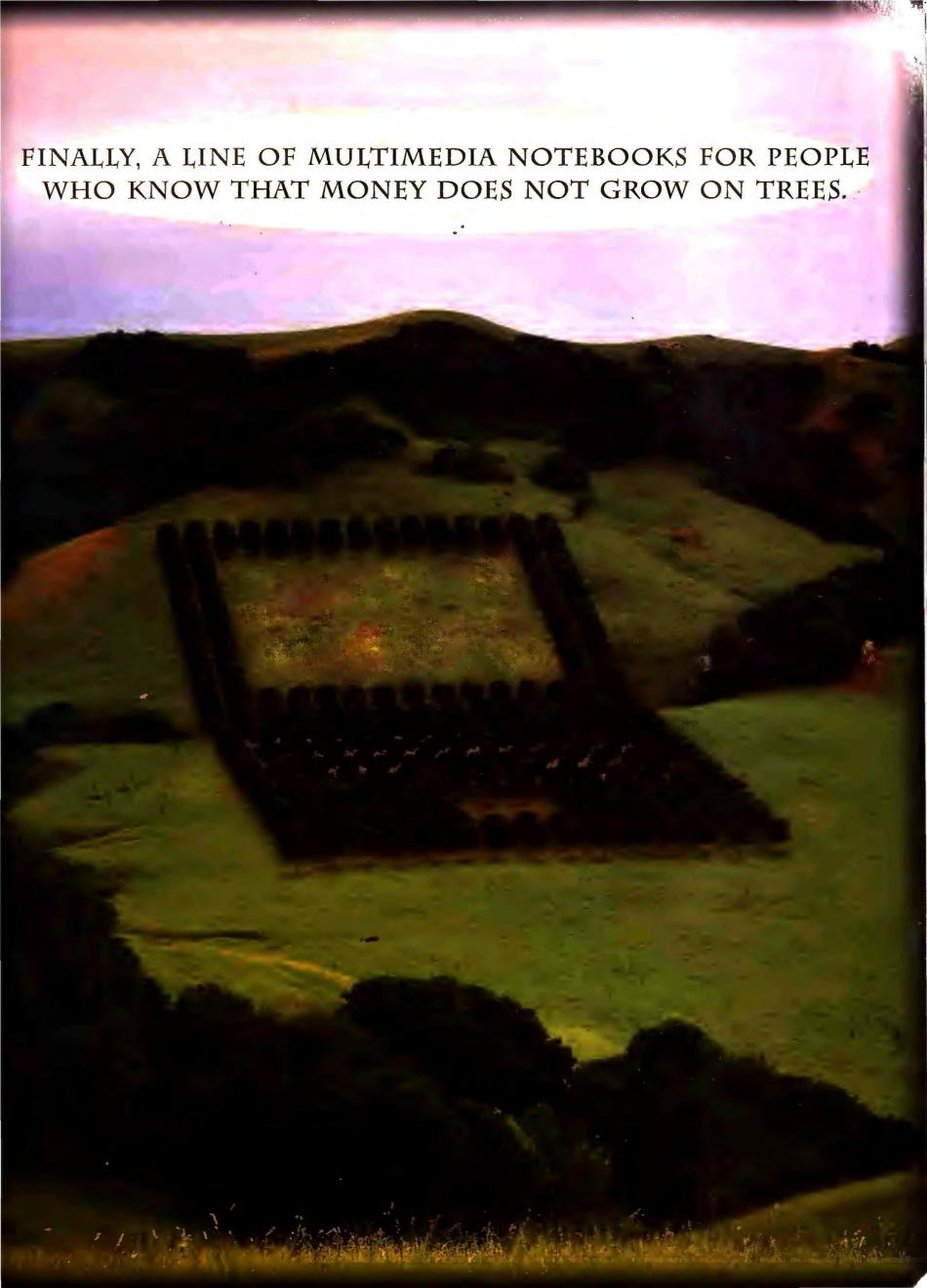
### GoldStar StudioWorks 78m

WINDOWS EVENTS, games, and presentations sound good on the multimedia GoldStar StudioWorks 78m. This \$799 unit sports speakers, a mike, a headphone jack, and a volume control on the front bezel. The on-screen menus look a bit cryptic, but they were easy to maneuver in our tests—at least until the main control panel button snapped off. Text detail was adequate, but graphics looked dull compared to the other screens we saw. LG Electronics, 800/243-0000

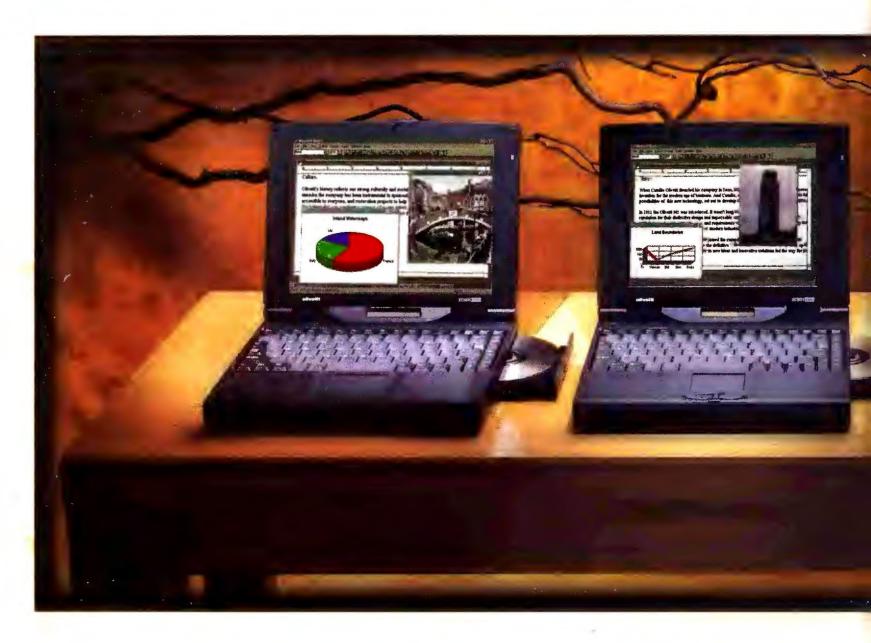
READER SERVICE NO. 803

### MAG InnoVision DX1795

FOR A MERE \$659, the MAG InnoVision DX1795 has a big 15.8-inch viewable screen and a handsome look. But the monitor's picture quality earned only adequate marks from our judges. Text could have been sharper, and colors were a tad dull. To adjust the screen, you simply tap one of nine buttons on the bezel to activate the on-screen menus. Contrast and brightness controls are only a click away, but you must navigate through the cryptic menus to find more advanced con-



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Multi-function bay: 6X CD-ROM (std.),

modular FDD (std.), second battery (opt.)

Est. Street Price:



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trols such as image tilt and trapezoid distortion. MAG InnoVision, 800/827-3998 READER SERVICE NO. 805

### MAG InnoVision DX17T

NOT ALL TRINITRON TUBES are created equal. Graphics looked okay on this \$735 MAG unit, but text was fuzzy on our Web page screen. There are no on-screen menus, but below the screen are 12 unsightly control buttons hidden behind a cover. Adjusting picture size, tilt, and pincushion is straightforward. The three-year parts warranty covers the tube for only two years and labor for one. MAG InnoVision, 800/827-3998

READER SERVICE NO. 804

### **NEC MultiSync M700**

NUMBERS AND LETTERS looked very sharp on the \$899 NEC MultiSync M700, but the foggy graphics were a surprise. The problem: poor glare coating under fluorescent office lights. NEC makes up for this with fancy features. The unit's sleek bezel sports speakers and a mike that sound fine with Windows events but not music. Animated icons and plain-English menus make it easy to figure out advanced controls; for example, the pincushion icon—labeled In/Out—bows back and forth on each side. But the design isn't perfect: It takes four button clicks to adjust contrast, and five just to change brightness. NEC, 800/632-4636

READER SERVICE NO. 806

### Nokia 447Xav

EXTENSIVE AND EXPENSIVE. That's the \$949 Nokia 447Xav multimedia monitor in a nutshell. For starters, the speakers and subwoofer sound great, even with music CDs. The built-in mike is sensitive, and for an extra \$499 Nokia includes a video camera between the speakers. The on-screen menu controls are intuitive, and this is the only monitor in the review that works with Access.bus-enabled PCs. The .25mm stripe pitch Trinitron tube delivers a 100-Hz refresh rate at 1024 by 768 resolution, and 85 Hz at 1280 by 1024. But the combination of average text focus, ordinary color graphics detail, and a steep price balances out the product's many cool features. Nokia, 800/269-6542 READER SERVICE NO. 807

### Panasonic PanaSync Pro C-1792P

TYPE LOOKED CRISPER THAN AVERAGE on page layouts, but lackluster graphics quality and a steep \$859 price kept this .25mm dot pitch monitor off the Top 10 chart. Colors were bright, but skin tones on our image of runners didn't compare to those from higher-ranked monitors. We liked the full palette of on-screen menu controls—such as moiré and image tilt—but none could improve the picture. To its credit, the PanaSync Pro C-1792P offers ample features and a full three-year warranty. Panasonic, 800/742-8086

READER SERVICE NO. 808

### Philips Brilliance 1730DC

HO-HUM TEXT AND GRAPHICS are what you get with this monitor. For \$949, we expected better shadow and highlight detail in graphics, and sharper letters. The speakers inside are okay for Windows events but not for music or games. Then again, adjusting contrast, brightness, or image size takes less than three clicks, thanks to a logical on-screen menu scheme. And the 1730DC's big 15.9-inch viewable screen and strict TCO shielding compliance are pluses. Philips Consumer Electronics Co., 800/531-0039

READER SERVICE NO. 809

### **Portrait Display Labs Pivot 1700**

THIS \$1049 MONITOR is built to tilt. To view full Web pages or layouts, simply grab a corner and rotate the screen from landscape to portrait mode. However,



FULL-PAGE TILT: Portrait Display Labs' Pivot 1700 can show you entire pages-just tilt it from landscape to portrait mode.

each time you pivot the picture, you must press one button to display in the correct orientation and another to degauss the monitor. There are no on-screen controls on the Pivot 1700, but the row of extensive button controls below the screen is clearly labeled. Though the unit refreshes at a standard 75 Hz at 1024 by 768 resolution, in portrait mode we noticed that grids of spreadsheet cells were uneven across the screen. In either position, pictures looked good, but text wasn't crisp. Portrait Display Labs, 800/858-7744

READER SERVICE NO. 810

### Sampo AlphaScan 760

BUSINESS LETTERS look very crisp on Sampo's AlphaScan 760. The .25mm stripe pitch Diamondtron tube displayed type that's as sharp along the edges of the screen as it is in the middle. Graphics looked good, but colors were not as vivid as with monitors on the Top 10 chart. The array of controls arching below the 15.8inch screen is elegantly designed, but it takes a few button clicks to activate and hunt down items in the on-screen menus. That, and a mere two-year warranty, is why this \$849 monitor barely missed a Top 10 ranking. Sampo, 770/449-6220

READER SERVICE NO. 811

### Techmedia TCM-1700G

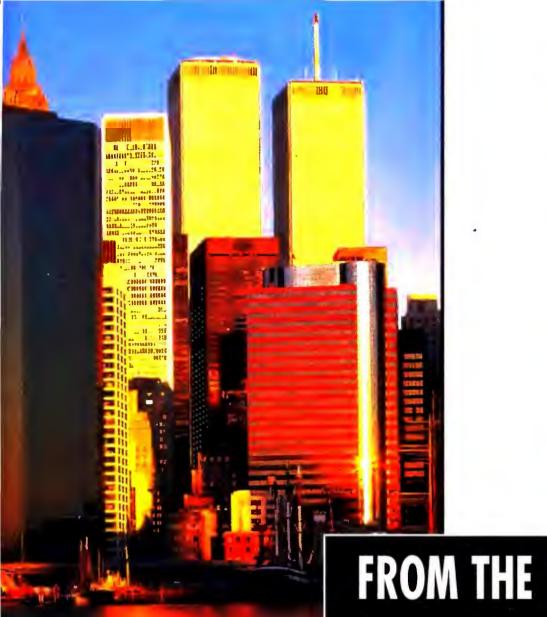
THE PRICE LOOKS GOOD on the \$688 Techmedia TCM-1700G, but the picture doesn't. Fuzzy text and drab graphics kept this low-end monitor out of the running. The on-screen menus were a little awkward to decipher, and there's no image reset button in case you mess up while adjusting the screen. Spend just \$11 more to nab the Best Buy from Panasonic. Techmedia, 800/379-0077

READER SERVICE NO. 812

### Wyse Technologies WY-17E

ASIDE FROM ITS LOW \$711 PRICE, this monitor has little to distinguish itself. Graphics looked acceptable, but the fuzzy text was annoying on the .28mm dot pitch screen. The on-screen menus weren't difficult to master, but repeated button pushing to cycle to each item was tedious. For \$12 less, opt for the Best Buy Panasonic. Wyse Technologies, 800/997-0014

READER SERVICE NO. 813





JUNE 25, 1996 MILLENNIA P133



JUNE 25, 1996 MILLENNIA P166











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Source: PC World Reliability & Service Monitor, May 20 - November 20, 1995



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- PCI 64-bit video, MPEG, 2MB EDO
- Full-size tower with 10 drive bays
- Microsoft Mouse, 104-key keyboord
- Microsoft Windows NT Workstation
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208-893-7393

Business leose \$104/month

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- 256KB internol coche, flash 810S
- PCI 32-bit Ultra SCSI Fast-20 controller
- BX SCSI CD-ROM drive, 3.5" floppy drive
- 16-bit stereo sound & speokers
- PCI 64-bit 3D video, MPEG, 4MB EDO
- Tool-free mini-tower or desktop
- Microsoft Mouse, 104-key keyboard
- Microsoft Windows NT<sup>™</sup> Workstation CD or Windows 95 & MS Plus! CD
- Microsoft Office Pro 95 & Bookshelf 95 CDs
- 5-year/3-year Micron Power warranty\*
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- Microsoft DOS 6.22/Windows® for Workgroups 3.11
- ∮• 5-yeor/3-year Micron Power™ worranty\*
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  - BMB EDO RAM 1,2GB EIDE hard drive
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Microsoft Works preinstolled

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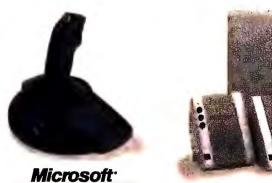


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# RD PROCESSING AMAZING

LAAAADIES AND GENTLEMEN! Step right up! The Amaaaazing Word-o-Matic is now on display! It makes letters, flyers, catalogs, invoices, and more! It slices! It dices! It even corrects your errors for you! And if you order your copy of the Amaaaazing Word-o-Matic today, we'll throw in a Web authoring tool absolutely free! BUT WAIT! THERE'S MORE ...

Some of us still remember the days when a word processor did just one thing: process words. Today's Windows 95 word processors seem to do everything, and then some. How are you supposed to master a program that's part word processor, part spreadsheet, and part database, with some desktop publishing and Web tools thrown in for good measure? With lots of help, that's how.

That's why we've assembled a collection of 101 tips for the three major Windows word processors: Microsoft's Word 7 for Windows 95, Corel's WordPerfect 7 for Windows, and Lotus's Word Pro 96. Most of these tips apply equally well to their older, Windows 3.1 cousins. And as a bonus (we told you there was more), we provide keyboard shortcuts that apply to all three word crunchers, as well as hints on how to use Word for Windows as a Web authoring tool. Like what you see? Fire up your modem, because these and other tips are available on PC World Online.

Make your Windows word processor do it all with these incredible tricks and techniques

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### MY DOCUMENTS, MY FOLDERS!

IN WORD 7, the default location for document files is the My Documents folder. But if you upgraded from Word 6, you probably stored your old documents somewhere else. Instead of moving your docs, change your default directory. Select Tools. Options, click the File Locations tab, then choose Documents in the File Types list. Click Modify, and either choose a different default directory from the list or click the Create New Directory button and create one on the fly.

### A DRAG ALL THE WAY

WHILE WORD 6 AND 7 let you drag a block of text to a new location, that gets tricky if you want to drag it to a part of the document that's not visible on screen. The best solution is to split the document into two panels and drag text between them. Select Window Split; a thin gray line will attach to your cursor. Drag the line to the middle of the screen and click the left mouse button. This creates two windows for the same document, with their own separate vertical scroll bars. Scroll the bottom window to the area where you want embedded graphic to select it, then select Tools. Auto Correct. You'll see part of the graphic displayed in the With window. Type a short abbreviation like mysig in the Replace box, making sure it's not a word you normally type, then click OK to add it your AutoCorrect list. The next time you type the abbreviation, Word will automatically insert the graphic.

### **EDIT IN PRINT PREVIEW**

DO YOU EVER need to edit a document while in Word's Print Preview mode? Click the magnifyingglass button on the toolbar to switch your pointer to the standard I-beam. To enlarge the preview so the text is legible, click the zoom control and pick a larger value (say, 75 percent) from the dropdown list.

### **RESIZE AND SCALE GRAPHICS**

AFTER IMPORTING A GRAPHICS FILE with the Insert-Picture command, you often need to change its size. To do this, first click the graphic to display its sizing handles. To resize the graphic without changing its proportions, click and drag the corner handles. Use the middle handles to resize with different proportions. To crop the graphic so that only a portion of it is displayed, hold down <Shift> and

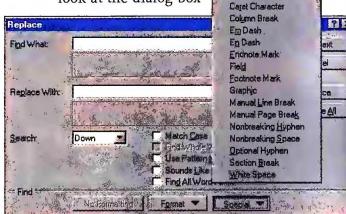
> drag a handle. To return the image to its original size, hold down (Ctrl) and double-click the graphic.

### TYPE THE UNTYPEABLE, PARTI

DO YOU OFTEN insert the same non-keyboard characters (such as a smiley face or a whether a shortcut key is already assigned to this character. If not, press the desired key combination for your shortcut. In most cases, <Ctrl>-<Alt>-key and <Shift>-<Ctrl>-<Alt>-key combinations are not

Any Character

assigned to default shortcuts. After pressing your combination, look at the dialog box



SEARCH FOR NONPRINTABLES To find characters such as tabs or paragraph marks in a Word document, click Special in the Find or Replace dialog box, then select the item you're looking for.

### TYPE THE UNTYPEABLE, PART II

just above the Description frame to see

whether your choice is currently assigned. If not, or if you want to replace the current

assignment, click Assign. Click Close to

make the keystroke permanent.

TO INSERT a trademark symbol (TM), press <Ctrl>-<Alt>-T. Pressing <Ctrl>-<Alt>-R inserts the registered trademark symbol (®), while **<Ctrl>-<Alt>-C** inserts the copyright symbol (©).

### STYLIN' MARGIN

IF YOU USE DIFFERENT paragraph styles in the same document, knowing which styles are used in each section can help you keep an eye on your work. The easiest way is to have Word show the style for each paragraph in the left-hand margin. To set this up, select Tools. Options and click the View tab. In the Window frame, increase the Style Area Width setting to 0.5 inch, then click OK. Need to edit a style? While the style area is displayed, double-click a style name to get to the Style dialog box.

### REPEATED SEARCHES

MOST USERS KNOW that pressing <Ctrl>-F calls up the Find dialog box. But did you know that pressing **<Shift>-<F4>** repeats the last search, bypassing the dialog box?

### THIS BUGS ME

### A Few Choice Characters

PROBLEM: Whenever I try to select a few characters in one word and a few in the next, Word 7 insists on highlighting each whole word.

insert

SOLUTION: Simply drag back to the first word and then drag forward again, or hold down <Shift>- or <Ctrl>-<Shift> and use the cursor keys. If this feature really annoys you, select Tools Options, click the Edit tab, then click the Automatic Word Selection option to disable it.

the new text, then drop it in. When you're finished, select Window-Remove Split to restore the single window display.

### **INSERT GRAPHICS QUICKLY**

DO YOU OFTEN insert a graphic, such as a logo or signature, into your documents? You can automate this process. Open a document containing that image, click the

pointing finger) into your documents? You can do this much faster by assigning a keyboard shortcut to the symbol. First, select *Insert*• *Symbol*, then select either the Symbols or Special Characters tab. Choose a symbol font that contains the character you want. Click that character, then click Shortcut Key. In the Customize dialog box, look at the Current Keys box to see

# COMMON KEYBOARD SHORTCUTS



THE MAJOR WORD processors may claim to be different, but they all speak a universal language-at least when it comes to keyboard shortcuts. The following keystrokes work in any of the three word processors discussed in this article. You'll probably find using them a lot more productive than constantly switching between keyboard and mouse.

Navigation	
Go to beginning of document	<ctrl>-<home></home></ctrl>
Go to end of document	<ctrl>-<end></end></ctrl>
Go to end of line	<end></end>
Go to beginning of line	<home></home>
Go to beginning of next word	<ctrl>-<right></right></ctrl>
Go to beginning of previous word	<ctrl>-<left></left></ctrl>
Go to beginning of next paragraph	<ctrl>-<down></down></ctrl>
Go to beginning of previous paragraph	<ctrl>-<up></up></ctrl>
Go to next open document	<ctrl>-<f6></f6></ctrl>
Go to previous open document	<ctrl>-<shift>-<f6></f6></shift></ctrl>
Selection	
Select character to right	<shift>-<right></right></shift>
Select character to left	<shift>-<left></left></shift>
Select word to right	<ctrl>-<shift>-<right></right></shift></ctrl>
Select word to left	<ctrl>-<shift>-<left></left></shift></ctrl>
Select to end of line	<shift>-<end></end></shift>
Select to beginning of line	<shift>-<home></home></shift>
Select to end of document	<ctrl>-<shift>-<end></end></shift></ctrl>
Select entire document	<ctrl>-A</ctrl>
File management	
Save	<ctrl>-S</ctrl>
Print	⟨Ctrl>-P
Close current document	<ctrl>-<f4></f4></ctrl>
Formatting	
Bold	<ctrl>-B</ctrl>
Underline	<ctrl>-U</ctrl>
<u>Italic</u>	<ctrl>-I</ctrl>

Word asks you to confirm the selection.

### INSTANT **FORMATTING INFORMATION**

EVER NEED QUICK information about the formatting of text, graphic images, or other objects in document? your Click the Help button on the far right of the standard toolbar (the one that looks like a pointer arrow with a question mark), then click on the text or object to get a Help bubble. When you're done, press **<Esc>** to restore the normal pointer.

### 1, 2, 3, GO!

SO YOU'RE READING page 13 of a document and need to get to page 178? You can

quickly access Word's Go To dialog box by double-clicking the page number area on the status bar or by pressing **<F5>**. Type the correct page number inside the dialog box, and you're there.

### **SPEEDY SELECTIONS**

NEED TO GRAB TEXT in a hurry? Click in the blank area just to the left of your text to select the current line. Double-click to select the paragraph. Triple-click or press **<Ctrl>-A** to select the entire document.

### **PRECISION TOOL**

word's rulers make it easy to adjust margins, columns, and tabs, but setting them precisely can be difficult, since the ruler is divided only in 10ths of an inch. To see more precise measurements, hold down the <alt> key while you click on or drag a margin, column, or tab marker. The precise dimension will appear on the ruler.

### **DOWN PARAGRAPH!**

TO ADD SPACE above a particular paragraph, press **<Ctrl>-0** (zero) with the cursor anywhere in the paragraph. Note that this is not a hard return, so you can avoid accidental deletions. The only way to remove this space is by pressing **<Ctrl>-0** again.

### SHIFTING FOR STYLE

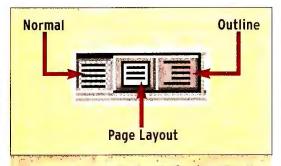
THE DROP-DOWN STYLES LIST on the standard Formatting toolbar is a quick way to select styles for text in your documents, but it normally displays only a few of the styles available in Word. To see all the available styles, such as the Table of Contents or Envelope styles, hold down **<Shift>** while you click the arrow to the right of the list.

### **EXTEND-A-TABLE**

IF YOU NEED TO ADD a number of rows or columns to an existing table, drag the mouse in your current table to highlight the number of rows and columns you want to add, starting where you need the new rows or columns. Right-click that selection, and select Insert Cells. If you selected an entire column or row, select Insert Columns or Insert Rows.

### **TABLE BE GONE!**

THE PROBLEM WITH WORD'S TABLES is that they just don't know when to leave. Pressing **Delete** with a table selected



QUICK SWITCH: Instead of using Word's menus to switch between the Normal, Page Layout, and Outline views, use these icons on the horizontal scroll bar.

### **BE AN INK-JET-SETTER**

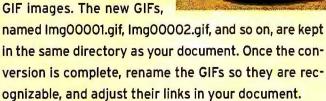
IF YOUR DOCUMENT footers or headers don't print on your ink jet printer, it's probably because Word is trying to print them too close to the edge of the paper, which ink jets can't handle. Here's the solution. Select File Page Setup, and click the Margins tab. In the From Edge box, set the Header and Footer values to 0.7 inch or more. To make this the new default for all documents, click Default, then Yes when

# WORD GOES WEB: INTERNET ASSISTANT

### FROM DOC TO HTML IN NO TIME

PROBLEM: I need to convert a complex Word document into a Web page. It has been formatted with styles, and it contains several embedded graphics and Excel tables. **SOLUTION:** Open your file in Word and select Save As.

In the Save as type dropdown list, select HTML Document (\*.htm). Internet Assistant converts Word styles to the closest available HTML styles. (If you've created your own styles, see the help system for how to map them to HTML styles.) Embedded graphics and OLE objects such as Excel tables will convert to



### **EASY AS A STENCIL**

PROBLEM: All the pages on my Web site have the same formatting and layout, and I keep having to repeat the same steps whenever I create a new one.

SOLUTION: Create a Web page template. Open an existing HTML document in Word, replace the existing text with generic labels such as Page banner, Body text, List item, and so on. Select Save As. In the Save as type field, select Document Template (\*.dot). Give the file an appropriate name (for example, Web Catalog Template), and click OK. You'll be asked if you'd like to save the new template with Word's Normal template or the Internet Assistant template attached. Select the latter. When you're ready to update your site, select File New and double-click that template's icon.

### **FIX UNEVEN SPACES**

PROBLEM: I often insert horizontal lines between blocks of text. When I preview the pages in a Web browser, the rules are surrounded by uneven space-too little before, too much after.

> **SOLUTION:** Internet Assistant adds a new paragraph tag after horizontal rules. Select View HTML Source. Scroll until you see <HR>, the HTML tag for a horizontal rule. Delete the <P> that follows it, and click Return to Edit Mode.

### IT'S ALL RELATIVE

PROBLEM: Whenever I add a graphic element to a new,

as yet unsaved document I lose the link to its file in the version that I post to my World Wide Web site.

**SOLUTION:** When you create a link in an unsaved document, Internet Assistant creates a link to a fixed file location rather than to a relative address. To avoid this, always save a document before you start embedding links in it. But if you've already established a link in an unsaved document, here's what to do: Double-click the afflicted GIF, click the Link Path button, and uncheck the Use fixed file location option. Click OK.

### **RETURN TO EDITOR**

PROBLEM: While editing the HTML source, I sometimes accidentally close the window that contains the Close button (which allows me to return to HTML edit view). How do I get back?

**SOLUTION:** That button is a just a floating toolbar. Right-click the Word toolbar, select HTML from the popup menu, and that button will reappear.

-Asha Dornfest

### documents, you may be prompted to save them, one by one. **CLEAN UP CLUTTERED MENUS**

The Close command

will be replaced with Close All. Select that option to close all

your documents. If

you have any unsaved

WANT TO REMOVE an unused command from a menu? Press (Ctrl>-(Alt>-<Hyphen>. Your pointer will change to a thick minus sign. Click the menu, then the command you want to remove. To restore an entry, select Tools. Customize, click the Menus tab, and select the menu you want to configure and the command you want to restore. Click Add. then Close.

### **MOUSELESS** CONTEXT

WANT TO DISPLAY one of Word's context-sensitive shortcut menus without having to click your right mouse button? To do this, just move your cursor to the

entry you want, then press <Shift>-<F10>.

### **BUTTON REMOVAL**

TO REMOVE AN UNWANTED BUTTON from a toolbar, hold down <alt> while you drag the button off the toolbar and into the document window. But be sure this is what you really want, because there's no automatic way to undo this move. If you change your mind, you'll need to rightclick the toolbar, select Customize, scroll down the Categories list until you find that icon, then drag it to up the toolbar.



deletes only its contents, not the table itself. To remove the table, click anywhere inside the table with the mouse, press <al><alt>-5 using the numeric keypad to select the table or use Table. Select Table, rightclick the selected table, and select Cut.

### MAKE YOUR OWN SHORTCUTS

NOT EVERY MENU COMMAND in Word has a corresponding keyboard shortcut, but that doesn't mean you can't create one of your own. Hold down (Ctrl>-(Alt) and press + on the number pad. The mouse

pointer will change to a special symbol. Select a menu command or toolbar button with this cursor to pop up the Customize dialog box. Press your desired keystroke combination, check for conflicts below the Press New Shortcut Key box, and click Assign, then Close.

### **CLOSE ALL DOCUMENTS** INSTANTLY

IF YOU NEED TO CLOSE all currently open documents with just one command, hold down **<Shift>** while you select *File*.



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To prevent circumstances or surroundings from getting in your way, we created the new TravelMate® 6000 series. An unprecedented 6-way modular bay delivers optimum storage and memory capabilities,

### TRAVELMATE 6000 SERIES

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- o 6-way modular bay
  with floppy or optional
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  capacity diskette drive,
  2nd Lithium ion battery,
  2nd HDD, weight
  reduction module
- Energy-saving, super high aperture TFT screen
- O Zoomed video port
- o 120 or 133MHz Pentium® processor with PCI bus (internal and external)

thus offering greater flexibility to work when and where you choose. With a trim 5.9 lb. frame illuminated by a noticeably brighter, more energy-efficient screen, it's ideally suited to even the most unusual locations. The TravelMate 6000 series is also fully supported by our new line of livegear™ accessories, including a wide range of optional docking stations. All told, it's the perfect opportunity to do something highly out of the ordinary.



Circle 235 on reader service card

### What's Up, .doc?

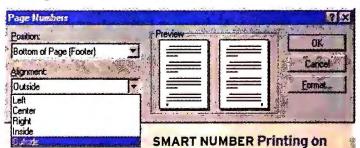


PROBLEM: No matter what extension I give my documents, Word 7 insists on tagging on the .doc extension, so I get file names like budget.89.doc. Is there a way around this?

SOLUTION: Type quotes around the file name in the Save As dialog box (for example, "budget.89"), and Word will accept it without forcing the default extension.

### **KEEP 'EM TOGETHER**

so you've Applied automatic hyphenation to your Word document, but there's a section of text that you don't want to hyphenate? Just select the appropriate text, right-click your selection, select Para-



both sides of the paper? Here's how to add page numbers to the outside bottom corner of each page. Select Insert • Page Numbers, then select Outside in the Alignment list and click OK.

graph, click Text Flow, and select Don't Hyphenate. This technique is quite handy for social security numbers, phone numbers, and any other type of text that you wouldn't want to break across lines.

### **LOVE THOSE DEFAULTS**

TO RESTORE A TOOLBAR to its default settings, right-click on the toolbar, select Toolbars from the pop-up menu, choose the toolbar you want to fix, and click Reset. Click OK twice to

finish the job.

### **FULL VIEW**

DOES TEXT KEEP SCROLLING off your screen? Word can display your document so it fits the width of the window. On the standard toolbar, click the dropdown-list arrow next to the Zoom

plays the current zoom level as a percentage of actual size), and select Page

Width.

Control (which dis-

**UNTIL THERE'S AKLINGON DICTIONARY...** 

THE SECTIONS OF A Word document that

contain foreign language or technical jargon can cause headaches when you run a spelling checker, because your word processor will prompt you to check each and every one of these specialized words. To force Word to skip over specific pas-

> sages during checks, select the text, select Tools. Language, and click (no proofing).

### **EVERY CHARACTER** COUNTS

word's standard Tools. Word Count command will count the number of characters in a selection of text for you, but it has a habit of ignoring the spaces between

words. When every character counts, use Microsoft's free enhanced Word Count. which can be downloaded from the company's world Wide Web site (http: //www.microsoft.com/MSOffice/MSWord/ FreeStuff/fs\_wd\_wdconverto5.htm). Install this utility in your \Winword\Startup group, and it'll add itself to your Tools menu. The next time you run Word Count, you'll have the option to count spaces too.

### THIS BUGS ME

## **Dodging Fake Bullets**

PROBLEM: I often get e-mail messages with mock bullets (spaces and hyphens) inserted at the beginning of each line. I want to convert them to Word bullets, but there's too much junk at the beginning of each line-spaces, asterisks, and so on.

SOLUTION: Hold down <alt>, click at the upper left corner of the</a> text, then drag the mouse over the desired area, selecting the

spaces and other offending characters in front of each line. When you're done, let go of the mouse button and press (Delete). You may need to repeat this for some stray spaces. Now block-select the text and apply real bullets by clicking the Bullets button on the toolbar.



# WORDPERFECT

### DON'T LOSE THE WRAPPER

TO CREATE A FILE that will import and reformat easily in other programs, don't just save it as ASCII. Instead, choose ASCII (DOS) Generic Word Processor (\*.\*) format when you use WordPerfect's Save As command. If you use the ASCII (DOS) Text (\*.\*) format, WordPerfect will add carriage returns to the end of each line, thereby losing the word wrap and making it a pain to import the document into another application.

### **EXPAND THE CLIPBOARD**

THE WINDOWS CLIPBOARD can hold only one item at a time. Fortunately, WordPerfect has a way around this restriction. To add to the contents of WordPerfect's clipboard, select the part of your document you want to paste, and select Edit. Append. You may repeat the process as many times as you want.

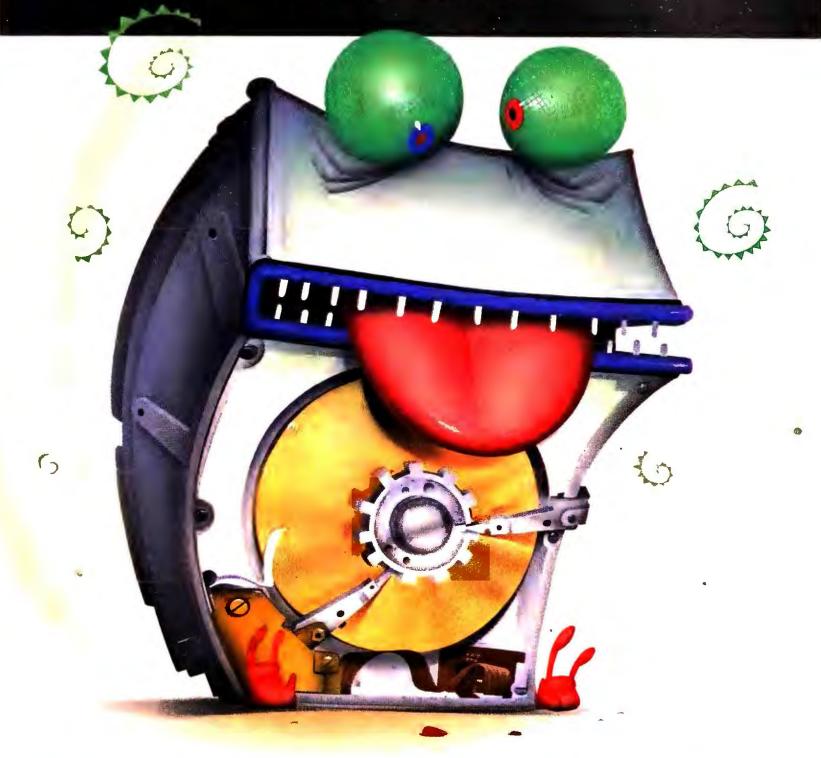
### **BACK TO WORK**

IF YOU USE LONG DOCUMENTS frequently, you'll be happy to know that the next time you launch WordPerfect, you can start work at the place where you left off. Select Edit. Preferences, then doubleclick the Environment icon. Click Always in the Save Workplace frame. Click OK, then Close. WordPerfect will start each subsequent session by loading the documents you used in the last session and placing the cursor right where it was when you exited the program.

### **CHANGE DEFAULT FONT**

YES, IT'S POSSIBLE TO CHANGE Word-Perfect's default font, but this option is buried where you'd least expect it. With a blank document on the screen, select File. Print. Select. Choose the printer you normally use, if it's not already selected. Select Options-Initial Font. In the Printer Initial Font dialog box, select the font name and size you want to use for all documents, then click OK. Click Select in the Select Printer dialog box, then select Close in the Print dialog box.

# IT'S WHAT KEEPS YOUR GIG DRIVE FROM GAGGING.



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### FINDING HIDDEN TEXT

HIDDEN TEXT formatting in WordPerfect is useful for annotating documents, but it's hard to tell which text is formatted as hidden text while you're editing, since it looks just like normal text. Here's how to identify hidden text on screen. Select the text you want to format as hidden, then select Format. Font. Click the Hidden Text check box in the Font dialog box, then go to the Color Options area and pick a color other than your normal text color. Click OK to apply the formatting. Note: Hidden text will print when it is displayed. To prevent this text from being printed, go to the View menu and deselect Hidden Text before you print.

### **CIRCUMVENTING OLE**

TO EDIT OBJECTS embedded in a document, just double-click them. Object Linking and Embedding 2.0 lets you edit them from within the document, without launching their native applications. In some cases you may need to open those apps, particularly if you want to work with other files. To do this in WordPerfect, hold down (Alt) while doubleclicking the object. That will start the application with the object loaded. Don't worry; by doing so, you don't lose your OLE functionality.

### **DISPOSABLE MACROS**

EVERY ONCE IN A WHILE you need to record a macro to perform a series of repetitive tasks for just that session. To do this, select Tools. Template Macro · Record, and click Re-

cord in the Record Template Macro dialog box. Make sure you don't type anything in the Name field. Record the desired commands, then select Tools. Template Macro.

# TOP 15 ONLINE RESOURCES

WE'D LOVE TO TELL YOU that this article has all you need for using your word processor more effectively, but that would be a *slight* exaggeration. You can find infinite volumes of tips, FAQs, and other types of help online. We've rounded up the top 15 sites on the Web and on CompuServe. And there's more to this list than meets the eye: Most of these Web sites offer links to dozens of other useful resources. -Aoife McEvoy

### All word processors

http://www.wordinfo.com/links/tiplist.htm

Links to dozens of great tip and FAQ sites.

http://www.hic.net/goliad/wordbk.htm

Word processing resource pages; links to other sites; shareware.

### CompuServe: go winword

One of the most active user-to-user and tech support message boards on CompuServe. For all versions.

### http://www.microsoft.com/support/products/office/word.htm

Microsoft Online Support; extensive knowledge base; tons of FAQs; feature articles; free software; links to newsgroups and more. For Word 6 and 7.

### http://www.nd.edu/~crunge/word.html

The Unofficial Microsoft Word for Windows Home Page: links to other support sites; tips, tricks, macros, templates and newsgroups. For Word 6 and 7.

### http://www.sni.net/wopr/

WOPR offers various goodies: add-ins for Office '95; tips and technical support options. For Word 7.

### WordPerfect

### CompuServe: go wpwin

Corel's forum features active message boards for technical support issues and user-to-user interaction. For WordPerfect for Windows.

### Usenet newsgroup: news:bit.listserv.wpwin-l

Never mind customer support; talk to the real Usenet newsgroup experts-users like you, some of whom are real gurus. For WordPerfect 6.1 and 7.

### http://daedalus13.mc.duke.edu/fag/WPWin2.html

A good collection of FAQs, tips, and links to other sites. For WordPerfect 6.1 and 7.

### http://www.rci.rutgers.edu/~dmikov/wp.htm

A wealth of tips, techniques, articles, macros and templates; useful software and add-ons; links to other sites and newsgroup access. For WordPerfect 6.1 and 7.

### http://www.wpmag.com

WordPerfect Magazine: Quick and easy shortcuts to customize your settings and speed up your work. For WordPerfect 6.1 and 7.

### http://www.corelnet.com/corelnet/resource.htm

CorelNet is a good place to start: tips and tricks; article excerpts; knowledge base; newsgroups. For WordPerfect 6.1 and 7.

### Word Pro

### CompuServe: go frm-558

A Lotus-operated customer support forum and user-to-user message board. For Word Pro 96.

### http://www.lotus.com/wordpro/street.htm

Lotus Development's Word Pro Street-all you need to know: FAQs and a slew of tips and tricks. For Word Pro 96.

### http://tile.net/smartnotes/technical9.html

Word Pro FAQs. For Word Pro 96.

Record again to stop recording the macro. To use the macro, select Tools-Template Macro Play, then click Play, without entering a name.

### **SHRINK TO FIT**

THE FORMAT • MAKE IT FIT EXPERT is great for making a document fit onto fewer pages. But this Expert affects

# It's What Makes Your Scanner Shine.



#### SCSI. The cool connection for hot peripherals.

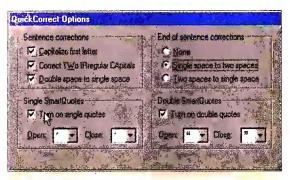
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or visit our cool home page at www.adaptec.com





IF YOU TYPE TWO SPACES at the end of a sentence but your company insists on one, WordPerfect 7 can help. Select Tools • QuickCorrect, click the Options button and make your selection.

only text, margins, and line spacing. It cannot change the size of graphics or tables. So if you're going to shrink a document that has these elements, it's a good idea to resize them before using the Expert.

#### **USE DEFAULT MENUS**

IF YOU'VE EVER INHERITED somebody else's copy of WordPerfect and it seems a little strange, it's probably

because that person customized the program's menus. But don't fret. You can revert to the standard WordPerfect 6.1 menus by pressing <Shift>-<Ctrl>-<Alt>-<Backspace>.

#### **DOCUMENTS AT A GLANCE**

TO PRINT A LIST of your files complete with directory information, select File. Open, then set the Open File dialog box to display the directories and files that you want to list. Click File Options, then click

Language Current Language: OK Czech Cancel DΚ Danish NL OZ Dutch English-Australia Help \* English-Canada nglish-U.K English-U.S. Language: US Writing Tools (Spell Checker, Thesaurus, Grammatik, etc.) use the dictionaries of the current language if they're available. You can disable Writing Tools for portions of the text that you don't want to check with the current X Disable Writing Tools (in this portion of the text)

PARLEZ HUH? In WordPerfect 6.1, you can selectively disable the spelling checker. Select the text, then select Tools.Language. Click Disable Writing Tools.

Print File List. Click Print, then select Cancel to close the Open File dialog box.

#### **INSTANT GO TO**

DON'T WANT TO GO through the menus to use the Go To command? Right-click any scroll bar to display a menu that shows the Go To, Bookmarks, and Preferences commands.

#### **CORRALLING TEXT BLOCKS**

TO USE YOUR MOUSE to select a vertical block of text, hold down <Shift> while you right-click and drag the mouse from the upper left corner of the block to the lower right corner.

#### THIS BUGS ME

#### Selective Selection

PROBLEM: When I select a few words with the mouse, WordPerfect won't let me extend the selection to the first letter or letters of the last word in the selection, but insists on highlighting the entire word.

SOLUTION: Hold down <Alt> as you click and drag, and you'll be able to select any portion of the last word.

#### STYLES BY EXAMPLE

HERE'S A GREAT WAY to avoid using WordPerfect's notoriously confusing Style feature: Format text in a document, select Format. Style, then click Quick Style to create a new style based on the selection.

#### **CUSTOMIZE THE BAR**

THERE'S MORE TO THE STATUS BAR than meets the eye. To add functionality to that bottom line, right-click the status

> bar, then select Preferences. Mark items you want included on the status bar (Date and Time are great ones), unmark those you want removed, then click OK. This isn't just for display: Most items in the status bar are clickable.

#### **RAPID-FIRE BULLETS**

IF YOU'VE INSERTED a bullet or number in your document using the Insert. Bullets & Numbers menu option, insert another of the same item later, anywhere in the document, by pressing <Shift>-<Ctrl>-B.



#### EASIER ON THE EYES

IF WORD PRO'S DEFAULT bright-white background is hard on your eyes, here's some relief: Right-click in the editing area of a blank new document and select Page Properties. In the InfoBox, click the Page Lines & Colors tab, then drop down the Background color list. From the color grid, pick a light color that works for you, then close the InfoBox. To save these settings,

> select File Save As. In the Save as type drop-down list, choose Lotus Word Pro SmartMaster (\*.MWP), then locate and select default .mwp (normally in the lotus\ smasters\wordpro directory) in the file/folder list. Click Save, and answer Yes when prompted to overwrite the file. Normally, this background color would print as a shade of gray, but you can prevent it from printing. Select

File Print, then click Options and click On preprinted form. Select OK to close the Options box, then Print.

#### **SEE-THROUGH FRAMES**

FRAMES ARE GREAT tools for desktop publishing, but if you don't configure them correctly, they can obstruct text on the page. To make a frame transparent so background text or other frames show through, right-click the frame, then select Frame Properties. Click the Frame Lines and Colors tab in the InfoBox, then select None in the Pattern drop-down palette.

#### **UNWELCOME SCREEN**

TIRED OF THE "WELCOME" BOX that greets you every time you start Word Pro? Select File · User Setup · Word Pro Preferences. Drop down the Disable list, and click Welcome Dialog.

#### PASTE TEXT INTO A TABLE

WHENEVER YOU PASTE multiple paragraphs of text (or text with tabs) into a single table cell, you lose hard returns and tabs, wreaking havoc with your table. To force these elements into the table, click in the target cell, then select Edit• Paste

# AITech Introduces the PC to TV Love Connection





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PC/TV-1108



ProPC/TV Type II





































# WHEN YOUR WORD PROCESSOR ISN'T ENOUGH

Today's word processors are powerful, but they can't do it all. Third-party vendors have come up with tools to help fill some of the gaps. There are dozens of such programs, but the selection listed here should give you a good start.

Task	Product	Description
HTML	Internet Assistant for Word 6 and 7 free, downloadable	Turn Word documents into Web pages.
authoring	from http://www.microsoft.com/msword/internet/ia/	
Generate	EndNote Plus \$299, Niles & Associates, 510/559-8592	Excellent tool for students, college professors,
bibliographies		researchers, and anybody else who needs to automate
		bibliographies. Doesn't yet support Word Pro.
Enhance Word	WOPR 6 and WOPR 95 \$49.95, Pinecliffe Int'l,	Several powerful menu and interface enhancements as
	314/965-5630	well as printing features.
Turn Word	Info Accelerator \$99.95, Baarns Publishing,	Customizable, full-fledged contact manager includes
into a PIM	800/377-9235	great mail-merge tools, a calendar, a phone log, and more.
Manage files	FileManager Junior shareware, available on PC World	Simplifies file management in Word 7; much faster than
in Word 7	Online, registration fee: \$19.95	the Save As or File Open dialogs.
Write better	Lifetime Encyclopedia of Letters \$69.95, Streetwise	850 letters for every business need; integrates with
letters	Software, 800/743-6765, or as shareware from PC	your word processor's menus.
	World Online	

Special instead of pressing <Ctrl>-V. In the As list, select Rich Text Format.

#### SPEED UP WORD PRO

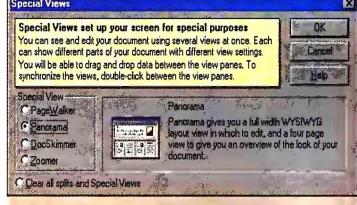
IF YOU'VE GOT LESS than 16MB of RAM, Word Pro can feel downright poky. To speed it up, consider these options: 1. Cut down the number of fonts installed in Windows: 2. Reduce the number of undo levels (select File · User Setup · Word Pro Preferences, click the General tab, and set the Undo levels value to fewer than the default of the fonts in the document. Select File Document Properties. Document. Click the Options tab, then select Embed fonts in document. Note: As TrueType fonts tend to consume anywhere from 10K to 250K, the saved document could be considerably larger.

#### **CHANGE CELL HEIGHT**

WORD PRO adjusts a cell's height based on its contents. To

set a custom

height, right-click in a cell and select Cell Properties from the menu that appears. Click the Table Cell Size & Margins tab, then click Automatic row height to deselect that option. Once this is done, you can resize the cell.



**CUSTOM VIEW Set up your Word Pro viewing options** using View. Special Views. But save the views for final editing since they can be a bit slow to update.

#### THIS BUGS ME

### Directory Assistance

PROBLEM: Whenever I try to save or open a file, I need to tell Word Pro which directory to go to, even though I've already used that directory in the current session. **SOLUTION:** Tell Word Pro to use the directory you

most recently accessed in the Open or Save As dialog boxes. Select File•User Setup•Word Pro Preferences, then click the Locations tab. Select Use working directory to enable that option, then click OK.

100 levels); 3. In the same dialog box, drop down the Disable list and select Small file format, OLE unless required, and Background Spell Check.

You'll sacrifice some functionality, but you'll notice a significant speed boost.

#### **EMBEDDING FONTS**

TO ENSURE that other users see your file the way it appears on your system, embed

#### **BULLETS OVER TABLES**

WORD PRO AUTOMATICALLY indents the text that follows bullets. But if you copy bulleted text into a table or a frame, you lose the indent and the text doesn't get aligned properly. The solution is simple: Select the text to copy or cut, then press **<Alt>-<Enter>** to open the Text Properties InfoBox. Click the Text Alignment tab,

then click Options. Click Ignore indent when not in main body of document.

#### **ROTATE TEXT IN TABLES**

TO PLACE TEXT VERTICALLY in column heads, select the cells you want to rotate, then right-click and select Cell Properties. Click the Misc tab, then Text Direction.

George Campbell is a contributing editor for PC World. Asha Dornfest (asha@ dnai.com) is the author of Do-It-Yourself Web Publishing with Word (Sybex, 1996, 510/523-8233). Aoife McEvoy is an assistant editor for PC World.

I N T E

BUT WAIT! There's more! In addition to these amazing tips, PC World Online gives you links to the shareware programs and

sites mentioned in this article. Log on now! Operators are standing by! http://www.pcworld.com

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NFI

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Desktop or Mini-Tower Chassis

Win '95 Keyboard & MS Mouse

Windows '95 Pre-Installed

Three-Year Parts & Labor Warranty

Energy-Star Compliant

#### Austin Élan Workstation **Standard Features:**

mtel 440FX PCI Set

180- or 200 MHz Intel Pentium Pro Processor

256 to 512K L2 Pipeline Burst Cache

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133MHz Intel Pentium Processor 16MB EDO RAM (expandable to 128MB) 1.2GB Enhanced IDE Hard Drive 64-Bit PCI Video Accelerator - 2MB DRAM 8X 1DE CD-ROM Drive, 16-Bit Audio, 40W Stereo Speakers

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#### Austin Affinity XR-Pro Server Standard Features:

Intel 440FX PCI Set

256K L2 Cache

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16-Bit Video

3.5" 1.44MB Diskette Drive

10Base-T PCI Network Adapter

4 ISA, 4 PCI, and 1 Shared Expansion Slot

Tower Chassis (26"H x 10" W x 25.5"D)

300W Power Supply

101-Key Keyboard

Three-Year Parts & Labor Warranty

One-Year On-Site Service



Intel 450GX PCI Set

Affinity XE: 512K L2 Cache Affinity XE Pro: 256K or 512K L2 Cache

Mylex or AMI PCI RAID Controller

6X SCSI CD-ROM Drive

3.5" 1.44MB Diskette Drive

16-Bit Video

100Base-T PCI Network Adapter

Affinity XE: 4 EISA, 4 PCI Expansion Slots Affinity XE Pro: 4 EISA, 6 PCI Expansion Slots

Tower Chassis (26"H x 10" W x 25.5"D)

500W Power Supply

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64MB RAM - Expandable to 512MB

3 2GB Hot-Swappable Fast & Wide SCA Hard Drives – Expandable to 48GB

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Austin Edge Duet™ Standard Features:

#### Base Unit:

Intel 430MX PCI Set

256K Pipeline Burst L2 Cache

3.5" Diskette Drive, (Use external

with Base Unit or mount in Docking Station)

28.8 Fax/Modem w/ Speakerphone

16-Bit Stereo Business Audio,

Built-in Mic, Speaker & External Line-In/Out

Lithium-Ion Battery

Integrated Glide Point<sup>®</sup> Mouse

Base System Weight with Battery: 4.7 lbs.

Win '95 Plug n' Play BIOS and Windows® 95 Pre-Installed

#### Portable Docking Station:

6X CD-ROM Drive

Feature Bay for 3.5" Diskette Drive

Built-In 10Base-T Ethernet

Retractable Stereo Speakers w/ Subwoofer

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Docking Station Weight: 2.0 lbs.

#### Austin Edge CD Notebook Standard Features:

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Internal 3.5" Removable Diskette Drive,

(Swappable w/ 2nd Battery or 6X CD-ROM)

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16-Bit Stereo Business Audio.

Built-in Mic, Speakers & External Line-In/Out

Lithium-Ion Battery

28.8 Fax/Modem w/ Speakerphone

Integrated Glide Point® Mouse

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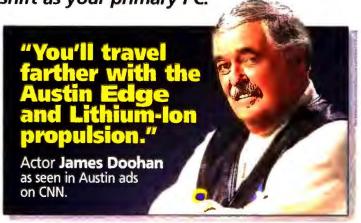
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16MB EDO RAM (expandable to 40MB)

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# Bargain Hunter's Guide Buying DCs

Smart ways to save hundreds of dollars on a new-or nearly new-Pentium PC.

Alton Martin saved

more than \$2000

ALTON MARTIN KNOWS a bargain when he sees one. An executive vice president at consulting firm Customer Outsourcing Performance Center in Austin, Texas, Martin is always on the lookout for computer hardware that fits his needs—and his budget. "We don't want anything fancy," he says, noting that his company sticks to typical business applications. "We just need good prices."

Good prices are just what Martin gets. His secret? He buys refurbished computers instead of new ones. Martin figures

by buying refurbished PCs.

he's saved more than \$2000 on the ten refurbished Dell computers he's bought over the past two years—and there's little or no downside to the deal. "We've had no equipment failures, nothing dead on arrival, and no part problems," he says.

BY LAURIANNE MCLAUGHLIN AND BRONWYN FRYER

Buying refurbished equipment is just one crafty way to save big bucks on a computer while you're waiting for the fabled \$500 Internet box to arrive. If you don't need a state-of-the-art system, and you're willing to take a risk on used hardware or don't mind trading in your old system, you can save even more money. Even as prices on new Pentium systems continue to plummet, you can still spend less by looking around first.

Of course, buying anything on the cheap involves trade-offs. Systems with slower processors and older components may not be able to run the latest operating systems and applications, limiting your ability to upgrade software. You'll have to spend more time tracking down a good deal and be more flexible about the equipment you're seeking. You also won't get the same warranty protections you get with a new PC, and if things go wrong, you may have to pop the hood and do the troubleshooting yourself. But if you know the tricks and avoid the traps, you can find excellent deals from unusual sources.

#### THE REFURBISHED ROUTE

WILLING TO LIVE WITH a PC that has a mysterious past? Refurbished PCs are nearly new computers that may have been Jim Dreyer bought a used 486DX-33 Gateway 2000 system for a dirt-cheap \$385.

used briefly and then returned to the manufacturer. They may be victims of buyer's remorse, units returned because of faulty components, or models that have simply been discontinued. In most cases the vendor makes any needed repairs, tests the system rigorously, and then sells it at a substantial discount. To be on the safe side, however,

it's a good idea for users to thoroughly test refurbished equipment immediately after it arrives.

The popularity of refurbished computers is skyrocketing, and no wonder: Systems from big-name vendors such as Compaq, Dell, Gateway 2000, IBM, Micron, and NEC sell for hundreds of dollars less than regular street prices. Angela Freeman, an editorial researcher in San Francisco, found a great bargain on a fully loaded Micron Millennia P133 through the company's Boise, Idaho, outlet store (208/893-7600). The system, with 16MB of RAM, a 1.6GB hard drive, and a 15-inch monitor, went for just \$1750-almost \$400 off the price of a new computer system.

"If you know what you want and don't need much hand-holding, buying refurbished is perfect," Freeman says.



# Secondhand PCs, First-Rate Prices

Buying a refurbished PC from a factory outlet can save you a little money or a lot, depending on when you shop. Inventory changes by the hour, so don't expect every vendor to offer a refurbished Pentium-166 every day. By the time you read this, prices for the systems listed may have dropped substantially. All these systems come with 16MB of RAM; the Refurbished column lists components and options that differ from new systems'. The Savings column shows how much you can save by buying refurbished instead of new. -Aoife McEvoy

System	Brand-new	Warranty	Street price	Refurbished	Warranty	Street price	Savings
Dell Dimension XPS P166 800/336-2891	2.5G8 hard disk; 2M8 of VRAM; 8X CD-ROM drive; 17-inch monitor; Windows 95, Office Professional	3 years parts; 1 year on-site	\$2581	2GB hard disk; 6X CD- ROM drive; DOS and Windows 3.1; Office Pro- fessional not included	90 days parts and labor; no on-site	\$2347	\$234
Compaq Presario 9660 CDS P166 800/318-6919	2G8 hard disk; 6X CD-ROM drive; 28.8-kbps modem; 15-inch monitor; speakers; Windows 95, Quicken	3 years parts and labor; 90 days on-site	\$3499	same	90 days parts and labor; no on- s就e	\$2938	\$561
Gateway 2000 P5 166 816/545-3700	2.5G8 hard disk; 8X CD-ROM drive; 28.8-kbps modem; 17-inch monitor; 16-bit sound card; speakers; Windows 95, Office Professional	3 years parts; 1 year on-site	\$2699	2G8 hard disk; 6X CD-ROM drive	3 years parts; 1 year labor; 1 year on-site	\$2445	\$254
Micron Millennia P166 208/893-7600	2.5G8 hard disk; 8X CD-ROM drive; 2M8 of DRAM; 28.8-kbps modem; 17-inch monitor; speakers; Windows 95; Office Professional, Microsoft Plus	5 years CPU and RAM; 3 years parts; optional 1 year on-site	\$2938	2G8 hard disk, 6X CD-ROM drive; Microsoft Plus not included	5 years CPU and RAM; 3 years parts; 1 year labor; no on-site	\$2725	\$213
NEC Ready 9619 P166 800/632-4636	2G8 hard disk; 6X CD-ROM drive; 2M8 of VRAM; 28.8-kbps modem; 17-inch monitor; sound card; speakers; Windows 95, Works, Publisher, Encarta	3 years parts and labor; 1 year on-site	\$3523	same	1 year parts and labor, no on-site	\$2698	\$825

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She's even happier with Micron's threeyear warranty on refurbished PCs—many companies offer only 90-day warranties on such systems, with a 7-day money-back guarantee. "If something does go wrong, my PC has almost the same warranty as the new systems," Freeman says, adding

Whether you buy

refurbished or used, the

most important thing to

check is the warranty.

In most cases, it's going

to be short.

that the only things missing are a moneyback guarantee and the one year of free on-site service she'd get with a new Micron.

Other manufacturers have their own ways of selling refurbished systems. Compaq and Gateway 2000 sell from

outlet stores and take phone orders, while IBM sells exclusively by phone. Dell takes phone orders, but many of the best specials in its outlet store in Austin are available on a walk-in basis only. The Compaq Works outlet in Houston, Texas, stocks discontinued items that go for as little as 60 or 70 percent below retail.

The bargains don't stop with complete systems. We found a refurbished Canon BJ-200e personal ink jet printer at the Compaq Works outlet (800/318-6919) for \$129—less than half the price of the current BJ-200ex model. You can also find white-elephant deals on older equipment for starving students or your relatives in Minsk: During a promotion over Memorial Day weekend, the store sold 486s for \$300 to \$1000.

But going the outlet route is not all roses. Warranties vary widely, the selection is limited and unpredictable, and you may spend a lot of time looking for items that may never be in stock.

If a factory outlet doesn't have what you need, look for an independent firm dealing in discontinued and refurbished PCs. Rumarson Technologies (800/929-0029), based in Kenilworth, New Jersey, sells brand-name PCs from manufacturers such as AST, IBM, NEC, and Zenith Data Systems. At press time, Rumarson was selling a new AT&T Globalyst Pentium-133 with 8MB of RAM, a 1.6GB hard drive, a 16-bit sound card, a 28.8-kbps faxmodem, a 6X CD-ROM drive, and a 14inch monitor for \$1704. Comparable new systems cost about \$1900.

Micro Exchange (800/284-1200), based in Nutley, New Jersey, sells brand-name, mint-condition (A-grade) Pentium-60 systems complete with monitor for as little as \$800. Refurbished (B-grade) computers assembled from brand-name components are even less expensive: \$199

> for a 486 without monitor. However, the B-grade machines are a little like Frankenstein's monster: The parts may not always get along, and the whole caboodle may lack documentation. A-grade computer systems from Micro Exchange come with warranties ranging

from one year to 90 days, depending on the product, while the B-grade systems have a 90-day warranty. All Micro Exchange systems also come with a 7-day money-back guarantee.

#### **USED, NOT ABUSED**

IF YOU DON'T MIND a little wear on the key caps, you can save even more with used, brand-name systems returned from leasing programs. Big Blue's leasing arm, IBM Credit Corp. (800/426-5440), sells mostly older PCs—486s, some PS/2 systems, and earlier ThinkPad notebooksbut you can hunt down newer models as well. All systems come with a 90-day warranty and a 7-day money-back guarantee. We found a refurbished IBM 486DX2-66, with 8MB of RAM and a 540MB hard drive, for \$780 including monitor.

There's a catch, of course: Most leased equipment has already withstood at minimum one year of heavy use. Conrad Baker, a director of management information systems at Dover Chemical Corp. in Dover, Ohio, is happy with the three previously leased 486-33s he bought for \$500 each from IBM Credit. But Baker wouldn't buy such equipment from anyone else. "I felt since they were on IBM's maintenance contract the whole time they were on lease, they'd probably be in good shape," he says.

Whether you buy refurbished or used, the most important thing to check is the warranty. In most cases, it's going to be short. Of the major vendors that we researched for this article, only IBM

# **Bargain Hunting** Do's and Don'ts

ECKLI

There's treasure galore out there, but where do you start? And once you've found something, how can you tell whether it's today's hot deal or yesterday's leftovers? Here's how you can find the system you want at a great price-and not feel like kicking yourself next week.

Do your homework. Once you've picked out your dream system, contact the manufacturer and dealers for the latest prices and warranty terms. There's no sense in buying a refurbished or used system if it costs only a few dollars less than a new one. To gauge prices, browse current street-price indexes online, postings in Usenet forums such as misc.forsale.computers, and your local newspaper's classified ads.

Be flexible. Identify similar systems you'd be content with if you can't get your first choice. Be clear about what you don't want: If you need a Pentium, don't let a sales rep talk you into a 486.

Compare apples to apples. When evaluating systems, be clear about processor speed, installed RAM, hard disk capacity, monitor size and maximum display resolution, multimedia extras (including CD-ROM drive speed), and bundled software. If you're shopping for a laptop, ask whether the display is active-matrix or dual-scan, what type of battery the system uses, and whether a carrying case is included. And don't forget that warranty.

Kick the tires. Whether you're buying a new or refurbished computer, test everything-including peripherals and software you intend to add to it-before the moneyback guarantee expires, If you're planning to buy a used system, check it out thoroughly before forking over any money. And whenever possible, buy with a credit card for maximum protection against shoddy merchandise and rip-offs.

If you're not sure, wait. In the computer business, everything will be bigger, faster, and less expensive next month or even next week. When a newer and better system comes out, the computer you almost bought will probably still be around-and will most likely be even cheaper.

-Scott Spanbauer



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and Micron provide the same warranty on refurbished systems as they do on new ones. (But as noted earlier, Micron does not provide on-site service or a moneyback guarantee.) If the computer breaks down outside the warranty period, you'll have to pay for the repairs yourself, and replacement parts may be difficult or impossible to find.

One solution to a short warranty is to purchase a third-party service contract from a local or national dealer. For example, Computerland (408/475-9500) in Capitola, California, sells warranties for \$150 to \$250 per year, depending on the machine. These contracts cover everything except routine maintenance for users in and around San Jose. Nationally, IBM (800/426-7378) offers premium onsite repair service for Pentium-grade machines of any make or model for around \$300 a year.

Even without the safety net of a long warranty, the savings you'll realize on previously owned systems are good

Despite problems with an older PC hard drive, Molly Cagle says buying refurbished systems is a great way to save.

enough that even people who've had problems come back for more. Molly Cagle, a State Farm Insurance agent in Baytown, Texas, bought a refurbished Compaq Presario Desktop 972 that turned out to have a bad hard drive. She returned the system within

the 90-day warranty period, and the hard drive was replaced. When no other problems developed, she bought a refurbished Aero notebook, too. "Going refurbished is a way to buy a good PC for a lot less than you'd pay retail," Cagle says.



#### TRICKS OF THE TRADE-IN

IF YOU'RE LOOKING to buy a new computer, chances are you need to unload your old one. As with buying a new car, trading in your old model can shave a few dollars off the price of a new one. Of

course, selling it via the local classifieds might net you more money, but it's also a lot more hassle.

Fred Butts of Southlake, Texas, squeezed the last \$100 out of his prehistoric IBM XT two years ago by trading it in to Computer Recycle Centers (817/282-1622) in nearby Bedford for credit toward a new system. "I ran a classified ad in the Fort Worth Star-Telegram for the whole summer, and nobody would look at it," he recalls.

There are numerous firms that specialize in buying computers in large batches, but it's more difficult to find companies willing to do low-volume deals. Computer Recycle Centers takes used computer systems—even no-name clones and 386s-in virtually any quantity. Larger nationwide firms such as Micro Exchange and Rumarson Technologies accept tradeins of 10 to 20 systems or more.

But don't think you're going to make big bucks on your old computer systems-most 486s bring in less than \$500. "If it's older than five years, the product is pretty much worthless," says Michael Schuler, Micro Exchange's vice president of remarketing.

# Web Sites for Savvy Shoppers

The Internet can help you become a smarter shopper. It can also turn you into a sucker. As with any other marketplace, the only way to know a good deal from a rip-off is to do your homework and be cautious with your credit card numbers. Check these sites for great deals on new and used hardware. -Aoife McEvov

	Web site	Description
×	Anchors Away Corp. http://www.anchors-away.ca	Distributor for used, discontinued, and refurbished systems, notebooks, peripherals, and RAM.
	Continental Resources http://www.conres.com	New and used AST, Compaq, HP, IBM, NEC, and Toshiba systems.
	Corporate System Center http://www.corpsys.com	New and refurbished hard disks, controllers, CD-ROM drives, and accessories at wholesale prices.
	Discount Computer Supplies http://www.webcom.com/~dlscount	E-mail quotes for hard disks, motherboards, memory, CPUs, sound and video cards, and CD-ROM drives.
	eBay AuctionWeb http://www.ebay.com/aw	Trading ground for buyers and sellers of hardware, software, and tons of peripherals.
	Oak Park Personal Computers http://www.oppc.com	E-maii quotes for used AST, Compaq, Gateway 2000, IBM, and NEC systems, plus other weekly specials.
	Onsale http://www.onsale.com	Live e-mail auction house for desktops, laptops, and peripherals.
	Price Watch Computer Index http://www.pricewatch.com	Best street prices available on PC components.
	United Computer Exchange http://www.uce.com	Global clearinghouse for buyers and sellers. List your own items for sale, browse the inventory, or make a bid.
	Used Computer Mall http://www.usedcomputer.com	Used brand-name PCs; MicroPricer survey lists used computer prices from dealers around the country.

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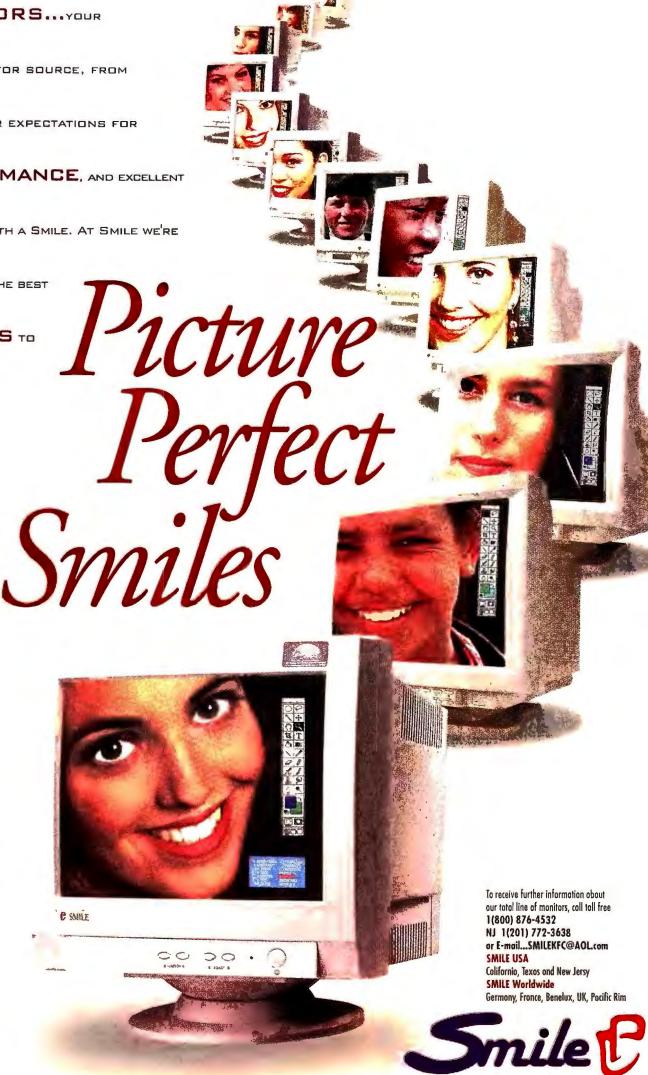
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#### ONLINE BARGAINS AND BEYOND

WHETHER YOU KNOW exactly what you want to buy or you're just window-shopping, the online world is a great place to find used and discounted hardware. You'll find dealer Web pages with the latest prices, Usenet groups filled with realworld advice, and forums on America Online and CompuServe where you can order PCs and components at a significant discount. (For information on other products for sale online, see "Web Sites for Savvy Shoppers.") Most of the companies selling online are small dealers or brokers expanding their existing operations into cyberstorefronts.

Online shopping can uncover discounts of 10 to 50 percent off the price of a new

# All the Buying News That's Fit

sional misinformation in Internet newsgroups are nuggets of real-world purchasing wisdom-and in some cases, great deals on used computer equipment. Some newsgroups listed here may not be available through your Internet service provider. Check local groups, too, for individuals and dealers near you. We've listed one for the San Francisco Bay Area (ba.market.computers).

aol.commerce.computers.forsale

ba.market.computers

comp.forsale.computers

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or used PC. In June, Atlanta used-computer brokerage United Computer Exchange (http:// www.uce.com) offered an IBM color ThinkPad 755 with 24MB of RAM, an 800MB hard drive, a DX4-100 CPU, and a 28.8-kbps modem for \$3000—that's \$900

less than the street price for the same system. And Discount Computer Supplies in Erial, New Jersey, offered to build a new Pentium-133 clone with a 1.6GB hard drive, 16MB of RAM, a 6X CD-ROM drive, a 28.8-kbps modem, a 14-inch monitor, and a one-year warranty for \$1549. You can find the company online (http://www.webcom.com/~discount).

Price isn't the only benefit to shopping online. You can shop at 3 a.m. on a Sunday if you like, and no pesky salesperson will breathe down your neck. Of course, the same caveats about shopping by mail apply to shopping online. Last May, Jim Dreyer, a self-employed sales representative in Madison, Wisconsin, bought a used 486DX-33 Gateway 2000 system for a dirt-cheap \$385. When the system arrived, he found that its CD-ROM drive lacked an adapter, and he also had to pony up \$40 for shipping and handling. "The Web page didn't warn me about those charges," he says.

Buying equipment from online sources or private parties can be scary, because there's no guarantee that the products will be reliable. Still, if you really need a certain item, you may find yourself with no other recourse.

Roger Richardson, owner of Delta Sigma Company, a robotics and radar equipment manufacturer in Hesperia, California, says that when he was hunting for a specialty plotter for his business, he had no choice but to look online. "We needed an accurate plotter, and pen plotters are the best for that, but no one makes them anymore," he recalls. "I looked everywhere, and finally found this place on the Internet that had just what I wanted for \$1200—one-third the price of the cheapest ink jet plotter—and there's absolutely nothing wrong with it."

If you prefer to make your deals face to

Price isn't the only benefit to shopping online. You can shop at 3 a.m. on a Sunday if you like, and no pesky salesperson will breathe down your neck.

face, computer auctions offer overstocked, refurbished, and discontinued equipment at anywhere from 10 to 30 percent below the lowest street price. You can usually find information about upcoming auctions in the business section of your local paper.

But auctions aren't for novices. Stay away unless you know exactly what you're buying, and be sure to inspect the merchandise closely before the bidding starts.

If you're willing to scrape the bottom of the barrel, check out computer swap meets, which offer a plethora of items at rock-bottom prices, sold by everyone from reputable store owners to gang members. Here the primary danger is buying faulty or stolen goods. According to Inspector Eric Olsen of the San Francisco Police Department's fencing unit, the willful purchase of stolen merchandise is a felony. Olsen suggests checking any equipment at a swap meet for a serial number, then checking that number against the vendor's-and the swap meet owner'sinventory lists. "If we can prove stuff is stolen, we love to prosecute," he says.

#### THE ROAD LEASE TRAVELED

IF YOUR CASH FLOW is more like a trickle but your business relies on getting the latest Pentium Pro, leasing is a last, best resort. The benefits are obvious: Instead of plunking down serious cash up front, you pay a monthly fee of about \$100 to \$300 that you can write off as a business expense. When you no longer need the PC, you send it back. In the long run, though, leasing isn't a money-saving proposition. By the end of the lease's term, you'll have paid nearly the full price of the PC with no assets to show for it.

No matter which route you take, tracking down a bargain PC will pay off. Now what will you do with the money you save on hardware? How about a little software?

Laurianne McLaughlin is an associate editor and Bronwyn Fryer a contributing editor for PC World. Assistant Editor Aoife McEvoy and Contributing Editor Scott Spanbauer contributed to this article.



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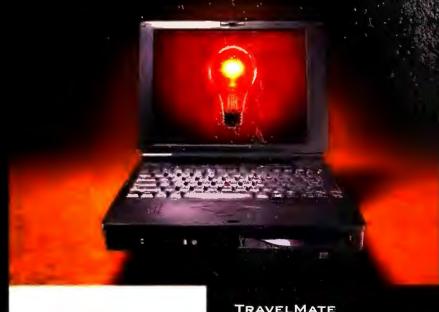






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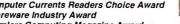
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B Y
B R A D
G R I M E S





Dell's P200 other Powe

TOP OF THE TOP:
Dell's new Dimension XPS
P200s leaps ahead of 14
other P-200s and tops our
Power Desktops chart.

LOOKING FOR the best PC, printer, modem, graphics board, or monitor? Our new Top 100 section brings PC World's monthly Top 20 and Top 10 hardware reviews together under one banner. We'll test and rank the same number of products in all our hardware categories as before, but beginning with this issue we've juggled and repack-

aged the information into a format that's more accessible and easy to use.

Each month we'll summarize our top picks and the hottest trends, so you'll always have the information you need to buy the best computers and peripherals. For details on the changes we've made, see "Introducing the Top 100." And for a rundown on how you can access these reviews online, see "Make Your Own Top 100."

#### P-200S ARE GOOD BUYS

THE BIGGEST NEWS in PCs this month is Intel's Pentium-200 chip. We tested 15 new P-200 PCs, 9 of which placed on our Top 20 Power Desktops chart. Three of these—the \$3329 Dell Dimension XPS P200s, the \$3259 Micron P200 Millennia, and the \$4276 Dell OptiPlex GXMT 5200—earned Best Buys.

While the new P-200s are fast, they're not as fast as Pentium Pro-200 systems. In fact, they're not as fast as we thought they'd be. As we expected, the average P-200 machine is faster than the average P-166, but only by about 8 percent—and that's with most of our test PCs equipped with 32MB of RAM, compared to 16MB of RAM in most of the P-166s we've tested.

So why have P-200s claimed almost half the spots on the Top 20 chart, including three Best Buys? There are a couple reasons. First, faster is faster,

no matter how small the speed increase may be. The slowest P-200 on the chart is still faster than 13 of last month's Top 20 power desktops. Secondly, these P. 200s give you more features for your money than any crop of new systems we've seen.

In the past, we've found that prices of new power

desktops start out prohibitively high and then become more affordable within a few months. But some of the P-200 machines are priced to move right from the get-go,

3-D TAKES OFF IN PCs:

The top-ranked Diamond

Stealth 3D 2000XL

brings 3-D effects to

some of the latest PCs.

CPUs, 2GB hard disks, and other high-end hardware. This month's top-ranked Dell Dimension XPS P200s, for

despite their brand-new

instance, costs \$400 less than a similarly configured Dimension XPS P166c did when it first came out. That's because chips and other components are less expensive now. When first introduced,

P-166 processors cost \$749 each; the P-200 chip costs \$599. The prices of big hard drives and memory have dropped, too. The bottom line: These new P-200



THIS MONTH WE'VE IMPROVED the way we present our Top 20 and Top 10 reviews. Almost every change is based on the feedback you've given us through surveys, focus groups, and letters.

We started by making our Top 20 lists easier to read. We've placed scores and features in two separate charts, and we now list features and

test results for all Top 20 PCs, not just the new ones. We've also changed the way we present test results. In addition to scoring the speed of a system by giving its PC World-Bench number, we assign it an easy-to-understand word score, ranging from "outstanding" to "poor," to help you get an overall feel for the product. But sometimes test results speak for themselves. In the Top 10 Printers chart, for instance, we present performance results in pages per

minute so you can quickly compare them to those of other tested printers as well as to the pages-per-minute rating that vendors supply.

Questions about the charts? The following section should answer most of them. If not, ask us; see page 12 for contact information.

How do the charts work? The Top 20 and Top 10 charts are constantly changing lists of the best PCs, monitors, modems, printers, and graphics boards we've tested. Every month we test the latest products in each category and compare them to the existing pool of products we've reviewed. As new items appear on the charts, those at the bottom drop off.

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 objective benchmark scoring. 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 make it onto the chart.

> What does the PC WorldBench score mean? It's a measure of how fast a PC is compared to our baseline machine, a Dell P75t configured with 8MB of RAM, a 540MB hard drive, and no secondary cache. A system that scores 200, for instance, is twice as fast as our baseline unit, while one that scores 82 is 18 percent slower.

Where do the reliability and service and support scores come from? For PCs, the reliability score and the "service"

portion of the service and support score come from readers who respond to the Reliability and Service fax-back survey in each issue of PC World. The support score is based on the vendor's support policies (length of warranty, available support hours, toll-free lines, and so on). Together they form our service and support score.

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 comparison to other power notebooks. Word scores for other categories, such as features and design, are relative to all desktops or all notebooks.

PCs give you greater speed and more features at good prices.

Only two new PCs made our Top 20 Budget Desktops chart this month. The seventh-ranked \$1695 Blackship P150 CyriMedia 6x86 and the number 15 \$2295 Acma zPower 166v are the two fastest budget systems we tested, with PC World-Bench scores of 196 and 199, respectively.

Other fast PCs are becoming good buys,

too, as the new Pentiums cause companies to slash prices on older models. Two P-133s jumped from the Power chart to the Budget list this month following price drops of as much as \$370. The \$2349 Micron P133 Millennia, once a mainstay of the Power chart, earns a budget desktop Best Buy, while the \$2352 NEC PowerMate P133 lands at number 12.

#### **NOTEBOOKS TAKE** SIDES

NOTEBOOK PCS ARE rapidly falling into two separate CPU classes. All the new notebooks in the Top 20 this month are either Pentium-133s or Pentium-100s, and one of each ends up high on the Power Notebooks chart. The \$3298 Toshiba Satellite Pro 420CDS P-100 reaps top honors because it's an affordable multimedia portable that performs like a champ and runs for more than 4 hours on a single battery charge. The third-ranked \$6299 Toshiba Tecra 720CDT P-133 is the new Rolls-Royce of portable PCs. Its active-matrix screen is a 12.1-inch technological marvel that uses a virtual desktop mode to display programs at 1280-by-1024-pixel resolution.

Other new notebooks to debut on the Power chart are the IBM ThinkPad 760E, the fastest notebook we've tested, and the Austin Edge CD P133, a high-end portable with a relatively low price.

On the Budget Notebooks chart, the Toshiba Satellite 100CS continues its reign in first place. The NEC Versa 550D moves up to the second slot now that Toshiba has discontinued its old DX4-75-based Satellite 2130CS and 2130CT models.

# MAKE YOUR OWN TOP 100

PC WORLD ONLINE PUTS even more Top 100 information at your fingertips. In addition to writeups of systems that didn't make the Top 20 lists, you'll find an interactive program that lets you create your own charts. Ever wonder which PC would land at the number one spot of a Top 20 chart if you could apply your own buying criteria? Now you can find out using our Web site's customizer. The customizer uses criteria you choose plus PC World's current data and test results to generate custom-built Top 20 charts for desktops and notebooks. If you have Netscape Navigator 2.0 with Macromedia's Shockwave for Director plug-in, you can use an even cooler version of the customizer that lets you set criteria with sliding scales and drag-and-drop icons. It's easier to use

than the normal point-and-click interface.

In coming months we'll add our Top 10 reviews to the customizer so that you can build your own charts for printers, modems, graphics boards, and monitors.

Missed a review? You can find past Top 20s and Top 10s on our Web site. Just go to the headings Current Issue, Hardware, or Mobile Computing, and you can search the last 18 months of PC World reviews of systems, monitors, modems, graphics boards, and printers. It's all on PC World Online (http://www.pcworld.com).

The three new machines on the Budget Notebooks list. the Digital Hi-Note VP, the

AcerNote Light 356, and the Austin Edge XP 100, are powerful portables that each cost less than \$2500. You pay less because they don't have a CD-ROM drive or an active-matrix display. Nevertheless, their P-100 processors and 16MB of RAM give them the kind of performance we expect from more expensive notebooks.

#### THE TOP PERIPHERALS

SEVENTEEN-INCH MONITORS aren't much less expensive than they were a year ago, but today's models are crisper and have more sophisticated controls. As high-speed PCs become cheaper, it's easier to spend an extra \$600 or so on a bigger display. Of the 25 different 17-inch monitors we tested in this month's roundup (see "More for the Money: 17-Inch Monitors"), the \$899 IBM P70 is the best. Its picture looked great to our judges, the viewable area of its tube is relatively large (15.9-inch diagonal screen size), and it's easy to adjust.

Graphics boards that do a good job of displaying 3-D images are becoming more common. Two of the three new products

on this month's Top 10 Graphics Boards chart-the \$179 Diamond Stealth 3D 2000XL and the \$199 ATI 3D Xpressionare fine boards that combine business and basic 3-D functions at discount prices.

Historically, color printers haven't worked well in black and white; text just isn't as crisp. But the only new entry in this month's Top 10 Printers chart—Xerox's \$6500 XPrint 4920 Plus—does a very nice job of combining sharp black text with good color printing. It can't beat HP's \$1999 color ink jet, the DeskJet 1600CM, for overall value, but at number two on the color chart, the XPrint is the best color laser workgroup printer we've seen.

We tested eight new modems, but none qualified for the Top 10 Modems chart. The Motorola Lifestyle 28.8 still reigns as our top external modem, and the Zoom V.34C tops the PC Card list.

Brad Grimes is an associate editor for PC World. Editorial Assistant Allyson Bates, Staff Editor John Goddard, Senior Associate Editor Bryan Hastings, Assistant Editor Eric Hellweg, Senior Editor Carla Thornton, and freelance writer Joe Hutsko contributed to the Top 100. Testing for the Top 100 by Dave Casini, Ulrike Diehlmann, Jeff Kuta, Kevin Mitchell, Mike Salayko, and Susan Silvius. See page 12 for contact information.

WITH NAVIGATOR 2.0 and Shockwave, you can drag and drop your specs.



# TOP 20 POWER DESKTOPS

	Systems	Last month	Last reviewed	Street price (6/15/96)	СРИ	Comments
1	Dell Dimension XPS P200s 800/613-3355 www.dell.com	-	new	\$3329	Pentium-200	Case and hot graphics card are pluses; fast, but not faster than EDO DRAM systems.
2	Dell OptiPlex GXpro 200 800/613-3355 www.dell.com	1	Aug 96	\$4676	Pentium Pro-200	Fastest system to date; modular design; built-in networking; highly reliable.
3	Dell Dimension XPS Pro200n 800/613-3355 www.dell.com	3	Aug 96	\$3599	Pentium Pro-200	Well-designed system is fast, but other Pentium Pro-200s are faster.
4	Micron P200 Millennia 800/223-6571 www.micron.com	_	new	\$3259	Pentium-200	Performs well for a P-200 with 16MB of RAM; comes with good 3-D graphics card.
5	Dell OptiPlex GXMT 5200 800/613-3355 www.dell.com		uem , ,	\$4276	Pentium-200	Fast P-200 is networkable right out of the box; can't add many PCI cards, though.
6	Gateway 2000 P5-200XL 800/846-2000 www.gw2K.com	<u> </u>	new	\$3899	Pentium-200	Comes with CD-recordable drive, multimedia, modem, lots of software.
7	Micron P166 Millennia Plus 800/223-6571 www.micron.com	7	Mar 96	\$3649	Pentium-166	SCSI version of Micron's reputable Millennia line includes lomega Jaz drive.
8	Quantex QP6/200 SM-2 800/896-4898 www.quantex.com	11	Aug 96	\$3149	Pentium Pro-200	Better speed and features than number three Dell, but reliability score is much lower.
9	Quantex QP5/200 SM-2 800/896-4898 www.quantex.com	· · · · cherrish / englare o	uew ************************************	\$3099	Pentium-200	Inexpensive for a fast, loaded P-200; reliability score hurts.
10	HP Vectra 500 Model 515MCx 5/166 800/752-0900 www.hp.com	6	July 96	\$3345	Pentium-166	HP's newest line is good for small and home offices; includes voice mail.
11	ZDS Z-Station GT 500 Series 800/533-0331 www.zds.com	- Hear	new	\$3797	Pentium-200	Fast and well put together, except for the add-in cards—they're upside down.
12	HP Vectra VL Series 4 5/200MT 800/752-0900 www.hp.com	,, sta 1 , , , , , , , , , , , , , , , , , ,	new	\$4122	Pentium-200	Well-configured P-200 is a bit slow for its CPU class; P-166 version is also a good PC.
13	IBM PC 350 P200 800/426-2968 www.ibm.com	es.	new	\$4835	Pentium-200	Fast PC features new technologies such as universal serial bus, but it's expensive.
14	Maximus Magna Media P-166 800/888-6294 www.maxImuspc.com	8	July 96	\$2499	Pentium-166	Super price for multimedia P-166; company's reliability, service are unknown.
15	NEC PowerMate P166 800/632-4636 www.nec.com	13	Aug 96	\$2999	Pentium-166	Over \$250 off this month; quality components, but so-so P-166 performance.
16	Tangent MediaStar 200 800/829-2850 www.tangent.com		new	\$3195	Pentium-200	Fastest P-200 to date; built-in speakers and video input, but no cool software.
17	Compaq Deskpro XL 5133 800/345-1518 www.compaq.com	15	Mar 96	\$3759	Pentium-133	Solid PC, but you pay a premium for built-in SCSI, networking, and EISA slots.
18	Cyrix 6x86-P166+ PC 800/340-7501 www.cyrix.com	19	July 96	\$3869	Cx6x86-P166+	\$700 price drop; P-166 speed, loaded with software and multimedia hardware.
19	Xi P166MTower SP 800/432-0486 www.win.net/xi_comp	14	Арг 96	\$2749	Pentium-166	\$250 price drop, nice monitor, fax-modem; reliability and service are unknown.
20	Xi Pro 200 MTower SP 800/432-0486 www.win.net/xi_comp	16	July 96	\$4699	Pentium Pro-200	Minitower with SCSI hard drive is fast, but it's expensive even after a \$600 price drop.
	Best Buy See features chart, pa	200	rformano	shart nees 200		Recommended as home system

<sup>1</sup> To order fax copies of system reviews, call 800/434-4495 from a touch-tone phone and use your credit card. You can order next month's reviews in advance: Power Desktops, Budget
Desktops, or Notebook PCs Top 20 charts and capsule reviews (\$9.95, available August 28). You can also order a previous month's Top 20 chart with capsule reviews plus features and
performance charts (\$4.50) and Individual capsule reviews with features and performance charts (\$1.50 each). Prices effective for the U.S. and Canada. Foreign orders are \$15 for advance



USUALLY WHEN A NEW FLEET of PCs hits the market, it takes a while for them to gain a foothold on our Top 20 Power Desktops list. But this month, nine new Pentium-200 systems landed on the chart. Among their cool new features are a CD-recordable drive in the Gateway

2000 P5-200XL and a powerful network maintenance program in the IBM PC 350 P200.

One system that didn't make the Top 20 is the Unisys Aquanta DM P-200. Back to selling consumer PCs after a long hiatus, Unisys has some work ahead. For write-ups of the Aquanta and other PCs that missed the Top 20, check out PC World Online (http://www.pcworld.com/t2opcsnaps).

			ş	ARD				
Overall rating	PC World- Bench score	Performance	Reliability	Features and design	Price	Service and support	Reader service number	Fax reprint number'
88	208	very good	good	outstanding	average	best	679	3415
87	232	outstanding	good	outstanding	very expensive	best	680	3401
86	211	very good	good	very good	average	best	681	3402
85	210	very good	good	outstanding	average	fair	682	3416
85	216	very good	good	very good	expensive	best	683	3417
84	208	very good	fair	outstanding	expensive	good	684	3418
83	198	good	good	outstanding	average	fair	685	3331
82	224	very good	poor	outstanding	average	fair	686	3405
81	216	very good	poor	outstanding	average	fair	687	3419
81	192	good	good	very good	average	fair <sup>2</sup>	688	3383
80	215	very good	fair <sup>z</sup>	outstanding	average	Service and their services and a	689	3420
80	201	good	good	very good	expensive	good <sup>2</sup>	690	3421
80	215	very good	fair	very good	very expensive	good	- Western Land	3422
79	201	good	3	outstanding	inexpensive	3	691	3384
78	194	good	fair	very good	average	fair ²	692	3406
78	220	very good	3 Sandal des l'appliches degles pour le	outstanding	average	3	693	3423
78	173	good	good	very good	average	good y	694	3340
77	199	good	3	outstanding	expensive	3	695	3387
77	199	good	pi Pi Pi Pinarakai a Madanii.	outstanding	inexpensive	3 - 3	696	3385
77	221	very good	3	outstanding	very expensive	3	697	3407
Perce overa	ntage of Il rating:	Performance 25 percent	Reliability 25 percent	Features 20 percent	Price 15 percent	Support 15 percent		

Top 20s, \$8 for previous months' Top 20s, and \$4 for individual reviews. <sup>2</sup> Limited data; score is based on responses for this company and average of all companies. <sup>3</sup> insufficient data.

For more information about all products in this table, circle reader service no. 907.

# This Month's Best Buys

#### NO. 1: DELL DIMENSION XPS P200S

PROS: Big hard drive, 8X CD-ROM drive, fast graphics card, 28.8-kbps fax-modem

CONS: A bit slower than we expected considering use of fast SDRAM; no speakers

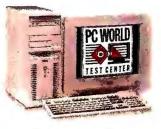


Like most new systems (including several of the P-200s we've tested), the top-ranked \$3329 Dell

Dimension XPS P200s isn't as fast as we expected. But it's faster than any other Dimension Pentium PC we've seen, and it's particularly well designed.

While the P-200 Dimension has the right overall mix it takes to top our chart, its PC WorldBench score of 208 is bound to go up with future revisions to the system. One place Dell will be looking for an extra boost is in its memory system. The new Intel chip set that Dell includes in its Dimension "s"

series supports SDRAM, a faster type of main memory than today's popular DRAM. But in our tests this month,



**Dell Dimension P200s** 

the SDRAM-based Dimension lagged behind several P-200 desktops that use EDO DRAM. As Dell tweaks this PC, we expect its speed to improve.

One thing Dell doesn't have to tweak is the graphics card. Our test system features the Number Nine Imagine 128 Series 2 with 4MB of VRAM. While this card added more than \$300 to the price of our system, it can handle all your graphics chores, including high-end image editing and desktop publishing. It even has 3-D hardware and support for CAD acceleration. Other notable features include 512K of pipeline-burst cache, a crisp Dell 17-inch monitor, and a U.S. Robotics 28.8kbps fax-modem.

Dell bundles Microsoft Office Professional with this system, but no speakers to go with the integrated sound chip. A set of standard speakers will cost another \$36. Also, make sure you ask Dell to include a Windows 95 CD-ROM if you order. Dell tells us that the standard procedure now is to load Win 95 but not send the CD-ROM unless customers request it.

#### NO. 2: DELL OPTIPLEX GXPRO 200

PROS: Fastest system we've tested, exceptional design, integrated networking

CONS: Expensive, 4X CD-ROM drive



If you want the fastest PC on the block, the Dell OptiPlex GXpro 200 is for you. With a PC World-

Bench score of 232, this Pentium Pro-200 is over 10 percent faster than the fastest P-166 we've tested and 5 percent faster than

the fastest P-200. Its high \$4676 price buys a built-in 3Com ethernet adapter, lots of RAM, and a Number Nine Imagine 128 Series 2 graphics card with 4MB of VRAM.



Dell OptiPlex

The GXpro doesn't pretend to deliver a supreme multimedia experience—it's

	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
V.	Deli Dimension XPS P200s*	Pentium-200	16	512	2.6	Number Nine Imagine 128 Series 2	4/VRAM	17/15.3	.28	8X
2	Dell OptiPlex GXpro 200*	Pentium Pro-200	32	256	2.1	Number Nine Imagine 128 Series 2	4/VRAM	17/15.6	.28	4X
3	Dell Dimension XPS Pro200n*	Pentium Pro-200	32	256	2.1	Number Nine (magine 128 Series 2	4/VRAM	17/15.3	.28	8X
4	Micron P200 Millennia*	Pentium-200	16	512	2.6	Diamond Stealth 3D 2000XL	2/EDO DRAM	17/15.9	.26	8X
5	Dell OptiPiex GXMT 5200*	Pentium-200	32	512	1.6	Number Nine Imagine 128 Series 2	4/VRAM	17/15.6	.28	4X
6	Gateway 2000 P5-200XL	Pentium-200	16	512	2.6	Matrox MGA Millennium	2/WRAM	17/15.9	.26	8X
7	Micron P166 Millennia Plus	Pentium-166	16	256	2.2	Diamond Stealth64 Video VRAM	2/VRAM	15/13.6	.28	8X
8	Quantex QP6/200 SM-2	Pentium Pro-200	32	256	2.6	Diamond Stealth64 Video 3200	2/VRAM	17/16.1	.26	6X
9	Quantex QP5/200 SM-2	Pentium-200	32	512	2.6	Number Nine Imagine 128 Series 2	4/VRAM	17/16	.26	8X
10	HP Vectra 500 Model 515MCx 5/166	Pentium-166	16	256	1.6	integrated Trio64	1/DRAM	15/13.7	.28	4X
11	ZDS Z-Station GT 500 Series	Pentium-200	32	256	2.6	integrated ATI-264VT	2/SGRAM	17/15.5	.26	8X
12	HP Vectra VL Series 4 5/200MT	Pentium-200	16	256	1.6	Matrox MGA Millennium	2/WRAM	15/13.5	.28	4X
13	IBM PC 350 P200	Pentium-200	32	512	1.6	Integrated Trio64V+	2/EDO DRAM	17/15.5	.28	- 6X
14	Maximus Magna Media P-166	Pentium-166	16	512	2.1	Matrox MGA Millennium	2/WRAM	15/14	.28	6X
15	NEC PowerMate P166	Pentium-166	16	256	2.1	Matrox MGA Millennium	4/WRAM	15/13.5	.28	6X
16	Tangent MediaStar 200	Pentium-200	32	512	2.1	STB Lightspeed 128	2/MDRAM	17/15.6	.28	6X
17	Compaq Deskpro XL 5133	Pentium-133	16	256	1.1	Compaq OVision	2/VRAM	- 15/13.6	.28	4X
18	Cyrix 6x86-P166+ PC	Cx6x86-P166+	16	256	4	Matrox MGA Millennium	2/WRAM	17/16	.27	6X
19	Xi P166MTower SP	Pentium-166	16	512	1.3	Matrox MGA Millennium	2/VRAM	17/16	.26	6X
20	Xi Pro 200 MTower SP	Pentium Pro-200	32	256	4.3	Matrox MGA Millennium	4/WRAM	17/15.7	.25	6X

\*Best Buy

a fast machine designed to exist in a corporate setting. The 4X CD-ROM drive is slow by today's standards, and the integrated Vibra 16 sound chip and Altec Lansing ACS 31 speakers are fairly plain.

If you want to add better multimedia components later, however, you'll have no problem. The OptiPlex GXpro 200 features a desktop design that is a vast improvement over previous OptiPlex systems. The case is easy to remove, and the layout inside is very modular. Cards are housed on a vertical riser plane that snaps out with the touch of a lever. Even the power supply swings aside for unrivaled access to the motherboard and drive bays. As we would expect from Dell, the new design is clearly explained in the system's manual. It's one of the most easily upgradable systems we've ever seen.

With its combination of speed, features, and top-notch design, the OptiPlex GXpro 200 is a no-brainer Best Buy.

#### NO. 3: DELL DIMENSION XPS PRO200N

PROS: Big hard drive, powerful graphics card CONS: Sluggish for a Pentium Pro-200



For a loaded Pentium Pro-200 that's as well built as the Dimension XPS Pro200n,

\$3599 is a good deal. That covers 32MB of RAM, a big hard drive, an 8X CD-ROM drive, and a Number Nine Imagine 128 Series 2 graphics card with 4MB of VRAM. In addition, Dell

Its minitower design, which is the same as that of the top-ranked Dimension XPS P200s, is an improvement over previous

bundles Microsoft Office Professional so

you can start working immediately.

Dimension designs we've seen. It has a sensibly placed on/off button that can't be mistaken for a floppy eject, and its tidy interior allows for easy upgrading.

The Pentium Pro-200 processor itself is a minor disappointment. The system's PC

WorldBench score of 211 is the lowest of all the Pentium Pro-200s we've tested, just 3 points higher than the number one Dimension XPS P200s, which is based on a regular Pentium-200 CPU. Still, the XPS



Dell XPS Pro200n

#### EXPANDABILITY

#### CUSTOMER SUPPORT

Modem	
speed (kbps)	Sound board
28.8	integrated Vibra 16
-	integrated Vibra 16
Annahista took	- The same of the
- Land Company of the	Creative Labs Vibra 16
and the flat of the for	Integrated Vibra 16
28.8	Ensoniq Soundscape Vivo
m. A. Sinon	Sound Blaster AWE32
28.8	படிப்பாள்கள் செய்தி கிரிப்போல் விக்க Ensoniq Soundscape Vivo PnP
28.8	Ensoniq Soundscape Vivo
28.8	Sound Blaster 16
- 11	Creative Labs Vibra 16
- Antonio e e e e e e e e e e e e e e e e e e e	Sound Blaster 16
Tell 13	
28.8	Sound Blaster AWE32
1	integrated OPTI 82C930
Allendari dili dili s	Sound Blaster 32 PnP
	integrated 16-bit
28.8	Sound Blaster AWE32
28.8	Sound Blaster AWE32
28.8	Sound Blaster AWE32

	-	Service Control			
Case style	Max. RAM (MB)	Maximum secondary cache (K)	Open SIMM sockets	Open drive bays (ext./int.)	Open slots
minitower	64	512	1	3/1	4
desktop	512	256	3	1/1	4
minitower	128	512	2	3/1	6
minitower	128	512	2	3/1	5
minitower	128	512	2 3	3/1	5
tower	128	512	no instruction in	2/6	2
minitower	128	256	2	1/1	5
minitower	128	256	0	2/1	3
minitower	128	512	0	3/2	4
minitower	128	256	4	2/1	4
minitower	192	512	4	4/1	5
minitower	128	512	4	2/1	4
desktop	192	512	4	1/1	5
minitower	128	512	4	3/2	5
minitower	128	512	2	2/2	4
desktop	512	512	6	1/1	6
desktop	144	256	4	1/0	4
minitower	128	512	2	1/0	3
tower	128	512	4	5/2	7
minitower	512	256	2	5/1	2

1	Warranty for parts/labor	Weekday toll- free support	Weekend	
ı	(years)	(hours)	support	Online support
1	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	3/1	24	Sat., Sun.	BBS, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	3/1	24	Sat., Sun.	BBS, WWW
	1/1	15	Sat., Sun.	BBS, Prodigy, WWW
	1/1	15	Sat., Sun.	BBS, Prodigy, WWW
	1/1	16	Sat.	AOL, BBS, CIS, WWW
1	3/3	24		BBS, CIS, MSN, WWW
1	3/3	11	-	AOL, BBS, CIS, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	4/4	10	Sat.	BBS, MSN, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, MSN, WWW
	3/3	11	Sat.	BBS, WWW
	3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
	3/3	24	Sat., Sun.	BBS, WWW
	3/3	9	Sat.	Www
	3/3	9	Sat.	www

Pro200n delivers lots of speed and features, and now Dell builds a three-year warranty into the price of all Dimensions. You can save \$199 by buying only a oneyear warranty, but you have to ask for it.

#### NO. 4: MICRON P200 MILLENNIA

PROS: 8X CD-ROM drive, 3-D graphics card CONS: No modem



Like all Micron Millennia systems we've tested, the \$3259 P200 Millennia is a solid power desktop. Its

sturdy design and ample configuration place it among the best new P-200s. A PC WorldBench score of 210 puts it in the middle of the Pentium-200 pack, but of the P-200s we've tested that come with 16MB of RAM, it's among the fastest.

Its large secondary cache and roomy

hard drive are nice, but nothing we haven't seen from several other vendors. What's unique in our test system is the Diamond Stealth 3D 2000 graphics card.

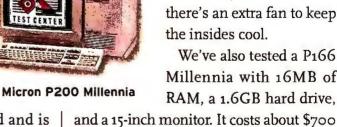
The P200 Millennia is the first PC we've seen to use this card, which combines exceptional Windows graphics performance with 3-D acceleration (see this month's Top 10 Graphics Boards). It has more 3-D features than the

Matrox MGA Millennium board and is nearly as fast. It's economical for people who want to use 3-D in presentations, Web sites, CAD programs, and games.

The rest of the P200 Millennia is a study in attention to detail. Its 17-inch Micron monitor is easy on the eyes; its Advent speakers are easy on the ears. The minitower case is narrower and taller than most we've seen, but still easy to upgrade. In back, all the multimedia ports are on a

> single small panel near the top of the PC, making them easily accessible. And there's an extra fan to keep the insides cool.

We've also tested a P166 Millennia with 16MB of RAM, a 1.6GB hard drive,



PC WORLD

looking to spend less, it's a great buy. In addition to offering round-the-clock support and a long warranty, Micron bundles Microsoft Office Professional.

less than the P200 Millennia yet runs

only 5 percent slower. For power users

#### NO. 5: DELL OPTIPLEX GXMT 5200

PROS: Fast, built-in networking, hot graphics card CONS: Expensive, quad-speed CD-ROM drive



The Pentium-200 version of Dell's network-ready OptiPlex GXMT line is built for speed. With a PC

WorldBench score of 216, it's the thirdfastest P-200 system we've tested. While its less expensive siblings—the \$3877 GXMT 5166 and \$2813 GXMT 5133are also good buys, the \$4276 OptiPlex

GXMT 5200 has the extra horsepower to leapfrog the others and earn a Best Buy.

Our test system's speed is due in no small part to its 32MB of RAM and 512K of secondary cache. Even its

Imagine 128 Series 2 graphics board keeps data moving rapidly. The only thing in the PC that's slow is the quad-speed CD-ROM drive. It can handle today's



Dell OptiPlex

multimedia, but you'll want to upgrade soon.

Inside, the 3Com ethernet adapter and 16-bit sound chip are integrated onto the motherboard so they don't take up room.

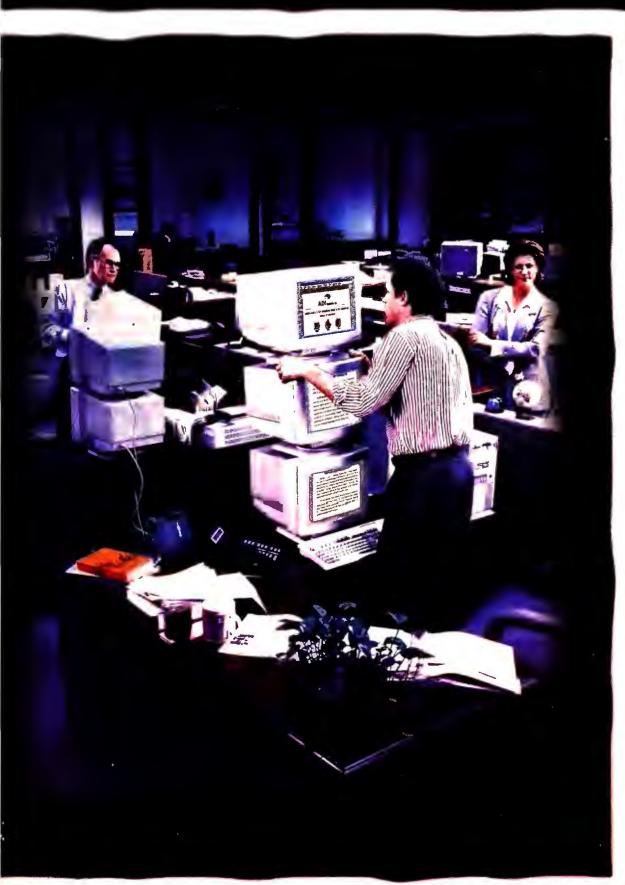
The add-in card slots hover above the motherboard on a daughtercard so you don't have to worry about system chips hindering longer boards.

#### PERFORMANCE TOP 20 POWER DESKTOPS PC WorldBench score Secondary cache (K) Faster Slower Systems Dell Dimension XPS P200s\* Pentium-200 16 512 208 Dell OptiPlex GXpro 200\* 232 Pentium Pro-200 32 256 3 Dell Dimension XPS Pro200n\* Pentium Pro-200 256 32 211 Micron P200 Millennia\* 210 Pentium-200 512 16 5 Dell OptiPlex GXMT 5200\* Pentium-200 512 216 32 6 Gateway 2000 P5-200XL Pentium-200 512 208 7 Micron P166 Millennia Plus Pentium-166 16 256 198 8 Quantex QP6/200 SM-2 Pentium Pro-200 256 224 32 9 Quantex QP5/200 SM-2 Pentium-200 512 32 216 10 HP Vectra 500 Model 515MCx 5/166 Pentium-166 16 256 192 ZDS Z-Station GT 500 Series Pentium-200 256 32 215 HP Vectra VL Series 4 5/200MT Pentium-200 16 256 201 13 IBM PC 350 P200 Pentium-200 512 215 32 Maximus Magna Media P-166 Pentium-166 512 201 16 NEC PowerMate P166 Pentium-166 256 194 16 16 Tangent MediaStar 200 Pentium-200 512 32 220 17 Compaq DeskPro XL 5133 Pentium-133 256 173 16 18 Cyrix 6x86-P166+ PC 256 Cx6x86-P166+ 16 199 XI P166MTower SP Pentium-166 16 512 199 Xi Pro 200 MTower SP Pentium Pro-200 32 256 221 \*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 A higher PC WorldBench score is better. All systems are tested with PC WorldBench, PC World's application-based benchmark. 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 (http://www.pcworld.com).

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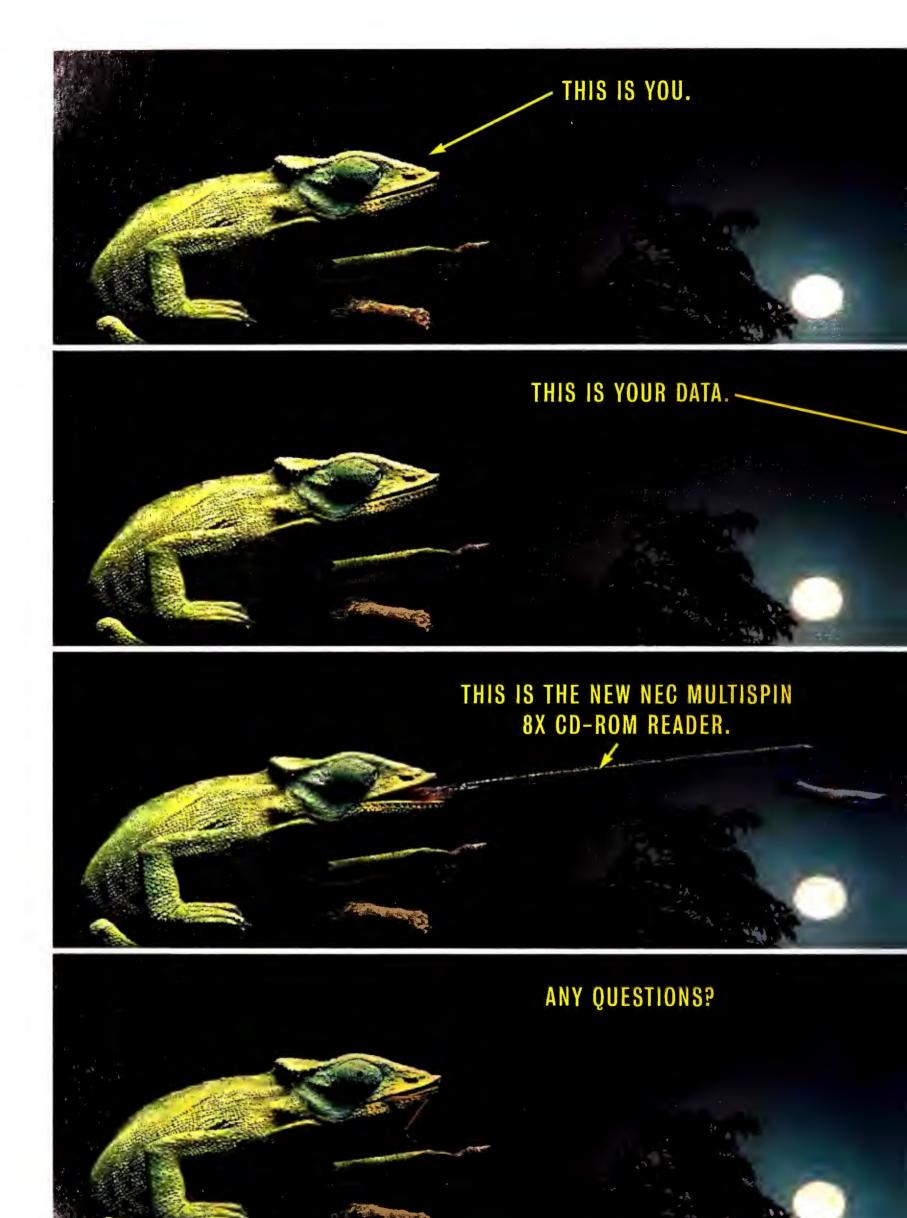
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#### **New This Month**

The following PCs made our Power Desktops chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http:// www.pcworld.com/t20pcs.

#### NO. 6: GATEWAY 2000 P5-200XL

PROS: 8X CD-ROM drive, CD-recordable drive, 28.8-kbps fax-modem

CONS: A bit slower than we expected considering use of fast SDRAM

Gateway 2000 has a reputation for being on the cutting edge, and its first P-200, the \$3899 P5-200XL, has an especially unique feature. We're not talking about its new, faster SDRAM, which failed to boost performance significantly. What really catches our eye is its recordable CD-ROM drive, which you can use to create your own multimedia CD-ROMs or even a disc

of favorite songs.



Gateway 2000

The system's 17-inch Vivitron monitor displays crisp graphics and is fed by a 2MB Matrox graphics card. For multimedia afi-

cionados, the PC comes with a fast CD-ROM drive, an Ensoniq Vivo wavetable sound card, and a set of Altec Lansing ACS400 speakers with a subwoofer.

#### NO. 9: QUANTEX QP5/200 SM-2

PROS: 8X CD-ROM drive, voice-capable modem CONS: Poor reliability score

Quantex's SM-2 line of PCs is well suited for office or home, and the new \$3099 QP5/200 SM-2 is no exception. It's among the fastest P-200s we tested this month, but it's only 3 percent faster than the \$2899 QP5/166 with the same amount of RAM and secondary cache.

The QP5/200 comes with all the multimedia extras befitting a fast PC. The 17inch MAG InnoVision DX1795 monitor has a great screen. You shouldn't have to upgrade the Imagine 128 Series 2 graphics card, with its 4MB of VRAM and 3-D acceleration, for years to come. The speedy Toshiba 8X CD-ROM drive should make working with text-heavy titles a pleasure. The PC's Ensoniq Soundscape Vivo wavetable sound card capably powers a three-piece Altec Lansing ACS31 sound system with subwoofer. To top it off, Quantex throws in a Supra 28.8-kbps faxmodem with telephony features.

The company bundles several CD-ROMs, including Grolier's Multimedia Encyclopedia and two entertainment titles-Al Unser Jr. Arcade Racing and USS Ticonderoga, a submarine

adventure game. For business as usual, bundled applications include the PerfectOffice application suite, Quicken, and GoldDisk Astound, for producing multimedia presentations.

The roomy minitower case is bulky, but it has a sculpted, easy-access front panel and a spacious, uncluttered interior that's easy to navigate. That's a good thing, because getting through to technical support can be tough. The company says it has added support personnel, but we're still encountering unacceptably long hold times. As for system reliability, its score is still low, but we've recently seen an increase in respondents' satisfaction and a decrease in DOA reports.

#### NO. 11: ZDS Z-STATION **GT 500 SERIES**

PROS: Fast, well designed, 8X CD-ROM drive CONS: Add-in cards hard to reach

If the Micron P200 Millennia is the Bud Abbott of minitower PCs—tall and thin the \$3797 ZDS Z-Station GT 500 Series is the Lou Costello. But we doubt the comic actor ever ran as fast as this stout, rounded Pentium-200 system. Its PC WorldBench score of 215 places it among the fastest P-200s we've tested. The rea-

son: 32MB of EDO RAM. Although it's hard to compare the Z-Station's performance against that of other P-200s with 16MB of memory, one thing is clear: If you want more speed, add memory, not just

secondary cache. With 32MB of memory and 256K of cache, the Z-Station outstrips systems such as the Dell Dimension XPS P200s, which has 16MB of fast SDRAM and 512K of secondary cache.

Inside, the Z-Station sports unique graphics components. Its integrated controller is the same chip ATI uses on its Video Xpression board, but instead of EDO DRAM, it uses 2MB of SGRAM to increase the

> amount of data it can pipe. On the business end of the graphics system is a reasonably good 17-inch ZDS monitor with a fine .26mm dot pitch for crisp images.

Quantex For the most part, we like

PC WORLD

the Z-Station's design. The case is sturdy and attractive. Unfortunately, working with PCI and ISA cards is a pain. ZDS uses a riser plane for add-in cards. However, in the Z-Station minitower the riser plane is facedown, which means the cards hang upside down. Unless you want to turn troubleshooting or card swapping into a gymnastics event, you'll have to turn the minitower on its side.

ZDS bundles a few useful applications with the Z-Station, including Netscape Navigator, Norton Navigator (for managing files), and Norton Antivirus, but no big software suites. Our file on ZDS's reliability isn't big enough for us to give it a formal rating, but the readers we've heard from find ZDS systems very reliable. The company backs its corporate PCs with a three-year warranty and round-the-clock support on weekdays.

#### NO. 12: HP VECTRA VL **SERIES 4 5/200MT**

PROS: Good graphics card, crisp monitor CONS: Expensive, sluggish for a P-200

The Vectra VL Series 4 5/200MT is only slightly faster than its \$3915 Pentium-166 sibling. But all other things being equal, the added speed is enough to make it

Hewlett-Packard's best high-end corporate PC. To get this quality, though, you have to be willing to pay-\$4115, to be exact. The money gets you a welldesigned minitower from



PC WORLD

a vendor that's known for reliable PCs. The exterior is unremarkable, but the

case is sturdy and easy to open. Add-in cards sit parallel to the motherboard



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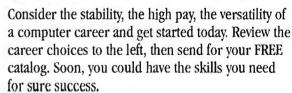
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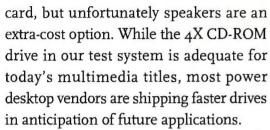
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on a riser so you can fit any size board you want. Our test PC had room for four extra cards and three extra storage devices.

Graphics hardware is one of this PC's

strongest suits. A Matrox MGA Millennium graphics card with 2MB of WRAM and an MPEG daughtercard connector drives a sharp, bright 15-inch HP monitor. The system also comes with a Sound Blaster 16 audio



While HP installs some helpful software tools for getting to know your PC, it includes no application software. It backs Vectra VL systems with a three-year warranty, but free technical support is available for only one year and for just 11 hours on weekdays.

#### NO. 13: IBM PC 350 P200

PROS: Fast, well designed, cutting-edge extras CONS: Ugly, expensive, low reliability score On the outside the \$4122 IBM PC 350 P200 desktop PC looks half-finished, with its drive bays recessed inches from the rest of the front panel. But this P-200 is fast, comes with a good software bundle, and includes some nice power-saving and automation features. However, you pay extra for Big Blue's attention to detail.

The system's ugly exterior serves a purpose by protecting the power buttons and drive bays. It also gives shape to an interior design that's far more elegant than what's on the surface. Inside you'll find a tidy motherboard that's simple to upgrade. Extra slots are available on a vertical riser, which makes adding cards easy because motherboard components won't

block longer cards. Adding a lot of RAM is an option, toobut upgrading the CPU is another story. It's stashed under the hard drive, rendering it virtually untouchable.

The PC 350 P200 comes with built-in universal serial bus

ports for chaining several peripherals together, an extra serial port for connecting an infrared transmitter, and a spare drive bay designed for PC Card slots (the

> PC Card bay is sold separately). Other nice extras include a suspend and resume feature and a "wake on demand" program that tells your system to power up at a certain time or in response to a specific event,

like a call through your modem.

**HP Vectra** 

The PC 350 P200 is one of the fastest Pentium-200s we've tested. Its PC World-Bench score of 215 is partly due to IBM's wise choice of an integrated graphics chip. Rather than hurt performance by using

inferior chips, IBM uses a speedy Trio64V+ graphics chip with 2MB of EDO DRAM to keep data moving to the monitor, an impressive IBM G70 17inch model in this instance.

PC 350 P200 systems come with Lotus SmartSuite as well as a program called NetFinity

that helps network administrators manage networked PCs remotely. The software even lets them turn on workers' systems from a central location in order to perform maintenance. IBM's support, which includes an extensive three-year warranty, has been highly rated in past years. Recently, however, readers responding to our fax-back survey have said they're less satisfied than they used to be with IBM's system reliability and service.



PROS: Good price for a P-200, unique design, built-in speakers, super graphics card

CONS: No multimedia titles to show off cool features, design could be a liability

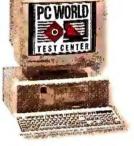
If you have multimedia on your mind, Tan-

gent's speedy, souped-up MediaStar 200 will be music to your ears. Featuring a striking desktop chassis with builtin stereo speakers, frontmounted video-in and -out jacks, and a dual-purpose MIDI/game port, the \$3195 MediaStar begs to be played with. This isn't to say it's not a serious machine—it handles business applications with unprecedented power. By posting a PC WorldBench score of 220, the MediaStar takes its place as the fastest Pentium-200 system we've seen to date, faster than than the Dell Dimension XPS Pro200n. The motherboard even has an extra CPU socket if you want to add a second processor.

The MediaStar is the first PC we've tested to include STB's new Lightspeed 128 graphics card with 2MB of Multibank DRAM. The MDRAM pumps more data than standard DRAM or VRAM in order to keep up with the faster 128-bit graphics chip. The fact that it can do so with just 2MB helps keep costs down. The board is

> a nice match for the sharp 17-inch Sampo AlphaScan 17mx monitor.

> The system's case design is unusual: It places controls and ports on the front panel rather than in back. At your fingertips are not only the power button but controls



Tangent MediaStar

for speaker power, volume, and bass boost, as well as the multimedia ports. Having connectors up front will appeal to some, but others might prefer them in back and out of the way.

Tangent backs the MediaStar 200 with a three-year warranty and toll-free support 11 hours a day on weekdays and Saturdays. But our spot calls to technical support have yielded disappointing results, and we don't have enough reader feedback to formally rate the company's system reliability and service.

#### Beyond the Top 20

We tested 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 (http://www.pcworld.com/t20pcsnaps).

- ◆ Austin PowerPlus 200
- ◆ Canon MT 9600 P-166
- ♦ DFI LandMarg Pro P166+ IPC
- ◆ DirectWave Blue Thunder P200 MVP ProS
- ♦ MultiWave UltraStar P200
- ◆ Unisys Aquanta DL P-166
- ◆ Unisys Aquanta DM P-200
- ◆ Vektron Optima Pro Station P200



**IBM PC 350** 



## Not all 800 pound gorillas are what they're cracked up to be.



If you need a scanner that combines high performance and maximum value, may we suggest a little head-to-head competition. UMAX vs HP? Unfair comparison? Maybe for them. UMAX has a reputation for offering advanced, award-winning scanners at prices that make good business sense. Plus, our software bundles are unmatched, even by the big boys. So why monkey around? Compare the UMAX Vista S-12 with the HP ScanJet 4c and decide for yourself.

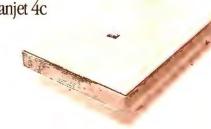
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Presentation software	✓ ASAP Word Power	None
Afteriomen DPI	<b>9600</b>	2400
Bit depth	✓ 33-bit <sup>1</sup>	30-bit
Scanning speed (5" x 7" color photo).	✓ 18 sec.	42 sec.
Lamp	Cold cathode - lasts longer	Fluorescent
Tech support	✓ Toll free	No 800 number
Price <sup>2</sup>	<b>✓</b> \$821	\$ 912

UMAX Vista S-12



Circle 250 on reader service card

HP Scanjet 4c





## TOP 20 BUDGET DESKTOPS

	Systems	Last month	Last reviewed	Street price (6/15/96)	СРИ	Comments
1	Dell Dimension P100t 800/613-3355 www.dell.com	1	July 96	\$1629	Pentium-100	Entry-level PC offers quality and speed, \$220 price drop; no speakers.
2	Dell OptiPlex GXM 5100 800/613-3355 www.dell.com	2	Aug 96	\$2223	Pentium-100	Good for those who want a well-made budget PC with built-in networking.
3	Gateway 2000 P5-120 800/846-2000 www.gw2K.com	3	Mar 96	\$1809	Pentium-120	\$170 off solidifies standing in Best Buy ranks; no sound or speakers.
4	Micron P133 Millennia 800/223-6571 www.micron.com	- Ang how Claracte	Mar 96	\$2349	Pentium-133	\$300 off makes it a budget PC; P-100, -120, -150, and -166 flavors are also good.
5	Quantex QP5/100 M-3 800/896-4898 www.quantex.com	5	Mar 96	\$1799	Pentium-100	Great value, upgraded tech support; reliability score is a problem.
6	Compaq Prolinea 575e 800/345-1518 www.compaq.com	16	May 96	\$1549	Pentium-75	Solid budget system from a reputable vendor; no CO-ROM drive.
7	Blackship P150 CyriMedia 6x86 800/531-7447 www.blackship-computers.com		new	\$1695	Cx6x86-P150+	Performs like a P-166 and comes with lots of stuff; pretty bland.
8	Compaq Prolinea 5120 800/345-1518 www.compaq.com	- destruction of the	Mar 96	\$2448	Pentium-120	A good office machine, but you pay a lot for what you get; no CO-ROM drive.
9	Micro Express MicroFlex-686/P120+ 800/989-9900 www.wpages.com/microexpress/	7	Aug 96	\$139 <mark>9</mark>	Cx6x86-P120+	Oirt-cheap PC with P-120-type power, but getting support can be difficult.
10	NEC PowerMate V100 800/632-4636 www.nec.com	17	Aug 96	\$2304	Pentium-100	Solid value system with nice design features, but graphics system is weak.
11	USA Flex Family Special 800/872-3539 www.usaflex.com	d o the	July 96	\$2149	Pentium-133	\$250 price drop lands it on chart; sparse documentation.
12	NEC PowerMate P133 800/632-4636 www.nec.com	- Chronithou de la	Mar 96	\$2352	Pentium-133	\$370 off lands this powerful PC on the Budget chart; fast, quality components.
13	Xi P133MTower SP 800/432-0486 www.win.net/xl_comp	13	Mar 96	\$2099	Pentium-133	Great performance, \$150 price drop, very expandable; tech support is limited.
14	Tempest Micro MediaPro P5-133 800/818-5163	-	Mar 96	\$179B	Pentium-133	Oecked-out PC outruns most budget systems; reliability, service are unknown.
15	Acma zPower 166v 800/786-6888 www.acma.com	B	new	\$2295	Pentium-166	Fast multimedia system is great deal and includes PC Card slots.
16	Netis N5100 Media 800/577-7526 www.netistech.com	e out do i vesto est	May 96	\$1730	Pentium-100	Fast for a P-100; documentation is haphazard, reliability is unknown.
17	Vektron Multimedia P-100 800/725-0026 www.vektron.com	4	Mar 96	\$1895	Pentium-100	Monitor and hard drive upgrades have raised price \$200 on this loaded PC.
18	Micro Express MicroFlex PCI/5133 800/989-9900 www.wpages.com/microexpress/	12	Apr 96	\$1799	Pentium-133	Fast, low-cost P-133; early returns indicate below-average reliability.
19	HiQ Saturn Station 800/827-5836 www.hiq.com	en en esta en la finale in a	June 96	\$1999	Pentium-166	Low price for a multimedia P-166; reliability and service are unknown.
20	Robotech Cobra XLT P-133 800/255-2215 www.robotechusa.com	8	July 96	\$2099	Pentium-133	Fast, affordable PC for the home office, but documentation is spotty.
	Best Buy See features chart, page 212; per	rformance	chart, page	214.		Recommended as home system.

¹ To order fax copies of system reviews, call 800/434-4495 from a touch-tone phone and use your credit card. You can order next month's reviews in advance: Power Desktops, Budget
Desktops, or Notebook PCs Top 20 charts and capsule reviews (\$9.95, available August 28). You can also order a previous month's Top 20 chart with capsule reviews plus features and
performance charts (\$4.50) and Individual capsule reviews with features and performance charts (\$1.50 each). Prices effective for the U.S. and Canada. Foreign orders are \$15 for advance



THE RECENT INTRODUCTION of Intel's P-200 processor brought a rash of price cuts across older PC lines. Gateway 2000, Micron, and NEC are among the vendors to slash prices on budget machines. In particular, the Micron P133 Millennia debuts on the Top 20 Budget Desktops chart this month following a price cut that knocked it below \$2500, our budget ceiling.

Only two new systems appear on the chart this month: the \$1695 Blackship P150 CyriMedia 6x86 and the \$2295 Acma zPower 166v. A couple of powerful PCs just missed the Top 20, though. See write-ups of Caliber's P-200 and Micro Express's Pentium Pro-200 on PC World Online (http://www.pcworld.com/t20pcsnaps).

=			<b>S</b> C	OREC	ARD			
Overall rating	PC World- Bench score	Performance	Reliability	Features and design	Price	Service and support	Reader service number	Fax reprint number
90	173	good	good	very good	Inexpensive	best	698	3391
84	170	good	good	very good	average	best.	699	3409
83	176	good	fair	very good	average	good	700	3392
82	182	very good	good	outstanding	expensive	fair	701	3268
80	167	good	роог	outstanding	average	fair	702	3353
78	86	poor	good	satisfactory	inexpensive	good	703	3366
77	196	very good	2	good	inexpensive	3	704	3424
77	169	good	good	good	expensive	good	705	3425
76	175	good		good	very inexpensive	2	706	3411
76	163	good	fair	very good	expensive	fair <sup>3</sup>	707	3413
76	181	very good	<b>1</b>	very good	average	entro e el el éveren e con	708	3426
76	185	very good	fair	very good	expensive	fair 3	709	3427
76	193	very good	2	very good	average	Z	710	3398
76	183	very good	2	very good	average	Z	711	3428
76	199	very good	2.	outstanding	expensive	Z F	712	3429
75	166	good	2	very good	inexpensive	2	713	3367
<b>75</b>	171	good	Z	very good	average	2	714	3325
75	190	very good	2	very good	average	2	715	3361
75	190	very good	2	very good	average	and the state of the state of	716	3379
75	189	very good	2	outstanding	average	2	717	3393
Perce	entage of all rating:	Performance 15 percent	Reliability 25 percent	Features 20 percent	Price 25 percent	Support 15 percent		

Top 20s, \$8 for previous months' Top 20s, and \$4 for Individual reviews. Insufficient data. Limited data; score is based on responses for this company and average of all companies.

For more information about all products in this table, circle reader service no. 908.

#### This Month's Best Buys

NO. 1: DELL DIMENSION P100T

PROS: Fast P-100, inexpensive, highly upgradable CONS: No speakers, no AVI acceleration



The Dell Dimension Proot desktop is fast, easy to upgrade, and \$220 cheaper than last month.

For \$1629 you get a P-100 with 16MB of RAM and a 1.6GB hard drive. With a PC WorldBench score of 173, the P100t delivers some of the best performance for the money of any PC we've seen. It's the second-fastest P-100 we've tested, and it's faster than several P-133s.

However, it's not a full multimedia PC. Although it comes with a 6X CD-ROM drive and a 16-bit sound card, speakers are optional; and despite the fact it has 2MB of graphics memory, its integrated S3 Trio64 graphics chip lacks features for speeding up fullmotion video clips. Consider spending an extra \$250 for some basic speakers and a 2MB video-enabled board. Even with a slightly higher price, the Dimension Proot



**Dell Dimension P100t** 

would rank at the top of our Budget chart.

#### NO. 2: DELL OPTIPLEX GXM 5100

PROS: Speedy, well designed, built-in networking CONS: No application software



The \$2223 OptiPlex GXM 5100 is aimed at the business PC buyer who wants the built-in network-

ing features of an OptiPlex but doesn't have a lot to spend. Its performance is nothing to sneeze at, either-a PC World-Bench score of 170 puts it among the fastest Pentium-100s we've tested.

The graphics and 16-bit sound controllers are integrated on the mother-

board, but unlike other entry-level Dell PCs, including the top-ranked Dimension Proot, this Opti-Plex has a graphics chip that accelerates full-motion video.



**Dell OptiPlex** 

The documentation is detailed, thorough, and user-friendly. About the only thing lacking from the package is some application software.

#### NO. 3: GATEWAY 2000 P5-120

PROS: Good performance, 8X CD-ROM drive, Microsoft Office Professional Edition

CONS: No sound, speakers, or modem



Gateway keeps dropping the price of its P5-120. This month another \$170 comes off, keeping this stur-

dy minitower system among the best budget PCs we've seen. But while \$1809 is a great deal for a P-120, it doesn't include several components that are becoming standard in today's desktops. You'll need to pay another \$100 for a sound card and speakers if you want full multimedia. And if you want to surf the Web, a 28.8-kbps fax-modem costs another \$149.

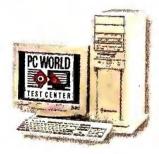
The P5-120's PC WorldBench score



#### STANDARD FEATURES

	Systems	СРИ	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 P100t*	Pentium-100	16	256	1.6	integrated Trio64	2/DRAM	15/13.6	.28	6X
2	Dell OptiPlex GXM 5100*	Pentium-100	16	256	1.1	integrated Trio64V+	2/EDO DRAM	15/13.5	.28	4X
3	Gateway 2000 P5-120*	Pentium-120	16	256	1.6	ATI Mach 64	2/DRAM	15/14	.26	8X
4	Micron P133 Millennia*	Pentium-133	16	256	1.6	Diamond Stealth64 Video VRAM	2/VRAM	15/13.6	.28	8X
5	Quantex QP5/100 M-3*	Pentium-100	16	256	1.6	STB Powergraph 64 Video	2/EDO DRAM	15/14	.28	8X
6	Compaq Prolinea 575e	Pentium-75	8	_	0.6	integrated Cirrus Logic	1/DRAM	15/13.6	.28	-
7	Blackship P150 CyriMedia 6x86	Cx6x86-P150+	16	512	1.3	Matrox MGA Millennium	2/WRAM	15/13.5	.28	6X
8	Compaq Prolinea 5120	Pentium-120	16	256	<b>1.1</b>	integrated Cirrus Logic	1/DRAM	17/15.8	.28	
9	Micro Express MicroFlex-686/P120+	Cx6x86-P120+	16	256	1.3	STB Powergraph 64 Video	2/DRAM	15/14.1	.28	4X
10	NEC PowerMate V100	Pentium-100	16	256	1.6	Alliance ProMotion 6422	2/DRAM	15/13.5	.28	6X
11	USA Flex Family Special	Pentium-133	16	256	1.3	STB Powergraph 64 Video	2/EDO DRAM	15/13.7	.27	8X
12	NEC PowerMate P133	Pentium-133	16	256	1.6	integrated Trio64V+	2/EDO DRAM	15/13.5	.28	6X
13	Xi P133MTower SP	Pentium-133	16	512	1.3	Diamond Stealth64 Video VRAM	2/VRAM	17/15.6	.26	6X
14	Tempest Micro MediaPro P5-133	Pentium-133	16	256	1.3	Diamond Stealth64 Video 2201	2/DRAM	15/13.8	.28	4X
15	Acma zPower 166v	Pentium-166	16	256	1.3	Diamond Stealth64 Video 2201	2/EDO DRAM	15/13.7	.28	6X
16	Netis N5100 Media	Pentium-100	16	256	1.6	Diamond Stealth64 Video VRAM	2/VRAM	15/13.9	.28	4X
17	Vektron Multimedia P-100	Pentium-100	16	256	2.1	Diamond Stealth64 Video VRAM	2/VRAM	15/14.1	.25	6X -
18	Micro Express MicroFlex PCI/5133	Pentium-133	16	256	1.6	STB Velocity 64 Video	2/VRAM	15/13.9	.28	4X
19	HiQ Saturn Station	Pentium-166	16	256	1.6	ASUS PCI-AV264CT	2/DRAM	15/13.8	.28	6X
20	Robotech Cobra XLT P-133	Pentium-133	16	256	1.3	Number Nine 9FX Motion 331	2/EDO DRAM	17/15.4	.28	6X

\*Best Buy



Gateway 2000

of 176 is above average for a Pentium-120 and high for a system in this price range. If you can spend an extra \$90, the P5-133 version will provide

you with a 6 percent performance boost in the same configuration.

#### NO. 4: MICRON P133 MILLENNIA

PROS: Loaded with features, 8X CD-ROM drive CONS: Reports of DOA components have risen



A \$300 price drop to \$2349 moves the P133 Millennia from the Power chart to the upper ech-

elon of the Budget chart. It's loaded with memory, secondary cache, and hard disk space, as well as a full complement of multimedia features. Its PC WorldBench score of 182 isn't spectacular, but it's average for a P-133 desktop PC.

Micron's on-screen Windows help is helpful, with photos and even videos of basic hardware maintenance tasks.

Price drops on all the other Millennias we've tested make them good budget machines, too. The P166 Millennia (reviewed in April) now goes for \$2549 and the P150 Millennia (reviewed in May)

sells for \$2449. The P120 and P100 Millennia (both reviewed in March) now cost under \$2250. One reason all these systems are so inexpensive is that they're priced with 15-inch monitors.

#### NO. 5: QUANTEX QP5/100 M-3

PROS: Fast P-100; fax-modem, 8X CD-ROM drive CONS: Low reliability score



The \$1799 QP5/100 M-3 is a family-oriented multimedia system that comes with a bunch of

games, PerfectWorks integrated software, and several online start-up kits. It's a good choice for home offices where the computer is also used for entertainment. Features like a 1.6GB hard drive, an 8X CD-ROM drive, and a 28.8-kbps fax-modem

> with voice mail earn this minitower a Best Buy.

If you want a little extra power, there's the \$2299 QP5/133 SM-2 (reviewed in July). With a \$250 price drop, this fast PC makes a good



Micron P133 Millennia

Modem speed (kbps)	Sound board
-	Creative Labs Vibra 16
_	integrated Vibra 16
	to in the program of a two to the experience of
	Creative Labs Vibra 16
28.8	WillowPond K130
_	America V V arts arts Selected days of America and America's X X X X X X
28.8	ES\$1688 Audio Drive
-	manurati in a militar i a Nori phinjani di V a umanga udirbug ji <b>ni afil</b> a i ini.
-	ESS1688 Audio Drive
	integrated OPTi 930A
28.8	proprietary 16-bit
_	integrated Vibra 16S
-	Creative Labs Vibra 16
_	DCS 8305
28.8	Sound Blaster 16
_	Creative Labs Vibra 16
14.4	Creative Labs Vibra 16
-	Sound Blaster AWE32
	ASUS PCI-AV264CT
28.8	Sound Blaster 16

Case style	Max. RAM (MB)	Maximum secondary cache (K)	Open SIMM sockets	Open drive bays (ext./int.)	Open slots
desktop	128	256	3	1/1	5
desktop	128	512	2	1/0	5
minitower	128	256	2	2/0	5
compact	128	256	2	2/1	5
minitower	128	512	2	2/1	4
compact	136	256	4	0/0	5
tower	128	512	2	3/1	4
desktop	192	256	4	2/0	5
minitower	128	512	4	3/1	6
minitower	128	256	2	2/2	5
minitower	128	512	2	3/1	4
minitower	128	256	2	2/0	6
tower	128	512	2	5/2	6
tower	128	512	2	3/2	5
minitower	128	512	2	2/1	3
compact	128	512	2	2/1	6
minitower	128	256	2	2/0	5
minitower	128	512	2	3/1	7
minitower	128	512	2	3/2	6 1
minitower	128	512	2	3/3	4

Warranty for parts/labor (years)	Weekday toll- free support (hours)	Weekend support	Online support
3/3	24	Sat., Sun.	AOL, B8S, CIS, Prodigy, WWW
3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
3/1	24	Sat., Sun.	AOL, 8BS, CIS, Prodigy, WWW
3/1	24	Sat., Sun.	BBS, WWW
1/1	15	Sat., Sun.	BBS, Prodigy, WWW
3/3	24	Sat., Sun.	AOL, B8S, CIS, Prodigy, WWW
1/1	10	- 4 eth i Riest erk	AOL, BBS, CIS, Prodigy, WWW
3/3	24	Sat., Sun.	AOL, BBS, CIS, Prodigy, WWW
2/2	9.5	Sat., Sun.	WWW :-
3/3	24	Sat., Sun.	AOL, BBS, CIS, MSN, WWW
3/3	24	Sat., Sun.	BBS' MMM
3/3	24	Sat., Sun.	AOL, BBS, CIS, MSN, WWW
3/3	9	-	WWW
1/1	9	Sat.	_
3/1	9.5	-	BBS, WWW
1/3	10	Sat.	BBS, WWW
1/1	11	- August and a section	BBS, CIS, WWW
2/2	9.5	Sat., Sun.	AMM
1/2	9	Sat.	BBS, WWW
3/1	9	-	BBS, WWW



Quantex

budget system. It's priced with a huge 2GB hard drive, a 17-inch monitor, multimedia hardware (including an 8X CD-ROM

drive), and a 28.8-kbps fax-modem.

#### **New This Month**

The following PCs made our Budget Desktops chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http://www.pcworld.com/t20pcs.

#### NO. 7: BLACKSHIP P150 CYRIMEDIA 6X86

PROS: Inexpensive, fast, 28.8-kbps fax-modem CONS: Unimpressive monitor, limited support

The \$1695 CyriMedia 6x86 is a great bargain. It uses a Cyrix 6x86-P150+ running at 120 MHz to achieve a PC WorldBench score of 196—about average for a P-166 desktop PC. It's loaded with features, including a huge cache, a Matrox graph-

ics card, and a SupraExpress fax-modem. In short, at this price the P150 CyriMedia 6x86 is hard to ignore.

Overall, though, it's a generic tower PC. The ESS1688 Audio Drive sound

card is a cheap one that we've seen popping up a lot lately in bargain PCs; it delivers decent sound, but at this time we don't know much about its performance. Likewise, the CD-ROM drive and speakers are from little-known vendors. But the only low-cost component that we found to be notably low-quality was the Tatung 15-inch monitor, which provided a dull picture and couldn't support the VESA-standard 75-Hz refresh rate at 800 by 600 resolution, leading to some screen flicker.

The CyriMedia comes with several Microsoft programs, including Works, Golf, Money, and Encarta. But when you see Blackship's low price, keep in mind that technical support is limited to 10 hours, Monday

Blackship P150 through Friday. In addition, the company guarantees its parts only for one year.

#### NO. 15: ACMA ZPOWER 166V

PROS: Multimedia, fax-modem, PC Card slots CONS: Poor monitor, limited expandability

Except for limited support hours and a somewhat jumbled interior, the zPower 166V is a good PC. This multimedia minitower is attractively priced at \$2295 and

comes with plenty of software for home users, including Microsoft's Encarta, Money, and Works. Our test machine earned a PC WorldBench score of 199, which is good for a P-166. The graphics card

(a Diamond Stealth64 Video 2201) and sound card (a Sound Blaster 16) are quality components. However, the Princeton monitor that came with our PC exhibited

> a slight flicker and faint horizontal lines. Acma offers a good warranty—three years for parts and one year for labor-but toll-free support is available 9.5 hours on weekdays only.

#### Beyond the Top 20

We tested 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 (http://www.pcworld.com/t20pcsnaps).

- ♦ Alaris Puma P166+
- ◆ Caliber Voyager VI P200
- ♦ Maximus Magna ProMedia P133
- ◆ Micro Express MicroFlex PCI/6200

#### TOP 20 BUDGET DESKTOPS

PC WORLD

Acma

PERFORMANCE



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 A higher PC WorldBench score is better. All systems are tested with PC WorldBench, PC World's application-based benchmark. 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 (http://www.pcworld.com).



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Purchase an HP SureStore CD-Writer		
4020i internal 4X Reader/2X Recorder (C4324RB or C4324B)	Signatura	
Mail: Completed rebate certificate original cash register receipt dated between 8/1/96 to 10/31/96, and UPC bar code (from a		
4020i drive package). Rebate request must be postmarked no later than $11/15/96$ and received no later than $11/30/96$ .	Customar Name	
Mail completed coupon along with proof-of-purchase materials to HP SureStore CD-Writer Rebate	Address	
P.Q. Box 6511 Young America, MN 55558-6511	City	State
If you have any questions, please call: 1-800-477-3837	Store where purchased	
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order form and store idantified, dated original cash register raceipts are required and ma Packard and cannot be returned. Trading, purchasing, or selling proofs of purchase is household, or address. U.S. Mail Fraud Statutes prohibits acts devised to defraud or ob among other things, tha use of fictitious or assumed names or addrasses 118 U.S.C. damaged, or delayed in mailing. This offar may not be published in any refunding maga from an authorizad Hewlett-Packard reseller in the 50 United States and Oistrict of C prohibited, taxed, or restricted by law. Rebate chacks are void if not cashed within 90 da HPCOLORADO BA	orohibited. This offer is welld for the person in anoney or property by means of false or fi 1341 and 13421. Requests from P.O. boxes we zine or elsewhere without Hewlett-Packard's olumbia are valid. If these terms and condity ys of issuance, and cannot be resssued. Please	who purchased this product raudulant pretenses if the po vill not be honored. Hewlett written permission. Only pu tions are not met, rebate ci e allow 6-8 weeks for proces
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Packard and cannot be returned. Trading, purchasing, or selling proofs of purchase is, household, or address. U.S. Mail Fraud Statutes prohibits acts devised to defraud or ob among other things, tha use of fictitious or assumed names or addrasses 118 U.S.C. damaged, or delayed in mailing. This offer may not be published in any refunding mage from an authorized Hewlett-Backard reseller in the 50 Unnect States and Ostrict of Corprohibited, taxed, or restricted by law. Rebate chacks are void if not cashed within 90 da  ### Colorado Back  **Purchase an HP Colorado T1000e**	ironhined. This offer is welld for the person in money or property by means of false or fi 1341 and 13421. Requests from P.O. boxes wine or elsewhere without Hewlett-Packard's oldumbia are valid. If these terms and conditing the control of the person of	who purchased this product raudulant pretenses if the po vill not be honored. Hewlett written permission. Only pu tions are not met, rebate ci e allow 6-8 weeks for proces
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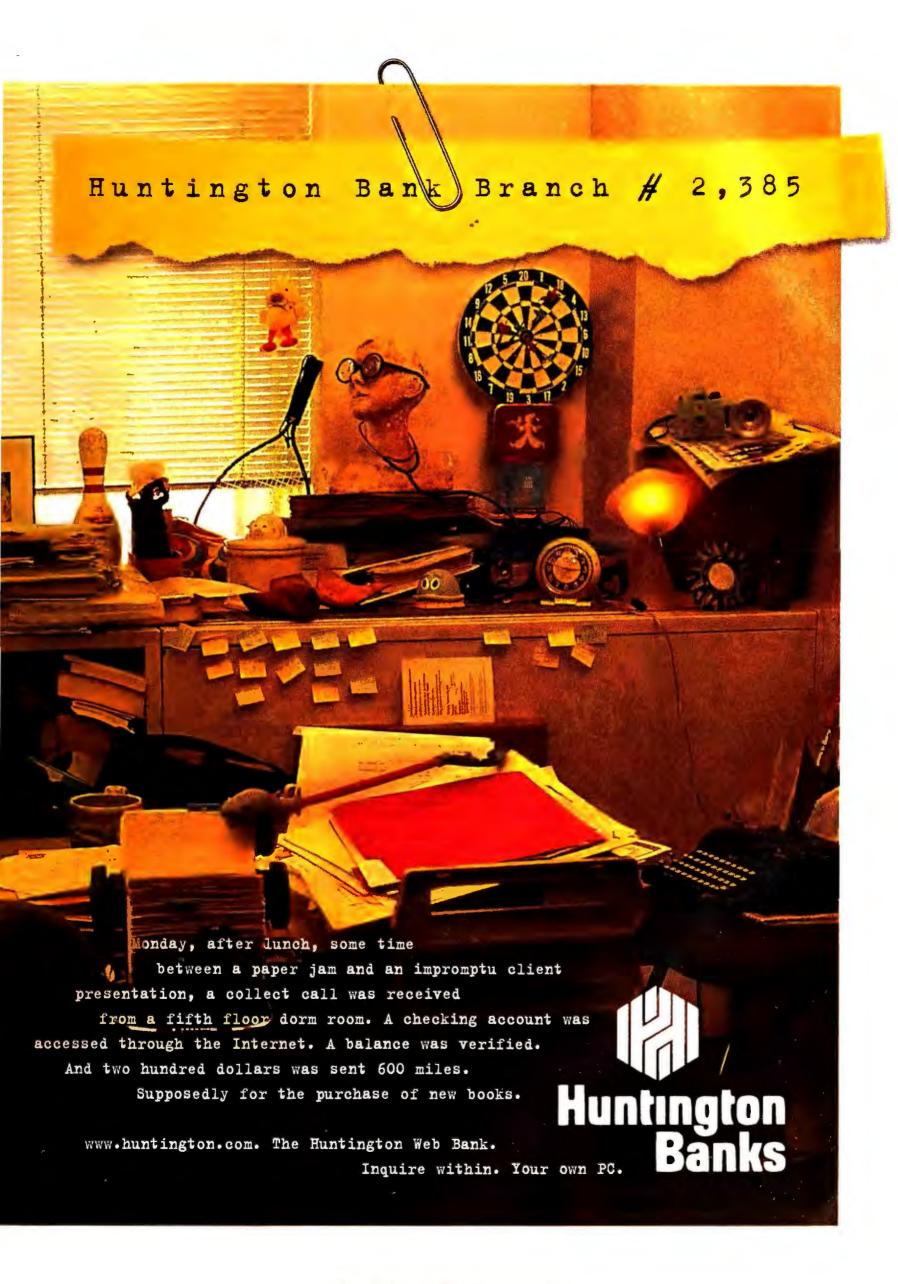
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## TOP 20 NOTEBOOK PCs

	POWER NOTEBOOKS	Last month	Last reviewed	Street price (6/15/96)	СРИ	Comments
1	Toshiba Satellite Pro 420CDS 800/457-7777 www.toshiba.com	-	new	\$3298	Pentium-100	Powerful multimedia portable, straightforward design is sturdy and comfortable.
2	Dell Latitude XPi P133ST 800/613-3355 www.dell.com	1	Aug 96	\$5099	Pentium-133	Fast, well-built notebook priced with 24M8 of RAM; no CD-ROM option.
3	Toshiba Tecra 720CDT 800/457-7777 www.toshiba.com	The second	new	\$6299	Pentium-133	Cutting-edge features, including 6X CD-ROM drive; 4.3-hour battery life; very heavy.
4	Toshiba Portégé 610CT 800/457-7777 www.toshiba.com	8	Mar 96	\$3199	Pentium-90	Few subnotes make the grade, but this one is comfy; nice screen, sound, and video.
5	WinBook XP5 P120 800/468-2162	5	Apr 96	\$3499	Pentium-120	Fast; great keyboard, long battery life; poor reliability score.
6	IBM ThinkPad 760E 800/772-2227 www.lbm.com	- * * * * * * * * * * * * * * * * * * *	пеж	\$6344	Pentium-133	Fastest notebook to date has great features, but high price and short-ish battery life.
7	AST Ascentia J30 800/876-4278 www.ast.com	7	July 96	\$2999	Pentium-100	\$330 price drop, long battery life, built-in modem; needs 8M8 more of RAM.
8	Austin Edge CD P133 800/952-9816 www.austindirect.com	_	пеж	\$3945	Pentium-133	8est deal you can get on a fast multimedia portable; no reliability data.
9	NEC Versa 4080H 800/632-4636 www.nec.com	_	Apr 96	\$4448	Pentium-120	Huge price drop pulls this speedy multimedia notebook back onto the chart.
10	Micron Millennia Transport 800/438-3343 www.micron.com	6	Aug 96	\$4998	Pentium-133	Fast and loaded, but its 3.3-hour battery life can't compare with top power notes'.
	BUDGET NOTEBOOKS					
1	Toshiba Satellite 100CS 800/457-7777 www.toshiba.com	1	June 96	\$1999	Pentium-75	If you need an inexpensive, no-frills Pentium notebook, this one is perfect.
2	NEC Versa 550D 800/632-4636 www.nec.com	6	Aug 96	\$1699	Cx5x86-100	Sleek, sturdy design with crisp screen; affordable, but you sacrifice performance.
3	IBM ThinkPad 365CS 800/772-2227 www.lbm.com		Aug 96	\$1999	IBM 4x86-75	A \$600 price drop makes this well-built but slow ThinkPad a good budget system.
4	Sharp PC 3020 800/237-4277 www.sharp-usa.com	7	June 96	\$1699	Cx5x86-100	Low-cost alternative to P-75 notebooks features good battery life, good screen.
5	WinBook XP5 P75 800/468-2162	8	Aug 96	\$1999	Pentium-75	Good performance with just 8MB of RAM; built-in fax-modem; low reliability score.
6	Digital HiNote VP 800/642-4532 www.digital.com	-	пеж	\$2499	Pentium-100	Delivers great speed for your money and features a bright dual-scan screen.
7	AcerNote Light 356 800/733-2237 www.acer.com	- And Barries	пем	\$2298	Pentium-100	Good price for light, comfortable P-100 notebook; screen is disappointing, though.
8	Austin Edge XP 100 800/952-9816 www.austindirect.com	-	пеж	\$2447	Pentium-100	Lightweight speedster has super screen; slim design means cramped keyboard.
9	CTX EZ Book 600CDT P75 800/888-9052	10	Aug 96	\$2299	Pentium-75	You don't usually see multimedia notebooks this cheap; long battery life is a plus.
10	Magitronic 550 Series 770/849-0667 www.magitronic.com	9	July 96	\$2549	Am5x86-P75	Multimedia notebook priced with 20M8 of RAM; battery life is a bit disappointing.
	Best Buy See features chart, pa	ge 220; pe	formance ch	art, page 224.		

'To order fax copies of system reviews, call 800/434-4495 from a touch-tone phone and use your credit card. You can order next month's reviews in advance: Power Desktops, Budget Desktops, or Notebook PCs Top 20 charts and capsule reviews (\$9.95, available August 28). You can also order a previous month's Top 20 chart with capsule reviews plus features and performance charts (\$4.50) and Individual capsule reviews with features and performance charts (\$1.50 each). Prices effective for the U.S. and Canada. Foreign orders are \$15 for advance



THE NOTEBOOK MARKET is moving full tilt. Just two months after we reviewed Gateway's Solo S5-120XL, the company replaced it with a P-133 version, which we will review soon. Several budget notebooks have been discontinued, including Toshiba's Satellite T2130CS and T2130CT.

Hot new notebooks include multimedia models and fast P-100 portables. This month seven new notebooks hit the chart—four power, three budget. Notable systems that didn't make it include the Digital HiNote Ultra II and the TI Extensa 570CDT. See their reviews on PC World Online (http://www.pcworld.com/t20pcsnaps).

	S C O R E C A R D													
Overall rating	PC WorldBench score	Performance	Price	Reliability	Features and design	Service and support	Battery life (hours)	Battery life	Traveling weight	Reader service number	Fax reprint number			
87	142	good	average	best	good	good	4:02	good	heavy	718	3771			
86	166	very good	expensive	good	very good	good ²	5:20	very good	average	719	3764			
85	160	very good	very expensive	best	outstanding	good	4:23	good	very heavy	720	3772			
84	99	satisfactory	Inexpensive	best	good	good	5:09	very good	light	721	3752			
82	145	very good	average	роог	good	good	6.19	outstanding	average	722	3736			
82	177	outstanding	very expensive	fair	very good	good	2:02	satisfactory	average		3773			
81	117	good	inexpensive	fair	good	good 2	5:12	very good	light	723	3759			
78	166	very good	average	3	good	3	3:39	good	heavy	724	3774			
78	131	good	average	fair	good		3:35	good	average	725	3741			
78	163	very good	expensive	3	very good	3	3:22	good	heavy	726	3765			
▲ Percentage rating for powe		Performance 22 percent	Price 14 percent	Reliability 22 percent	Features 16 percent	Support 10 percent	Batte 8 pe	ry life rcent	Weight 8 percent					
82	86	good	average	best	satisfactory	good	3:35	good	average	727	3754			
77	75	satisfactory	inexpensive	fair	satisfactory	a. s. san grossininanining s	2:59	dooq	average	728	3767			
77 2 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	62	poor	average	fair	satisfactory	good	3:50	good	average		3775			
76	79	satisfactory	inexpensive	3	satisfactory	3	4:28	good	average	729	3757			
76	91	good	average	poor	good	good	4:05	good	average	730	3768			
. <del>, isla</del> dadudi (161 etc. 162	139	very good	expensive	3	good	3	3:36	good	light	731	3776			
75	118	good	average	1	good		2:57	good	light	732	3777			
74	132	very good	expensive	, eder State in Leder	good	3	3:27	good	light	733	3778			
73	84	satisfactory	average		good		6:12	outstanding	heavy	734	3770			
72	117	good	expensive	and the second of the second o	good	3	2:24	satisfactory	heavy	735	3769			
▲ Percentage	of overall jet notebooks:	Performance 14 percent	Price 22 percent	Reliability 22 percent	Features 16 percent	Support 10 percent	Batte 8 per	ry life	Weight 8 percent	1				

Top 20s, \$8 for previous months' Top 20s, and \$4 for Individual reviews. <sup>2</sup> Limited data; score is based on responses for this company and average of all companies. <sup>3</sup> Insufficient data. For more information about all products in this table, circle reader service no. 909.

#### POWER NOTEBOOKS

#### This Month's Best Buys

NO.1: TOSHIBA SATELLITE PRO 420CDS

**PROS:** Fast P-100, nice screen, built-in AC adapter **CONS:** Single speaker, small hard drive



Somewhere between the superexpensive Toshiba Tecra 720CDT and the budget-level Satellite 100CS is the \$3298 Toshiba Satellite Pro 420CDS. With its high-end features and low-cost design, the 420CDS is perfect for people who want multimedia on the road but don't want to spend a fortune.

The 42oCDS has a 6X CD-ROM drive, 16-bit audio, and VESA local bus video for ably handling multimedia presentations. The notebook's 11.3-inch dual-

scan screen is crisp and bright, although it doesn't give you the range of viewing angles that an active-matrix screen does. Of course, like most notebooks it



Toshlba Satellite Pro

can still be hooked up to a monitor.

	POWER NOTEBOOKS	СРИ	Traveling weight (pounds)	RAM (MB)	Hard drive (MB)	Color screen type	Screen diagonal (inches)	Screen resolution	Maximum screen colors	Battery type	Pointing device
1	Toshiba Satellite Pro 420CDS*	Pentium-100	8.8	16	772	dual-scan	11.3	800 x 600	65,536	lithium ion	eraserhead
2	Dell Latitude XPi P133ST*	Pentium-133	7.2	24	1215	active	11.3	800 x 600	256	lithium ion	trackball
3	Toshiba Tecra 720CDT	Pentium-133	10.6	16	1130	active	12.1	1024 x 768	16.8 million	lithium ion	eraserhead
4	Toshiba Portégé 610CT	Pentium-90	6.4	8	720	active	9.5	640 x 480	65,536	lithium ion	eraserhead
5	WinBook XP5 P120	Pentium-120	7.4	16	1295	active	10.3	640 x 480	65,536	lithium ion	eraserhead, touchpad
6	IBM ThinkPad 760E	Pentium-133	7.8	24	1080	active	12.1	800 x 600	65,536	lithium ion	eraserhead
7	AST Ascentia J30	Pentium-100	6.6	. 8	810	active	10.4	800 x 600	65,536	lithium ion	eraserhead
8	Austin Edge CD P133	Pentium-133	9.2	16	1358	active	11.3	800 x 600	256	lithium ion	touchpad
9	NEC Versa 4080H	Pentium-120	8.2	16	1080	active	10.4	800 x 600	256	lithium ion	touchpad
10	Micron Millennia Transport	Pentium-133	9	16	1215	active	11.3	800 x 600	65,536	lithium ion	eraserhead, touchpad
	BUDGET NOTEBOOKS									2 - 324445 5-5	
1	Toshiba Satellite 100CS*	Pentium-75	7.6	8	540	dual-scan	10.4	640 x 480	256	Nimh	eraserhead
2	NEC Versa 550D*	Cx5x86-100	7.4	8	540	dual-scan	10.4	640 x 480	256	NiMH	trackball
3	IBM ThinkPad 365CS	18M 4x86-75	7.2	8	540	dual-scan	10.4	640 x 480	256	NIMH	eraserhead
4	Sharp PC 3020	Cx5x86-100	7.2	8	500	dual-scan	10.4	640 x 480	256	NiMH	touchpad
5	WinBook XP5 P75	Pentium-75	7.4	8	540	dual-scan	10.4	640 x 480	256	lithium ion	eraserhead
6	Digital HiNote VP	Pentium-100	6.8	16	810	dual-scan	10.4	800 x 600	256	NiMH	touchpad
7	AcerNote Light 356	Pentium-100	6.8	16	810	dual-scan	10.4	640 x 480	65,536	NIMH	touchpad
8	Austin Edge XP 100	Pentium-100	6.8	16	814	dual-scan	10.4	640 x 480	256	NiMH	eraserhead
9	CTX EZ Book 600CDT P75	Pentium-75	9.2	8	540	active	10.4	640 x 480	65,536	NIMH  NIMH	eraserhead
10	Magitronic 550 Series	Am5x86-P75	8.6	20	543	active	10.4	640 x 480	256	NiMH	touchpad

\*8est Buy Includes computer, adapter, power cord, floppy drive, and CD-ROM drive if notebook has one.

With a PC WorldBench score of 142, the 420CDS is the fastest Pentium-100 notebook we've tested. This is particularly notable considering that Toshiba left out a secondary cache in order to shave some dollars off the price. At 8.8 pounds, it's also fairly light for a multimedia notebook. The dual-scan display, which is lighter than an active-matrix version, certainly helps, but the fact that the AC adapter is built into the system helps cut its traveling weight by about 1 pound. All you have to carry is a power cord. What's more, the 420CDS runs for more than 4 hours on a single charge of its lithium ion battery.

The 420CDS's keyboard is large and comfortable. Its eraserhead pointing

device is responsive. Beneath the wrist rest is a single speaker that emits respectable 16-bit audio, but it's not as good as stereo speakers' sound.

Overall, though, the Satellite Pro 420-CDS is a well-built multimedia notebook that won't break the bank. In our ongoing fax-back survey, readers continue to give Toshiba the highest marks for reliability.

#### NO. 2: DELL LATITUDE XPI P133ST

PROS: Fast, long battery life, large screen

CONS: No internal CD-ROM option, cramped keyboard, somewhat reckless trackball



**Dell Latitude** 

With a PC WorldBench score of 166, the \$5099 Latitude XPi P133ST is a fast portable. Its

speed, 5.3-hour battery life, and 7.2-pound traveling weight make it a Best Buy.

The XPi's NeoMagic video chip has a fast 128-bit core and 1MB of embedded video RAM to accelerate Windows 95. The crisp 11.3-inch active-matrix screen dis-

plays your work at 800 by 600 resolution. The Latitude is sturdy overall, but its keyboard is cramped and the trackball a bit unruly. Dell now offers a multimedia Pentium-133 notebook, which we will review soon.

#### EXPANDABILITY

#### CUSTOMER SUPPORT

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	1/1	24	Sat., Sun.	BBS, WWW
	2/2	24	Sat., Sun.	BBS
	2/2	24	Sat., Sun.	BBS, WWW

#### **New This Month**

The following PCs made our Power Notebooks chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http://www.pcworld.com/t20pcs.

#### No. 3: TOSHIBA TECRA 720CDT

PROS: Amazing display, cutting-edge technology, 1130MB hard drive, 6X CD-ROM drive, fax-modem CONS: Hefty, very expensive, weak audio

It's got an embarrassing weight problem and a scary price, but overall, Toshiba's new \$6299 Pentium-133-based Tecra

The 720CDT's 12.1-inch active-matrix screen not only can show applications at

720CDT is a killer portable.

1024 by 768 and 65,536 colors, it can display up to 1280 by 1024 pixels in its virtual desktop mode. What's visible at one

time is 1024 by 768, but by moving the mouse you can bring the hidden portion of the desktop on screen.

The Tecra is nicely configured with a 6X CD-ROM drive, an infrared port, and a 28.8-kbps fax-modem with

telephony capabilities. It has 16-bit sound, but the audio sounded tinny to us. A fan à la today's desktop PCs keeps things cool.

The Tecra 720CDT's keyboard is comfortable and responsive. Its eraserhead pointing device is easy to control. Thanks

to the notebook's 64-bit multimedia PCI graphics controller, screen redraws are fast and video playback is smooth. The

Tecra scored 160 in our PC WorldBench test—among the five highest scores we've seen. It supports Zoomed Video and Card Bus, two new standards that open the door to faster, more powerful PC Card peripherals.



Toshiba Tecra

All the extras cost the Tecra in portability: With floppy drive in tow, it weighs 10.6 pounds and measures 3 inches thick. Yet despite all the weight it's carrying around, the Tecra managed to run for 4.3 hours in our battery test.

## Go through life with less baggage.





Introducing the MessagePad 130 with Newton 2.0.

The farther we go, it seems, the more we're asked to bring with us. The names and numbers of clients past and present.

Dates, times, and notes from countless meetings. Not to mention a way to get your e-mail.

The new Apple® MessagePad®130 was designed to lighten your load by making it easier than ever to schedule work, take notes, send and receive e-mails and faxes — or hop on the Internet — from wherever you happen to be.

Even in the dark, thanks to its backlit screen.

**The Newton 2.0 operating system: learn less, do more.** The award-winning Newton 2.0 provides a surprisingly familiar way of working that encapsulates all you do now in a simpler, more concise form. Instead of loading you with complex commands, Newton works the way you do. It even reads your handwriting.

Dozens of new and well-known applications, such as Now Contact, ACT!, Quicken, CompuServe, Meeting Maker, and Eudora Pro, are available for Newton, with more coming. Making it easy to transfer information to and from your PC.

**Pick up a MessagePad and get going!** So put down whatever you're doing, and go see the Apple MessagePad 130 at your nearest dealer. Or get our faxback information kit, with details on the complete line of MessagePad products and the latest software. See just how little you have to carry, to have it all.

To get your information kit, visit our Web site or call Apple today!

http://www.info.apple.com/newton/ 1 800 364-0766 ext. 1013







#### NO. 6: IBM THINKPAD 760E

PROS: Fastest notebook to date, bright 12.1-inch screen, built-in 28.8-kbps voice-enabled modem CONS: Expensive, 2-hour battery life

If you need the fastest notebook on the block, the ThinkPad 760E is for you. With a PC WorldBench score of 177, it's 11 points ahead of the next-fastest portable to be tested with 24MB of RAM, the Dell Latitude XPi P133ST. That score also puts the ThinkPad 760E on a par with several P-133 desktop PCs that we've tested. But like fast,

hot automobiles, the 760E costs a lot of money-\$6344, to be exact. For the price you get what is essentially an upgraded version of the ThinkPad 76oC, with a faster P-133 processor and a PCI local bus motherboard.

If you have the means, it's hard to do better. This slick, black machine is equipped

with a roomy 1080MB removable hard drive, a 28.8-kbps fax-modem with voice mail, an infrared port, and PC CardBus support for highspeed add-in cards. The responsive TrackPoint



**IBM ThinkPad** 

PERFORMANCE TOP 20 NOTEBOOK PCs PC WorldBench score Faster Slower RAM (MB) Secondary cache (K) Average of tested P-133s POWER NOTEBOOKS CPU Toshiba Satellite Pro 420CDS\* Pentium-100 142 2 Dell Latitude XPi P133ST\* 256 Pentium-133 24 166 3 Toshiba Tecra 720CDT Pentium-133 16 256 160 4 Toshiba Portégé 610CT Pentium-90 8 99 5 WinBook XP5 P120 Pentium-120 256 145 16 6 IBM ThinkPad 760E 177 Pentium-133 24 256 7 Pentium-100 **AST Ascentia J30** 8 5 117 8 Austin Edge CD P133 Pentium-133 16 256 166 9 NEC Versa 4080H Pentium-120 256 131 16 10 Micron Millennia Transport Pentium-133 16 256 163 BUDGET NOTEBOOKS Toshiba Satellite 100CS\* Pentium-75 8 86 2 NEC Versa 550D\* Cx5x86-100 8 75 3 IBM ThinkPad 365CS IBM 4x86-75 8 62 4 Sharp PC 3020 Cx5x86-100 8 79 WinBook XP5 P75 5 Pentium-75 8 256 91 6 Digital HiNote VP Pentium-100 139 16 7 AcerNote Light 356 Pentium-100 16 118 8 Austin Edge XP 100 Pentium-100 16 132 9 CTX EZ Book 600CDT P75 Pentium-75 8 256 84 Magitronic 550 Series Am5x86-P75 90 \*Best Buy Application test times in minutes 30

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

NOW WE TEST A higher PC WorldBench score is better. All systems are tested with PC WorldBench, PC World's application-based benchmark. 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 (http://www.pcworld.com).





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eraserhead and tilting keyboard make the system a pleasure to use, and the 12.1-inch active-matrix screen is brilliant. The impressive screen adds little to the notebook's weight, which tops out at just 7.8 pounds. For multimedia presentations, the

760E has built-in 16-bit sound and stereo speakers that provide terrific audio, but you won't find a CD-ROM drive option for this Pentium-133 model. For that you will need to buy the ThinkPad 76oED, which is otherwise identical.



Toshiba 100CS

The ThinkPad 760E needs to refuel frequently. Plan on finding an outlet after only 2 hours. You can add an extra battery in a special expansion bay located under the keyboard.

In addition to round-the-clock tech support. IBM offers an extensive on-screen orientation and CoSession for Windows remote control software that allows IBM's tech support personnel to troubleshoot your ThinkPad via modem.

#### NO. 8: AUSTIN EDGE CD P133

PROS: Good price, fast, sturdy, good speakers CONS: Poor keyboard layout, CD-ROM drive doesn't fit well in its drive bay

The \$3945 Austin Edge CD P133 is a rugged, high-end portable for power users who are also on a budget. It's the least expensive Pentium-133 multimedia notebook on the chart by more than \$1000.



It's also one of the fastest we've tested-its PC World-Bench score of 166 ties it for second on our current all-time fastest notebooks list. As far as multi-

Austin Edge

media notebooks go, it's highly mobile; with all the essentials it weighs just 9.2 pounds. Its lithium ion battery lasts more than 3.5 hours.

Our Edge CD P133 came equipped with 16MB of RAM, a 1.4GB hard drive, and a 4X CD-ROM drive that you can swap for the floppy drive. According to Austin, by the time you read this the standard CD-ROM drive will be 6X at no extra cost. In addition, the company will be including a 28.8-kbps

fax-modem with speakerphone.

The Edge CD P133's 11.3-inch active-matrix screen displays at 800 by 600 in bright, crisp colors (albeit only 256 of them). The notebook comes with particularly good stereo speakers and sound. You can control

> the bass, treble, and balance from the keyboard. The touchpad pointing device is easy to control, but if you prefer cursor keys, the keyboard has special keys for accessing Windows 95's Start menu and Explorer.

The Edge CD P133 feels very sturdy. We did notice, however, that the CD-ROM drive didn't fit well in the drive bay. In addition, we had a problem with the placement of the right <Shift> key. It's at the far edge of the keyboard past the cursor keys, which caused us to continually hit the question mark key when we meant to shift.

Aside from an airline guide, which comes with almost every notebook we test, the Edge CD P133 includes very little application software or additional utilities.

#### BUDGET NOTEBOOKS

#### This Month's Best Buys

#### **NO. 1: TOSHIBA SATELLITE 100CS**

PROS: Good value, nice screen and keyboard CONS: No bundled application software



The \$1999 Satellite 100CS is a perfect first notebook. You get Pentium power, a good dual-scan screen, and an excellent design for a bud-

get price. It doesn't have any extras like a super-VGA screen, built-in sound, or an infrared port, but it's well built and comes from a reputable vendor.

The 100CS has a bright 10.4-inch dualscan display with good controls for brightness and contrast. Its keyboard is comfortable and responsive, and its eraserhead pointing device is easy to manipulate.

Because it comes with just 8MB of RAM it's not the fastest P-75, but it's fast for a notebook in its price range. An 8MB upgrade module costs \$459 and should boost performance by about 15 percent.

Toshiba doesn't bundle any application software with the 100CS, but it does have several helpful utilities to get you acquainted with your PC. An on-screen program monitors battery life, which should top out at around 3.5 hours with all the power management features activated.

#### NO. 2: NEC VERSA 550D

PROS: Very low price, nice design, good display CONS: No bundled application software



The \$1699 NEC Versa 550D is a solid, though not terrific, performer that's well designed and inexpen-

sive. With a 100-MHz Cyrix 5x86 CPU and 8MB of RAM, the Versa 550D achieved a PC WorldBench score of 75, which makes it just a slightly slower performer than the average 8MB Pentium-75 notebook. The 550D's battery life, which clocks in at just shy of 3 hours, is also acceptable. And at 7.4

pounds, including the trim AC adapter, it's pretty easy to carry.

Overall, the Versa 550D is sleek and sturdy, with gentle curves and protected latches. We especially



**NEC Versa** 

like the range of brightness and contrast that you can achieve on the 10.4-inch dual-scan display.

A trackball with large mouse buttons is located in the center of the wrist rest. The buttons work fine, but the trackball's rough texture has its pros and cons: It's easier to control, but it also creates a disconcerting grinding sensation.

NEC doesn't bundle any application software with its Versa 550D, but it does provide good documentation.

#### **New This Month**

The following PCs made our Budget Notebooks chart for the first time this month. For previously tested PCs on the chart, visit our Web page at http://www.pcworld.com/t20pcs.

#### NO. 6: DIGITAL HINOTE VP

PROS: Exceptional P-100 performance, good battery life, bright display

CONS: No built-in CD-ROM option

At every turn, the \$2499 HiNote VP exceeded our expectations. With a PC WorldBench score of 139, it's the sec- ▶



monitors with advanced Trinitron CRT is Technitron

InnoVision DX15T	Multiscan* 15sf II	MultiSync* XE15	InnoVision DX700T	Multiscan* 17sf ll	MultiSync XV17+
Trinitron *	Trinitron"	Conventional Rat Square Tube	Trinitron "	Trinitran'	Conventional Elat Square Tube
<b>0.25</b> mm	0.25mm	0.28mm	1.25mm	0.25mm	0.28mm
13.9"**	13.9"**	13.8***	15***	16***	15.6***
MSRP \$459	MSRP \$549	ESP \$575	MSRP \$799	MSRP \$879	ESP \$849

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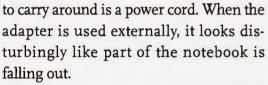
Digital HINote VP

ond-fastest P-100 notebook we've tested, outperforming several P-120s. Its 3.6-hour battery life is impressive considering that the Hi-Note VP uses a

NiMH battery instead of the longer-lasting lithium ion kind.

In contrast to Digital's slim Ultra II notebook, the HiNote VP's keyboard is roomy, comfortable, and responsive. Its 10.4-inch dual-scan screen is vivid and has excellent controls for brightness and contrast. The HiNote VP is lightweight at just

6.8 pounds. The AC adapter is one of those optional internal kinds that can take the place of the floppy drive or rest on your desk. If you don't use your floppy drive much, this is a sensible design because all you have

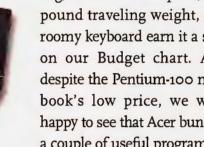


The bundled software is marginally useful. Our system had CompuServe and America Online, but no modem to log on with. It came with LapLink for Windows 95 for file transfer, but you have to supply the cables. (The HiNote VP doesn't have an infrared port.) Digital backs the HiNote VP with a one-year warranty. Toll-free technical support is limited to weekdays, but you can get round-the-clock support if you purchase Digital's Passport service, which costs \$49 the first year.

#### NO. 7: ACERNOTE LIGHT 356

PROS: Lightweight; comfortable keyboard CONS: Slow for a P-100 notebook with its configuration, dull screen, one year of free tech support The \$2298 AcerNote Light 356 is a mixed

> bag, but its attractive price, 6.8pound traveling weight, and roomy keyboard earn it a spot on our Budget chart. And despite the Pentium-100 notebook's low price, we were happy to see that Acer bundles a couple of useful programs—



Sidekick and Quicken.

PC WORLD

AcerNote

The AcerNote runs for almost 3 hours on a single NiMH battery—not bad for a budget notebook. It isn't as slim as some notebooks we've seen, but at just 2 inches thick it slips easily into your luggage. The palm rest is just the right size—not so narrow as

> to be uncomfortable. and not so wide as to cramp the keyboard. You control the mouse with a touchpad that's easy to use.

On the other hand, there are a few shortcomings that prevent the AcerNote from rising higher on the chart. Its PC WorldBench score of 118 is disappointing for a P-100 notebook with 16MB of RAM. While its 10.4inch dual-scan screen can handle over 65,000 colors, we found it looked washed-out and jittery. What's more, the first notebook Acer sent us broke down

during testing. The replacement worked

Acer backs its notebooks with a strong warranty: During the first year the company will replace a defective notebook; over the next two years you can send it in to be fixed. Tech support is available around the clock, but it's free only for the first year. After that you can pay for one of a variety of support plans.

#### NO. 8: AUSTIN EDGE XP 100

PROS: Affordable, lightweight, excellent screen CONS: Cramped keyboard, poor sound quality The \$2447 Edge XP 100 doesn't have a lot of frills like an active-matrix screen or a CD-ROM drive, but it's fast, lightweight, and—for a P-100—easy on the wallet. Its PC WorldBench score of 132 is good for a P-100 notebook with 16MB of RAM, while its slim design and 6.8-pound traveling weight are superb for any portable. Even its 3.5-hour battery life is commendable for a notebook with a NiMH battery.

The 10.4-inch dual-scan screen displays only 256 colors, but it's surprisingly

sharp. The eraserhead pointing device is responsive, and the mouse buttons are placed at a perfect distance from the keyboard so they're easy to



Austin Edge

use. On the other hand, the keyboard itself is a bit cramped, with smaller-thanaverage keys. The right <Shift> key is at the far edge, which caused errors during typing. There are speakers built into the display unit, but they sound distorted.

Software bundled with the Edge XP 100 is limited. There's an airline flight guide and an antivirus program, but nothing that will help you do your work.

#### Beyond the Top 20

We tested 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 (http://www.pcworld.com/t20pcsnaps).

- ◆Canon Innova Book 360CD
- ◆ Digital HiNote Ultra II
- ◆ Texas Instruments Extensa 570CDT
- ♦ WinBook XP5 P100

#### TEST REPORT



#### Notebook Battery Life

Toshiba Tecra 720CDT		4:23
Toshlba Satellite Pro 420CDS*		4:02
Austin Edge CD P133		3:39
Digital HiNote VP		3:36
Austin Edge XP 100		3:27
AcerNote Light 356		2:57
IBM ThinkPad 760E	5 6 7	2:02

\*Best Buy

Time in hours:minutes.

HOW WE TESTED We drain and fully recharge the battery twice and set power-saving options to match a consistent profile where possible. Office workers use Windows 95 applications, periodically saving and allowing regular idle time. Notebooks are rotated among workers. We report the time elapsed when the notebook shuts itself off.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

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When you first set up your PC, were any components "dead on arrival" (DOA)?

If so, which component was it? (Mark all that apply.)

8attery	<ul> <li>Graphics/video board</li> </ul>	Modem/fax board	O Power supply
○ CD-ROM	O Hard drive	O Monitor/screen	O Sound board
○ CPU	○ Keyboard	○ Motherboard	Other
O Floppy drive	O Memory	○ Mouse	

Did your problem occur only after you added your own hardware or software?

How many times have you had a problem with this PC? O No O Don't know ○ No problem ever ○ Three One O Four Would you buy this brand of PC again? More than four O No ○ Two O Yes O Not sure

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.

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O Manufacturer's author	orized repair techn	ician 🔘 On site	O Component swap
O Self	Other	○ In store	<ul> <li>Factory return</li> </ul>
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O Less than 1 minute	○ 3-5 minute	s 🔘 11-20 minutes	20 minutes
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O Less than 15 minutes	2-5 hours	11-24 hours	○ 3-5 days
○ 15 minutes-1 hour	○ 6-10 hours	○ 11/2-2 days	O 1 week or more

How long did it take to resolve the problem completely? Was it resolved to your O 1-2 days O More than 1 month satisfaction? O Never resolved O 3-7 days Yes O No

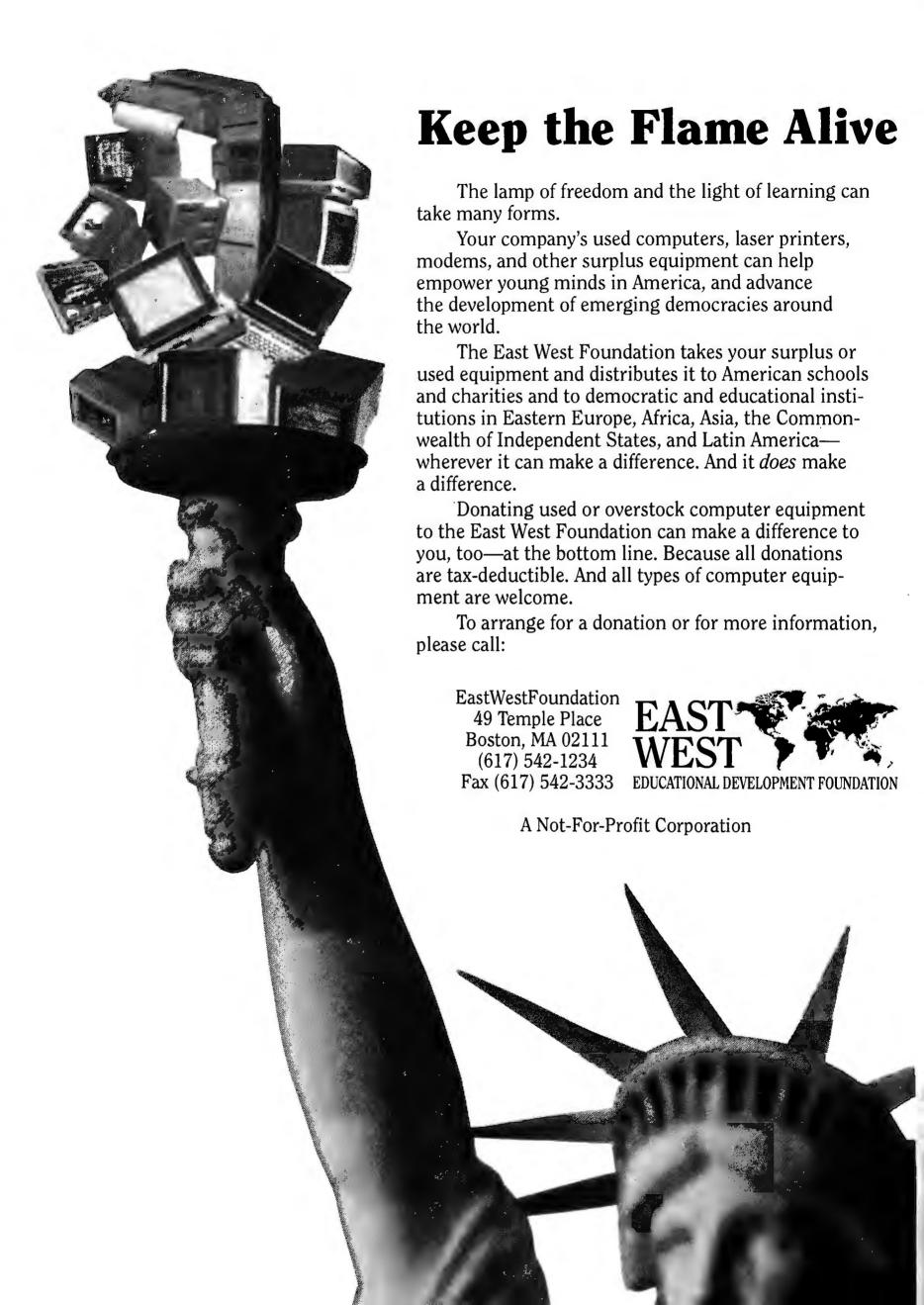
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support you received, would you buy this brand of PC again? Yes

On the whole, how satisfied are you with the service and support you received?

Extremely satisfied O Not at all





## TOP 10 PRINTERS

9								
	MONOCHROME WORKGROUP PRINTERS	Month tested	Street price (5/14/96)	Overall rating	Speed for plain text	Speed for full-page graphics	Comments	Reader Service Number
1	Lexmark Optra Lx+ 800/891-0331 http://www.texmark.com	July 96	\$1950	91	10.7 ppm	1.4 ppm	FEATURES: 16-ppm laser. Standard 4MB of RAM, 600-by-600-dpi resolution (true 1200 dpi with at least 8MB of RAM), 500 sheets input and output. PROS/CONS: Excellent print quality. Easy-to-read LCD labels on control panel. Somewhat slow, especially printing full-page graphics.	625
2	HP LaserJet 5M 800/752-0900 http://www.hp.com	July 96	\$1799	90	9.5 ppm	1.1 ppm	FEATURES: 12-ppm laser. Standard 6M8 of RAM, 600-by-600-dpi resolution, 250 sheets input and output. PROS/CONS: Very good print quality. Innovative control panel is easy to use. But its maximum paper capacity of 750 sheets is low—all others on the chart except the TI exceed 1000.	626
3	Lexmark Optra R+ 800/891-0331 http://www.lexmark.com	July 96	\$1450	89	10.8 ppm	1.2 ppm	FEATURES: 16-ppm laser. Standard 2M8 of RAM, 600-by-600-dpi resolution, 200 sheets input, 250 output.  PROS/CONS: Print quality, speed, and basic design similar to the Optra Lx+'s, but less paper capacity. Upgraded model (to be tested for upcoming issue) will have 4MB of RAM standard.	627
4	Okidata OL1200/PS 800/654-3282 http://www.okidata.com	July 96	\$1399	82	8.9 ppm	2.3 ppm	FEATURES: 12-ppm LED. Standard 6MB of RAM, 600-by-600-dpi resolution, 500 sheets input, 250 output. PROS/CONS: \$164 price cut makes it the least expensive on the monochrome chart. Good print quality, decent performance, but control panel not as intuitive as the Lexmarks' or HP's.	,w-whit were so wish ,
5	TI microLaser PowerPro/12 800/848-3927 http://www.tl.com	July 96	\$1439	80	10.4 ppm	2.4 ppm	FEATURES: 12-ppm laser. Standard 3MB of RAM, 600-by-600-dpi resolution, 500 sheets input, 250 output. PROS/CONS: Fast, inexpensive PostScript printer, but comparatively low paper capacity makes it unfit for high-volume offices—only it and the HP 5M hold less than 1000 sheets maximum.	629
	COLOR WORKGROUP PRINTERS							
1	HP DeskJet 1600CM 800/752-0900 http://www.hp.com	July 96	\$1999	91	4.4 ppm	O.5 ppm	FEATURES: 8-ppm monochrome/2-ppm color ink jet with 6MB of RAM, 600-by-600-dpi monochrome, 300-by-300-dpi color. PROS/CONS: Inexpensive for good print quality and adequate speed. PostScript and ethernet are included. Ink jet pages, unlike a laser's, are sensitive to moisture and light.	630
2	Xerox XPrint 4920 Plus 800/349-3769 http://www.xerox.com	new	\$6500	86	5.5 ppm	O.3 ppm	FEATURES: 12-ppm monochrome/3-ppm color laser with 16MB of RAM, 600-by-600-dpi monochrome and color. Not Plug and Play ready. PROS/CONS: Superb print quality. Optional feeder/printer cabinet (\$1341) gives it the highest maximum paper capacity of any color laser on the chart. Slow printing full-page graphics.	631
3	Tektronix Phaser 550 800/835-6100 http://www.tek.com	July 96	\$5945	84	5.6 ppm	O.5 ppm	FEATURES: 14-ppm monochrome/5-ppm color laser with 8MB of RAM, 600-by-600-dpi monochrome and color (true 1200 dpi with RAM upgrade). PROS/CONS: Least expensive color laser on the chart. Versatile paper handling accommodates labels. Proprietary RAM is expensive.	632
4	Lexmark Optra C 800/891-0331 http://www.lexmark.com	July 96	\$6400	84	5.8 ppm	O.5 ppm	FEATURES: 12-ppm monochrome/3-ppm color laser with 8MB of RAM, 600-by-600-dpi monochrome and color. PROS/CONS: Very good color quality. Universal paper tray takes up to legal size, automatically senses size it contains. Expensive, and fuser oil spills easily when printer is moved.	633
5	Apple Color LaserWriter 12/600 PS 800/776-2333	July 96	\$6499	senti emeritere isoscie.	3.8 ppm	0.3 ppm	FEATURES: 12-ppm monochrome/3-ppm color laser with 12MB of RAM, 600-by-600-dpi monochrome and color. PROS/CONS: Like the Lexmark, it has very good print quality. But it's pricey, has the same problem with fuser oil spills as the Lex-	634
	http://www.apple.com						mark, and is the slowest color laser on the chart.	



YOUR OFFICE'S PRIMARY PAPER PUSHER may still be a monochrome laser, but don't be surprised if a color printer soon shares the duty-or takes it over entirely. This month we've expanded our color chart from three rankings to five to

make way for new lasers like the Xerox XPrint 4920 Plus. Debuting in second place, it can handle black text as easily as color images. Speed is still an issue, however, as our new pages per minute-based test results indicate. (continues)

HOW WE TEST The overall rating for both monochrome and color workgroup printers is based on print quality (27 percent), price (20 percent); features and ease of use (20 percent), speed (15 percent), service and support policies (13 percent), and cost of consumables (5 percent). For all ratings, higher is better. Oata based on tests designed and conducted by the PC World Test Center. All rights reserved. For more Information about all products in this table, circle reader service no. 902.

The Xerox is the only newly tested workgroup printer to make the Top 10. (Workgroup printers have rated engine speeds of 8 to 16 ppm for monochrome printing.) We tested the Apple Color LaserWriter 12/600 PS for our July review, but it didn't make the chart until this month.

You can spend less than the \$6500 that the Xerox XPrint 4920 Plus costs, but you'll get less. The Xerox XPrint 4915 Plus, which we also tested, costs just \$4500; its 300-dpi resolution limits its capabilities, however, and it didn't make the chart. The same fate befell the QMS magicolor CX/32, which had uneven print quality as well as a high \$6799 price. Our Best Buy is still the inexpensive (\$1999), capable HP DeskJet 1600CM color ink jet. It prints well enough to lure you away from a laser, but we realize some diehards won't settle for anything else.

No new monochrome printers were available for this month's review, and Lexmark's Optra Lx+ is still our Best Buy. Next month we'll retest the Lexmark Optra R+, which now comes with 4MB of RAM, and we'll review a new Apple laser.

#### **XEROX PRINT QUALITY PREVAILS**

IN THE XPRINT 4920 PLUS'S NAME. "Plus" refers to improvements Xerox made to the print quality of the XPrint 4920 that it introduced about a year ago.

Xerox fine-tuned the printer's ability to match its colors with those defined by your application, and to sharpen color prints by substituting true black in areas where previously it would have used inferior, three-color "process" black. The results showed in our tests: Color photographs we printed on the Xerox had deep-

er shadows and finer line definition. Although the Xerox costs \$555 more than the Tektronix Phaser 550 and is a little slower, its better print quality prevails.

Xerox's XPrint 4915 Plus costs \$2000 less than the XPrint 4920 Plus, but its 1200-by-300-dpi resolution is good only for text and simple graphics like pie charts—which may be all some offices need. Photographs look grainy, however, and the colors aren't as subtle as those produced by the XPrint 4920 Plus.

The QMS magicolor CX/32's price is high—in part because it includes 32MB of RAM. However, the unit posted just average print speeds. The gray-scale and color images from this 600-dpi printer showed noticeable banding, and transitions from light to dark were rough. We didn't test two other versions of this printer: the \$5524 CX/20 with 20MB of RAM, and the \$4929 CX/8 with 8MB of RAM. The CX/8 prints at 300-dpi resolution.



XEROX XPRINT 4920 PLUS DELIVERS. The finely drawn black text and improved color rendering on photographic images earn this Xerox high print-quality ratings.

#### MORE COLOR LASERS COMING UP

CANON'S NEW \$10,625 C LBP 360PS color laser has the same Fiery controller as the Digital Colorwriter LSR 2000, which we reviewed in our July issue. Developed by EFI, a leader in desktop publishing technology, the Fiery is supposed to improve the speed of color lasers dramatically. Unfortunately, at our testing deadline EFI had not yet fixed the Fiery's problem with printing text from Word 7.0 for Windows 95. Both Digital and Canon had issued fixes by press time; we'll retest the printers soon.

The Digital and Canon are just two of the color lasers we've seen that use the same Canon print engine; the others are the Apple Color LaserWriter 12/600 PS and the Lexmark Optra C. We love the print quality this engine delivers, but we've found a flaw in its design: Its slick fuser oil, part of the subsystem that melts the toner onto the paper, can easily leak when the printer is moved or even tipped a little. The documentation, which of course everyone reads, says you should use the supplied syringe to remove some oil before moving the unit-but it was an untidy operation, and users shouldn't have to deal with it.

—Bill Underwood ■

Bill Underwood is a mechanical engineer with over 16 years' experience testing printers. Testing performed by Dave Casini of the PC World Test Center.

#### PRINT QUALITY SAMPLES

#### Xerox Laser Earns Best Color Scores Yet



LEXMARK OPTRA LX+

The Lx+'s monochrome

print quality is simply

top-notch. It produced

Images, and It rendered

text with razor-sharp

legibility down to very

excellent gray-scale

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is is 6 point te s is 7 point to is 8 point is 9 point s 10 poir

#### HP DESKJET 1600CM

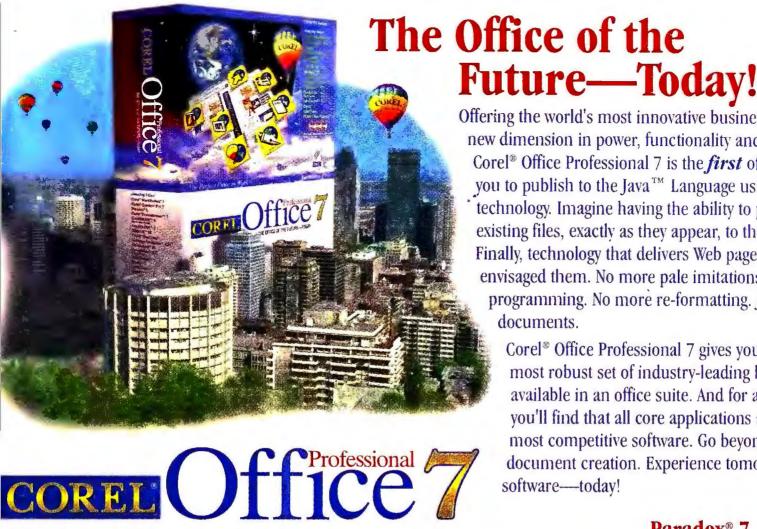
An ink-drying heater in the DeskJet 1600CM sharpens its text, gray-scale, and color images. Although the images are very good, they're not quite as crisp as a color laser's unless you use expensive coated paper.



#### XEROX XPRINT 4920 PLUS

Xerox fine-tuned the way true black is used in both monochrome and color images, so this color laser's text, gray-scale, and full-color prints all look crisper and truer than images from the unit's competition,

small point sizes.



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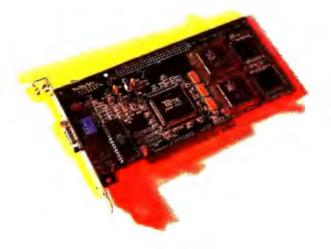


Tseng Labs ET6000, 128-Bit Graphics Accelerator (Ideal for displaying multiple video windows)



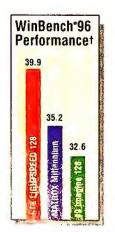
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## TOP 10 MONITORS

حعا							
	17-INCH MONITORS	Month tested	Street price (5/31/96)	Overall rating	Quality of text/graphics	Comments	Reader service number
1	1BM P70 800/426-7255 http://www.pc.lbm.com	e <b>New</b>	\$899	84	very good/ very good	FEATURES: 15.9-inch viewable screen, .26mm Trinitron tube, up to 85-Hz refresh rate <sup>1</sup> , Level 2b Plug and Play ready <sup>2</sup> , three-year warranty, 24-hour daily toll-free support. PROS/CONS: Sharpest text and graphics detail of the bunch, easy-to-use on-screen menus; two extremely faint lines visible across screen, expensive.	-
2	Panasonic PanaSync S17 201/348-7000 http://www.panasonic.com	пеж	\$699	84	very good/ very good	FEATURES: 15.7-inch viewable screen, .27mm dot pitch tube, up to 85-Hz refresh rate', Level 2b PnP ready, three-year warranty, 24-hour daily toll-free support. PROS/CONS: Low price for accurate text and graphics quality; on-screen menu icons difficult to decipher—frequent button pressing needed to adjust screen.	616
3	Continental Digiview 1709D 818/854-8288 http://www.digiview.com	new	\$799	83	very good/ very good	FEATURES: 15.9-Inch viewable screen, .25mm Diamondtron tube, up to 101-Hz refresh rate <sup>†</sup> , Level 2b PnP ready, three-year warranty, 8-hour weekday toll-free support. PROS/CONS: Good price, words and pictures look very crisp, main control button looks odd but adjusting screen is easy; rear on/off switch is hard to reach.	617
4	Packard Bell 3020 SL 800/733-5858 http://www.packardbell.com	new	\$660	82	very good very good	FEATURES: 15.7-inch viewable screen, .28mm dot pitch tube, up to 75-Hz refresh rate <sup>1</sup> , Level 2b PnP ready, 24-hour daily toll-free support. PROS/CONS: Lowest price on chart, very sharp type and images; awkward four-button control panel, lacks reset and image tilt controls, only a one-year warranty if not purchased with a PC.	618
5	Samsung SyncMaster 17GLsi 818/365-8131 http://www.samsung.com	new	\$910	80	very good/ satisfactory	FEATURES: 15.8-inch viewable screen, .26mm dot pitch tube, up to 105-Hz refresh rate!, Level 2b PnP ready, three-year warranty, 24-hour daily toll-free support. PROS/CONS: Type looks crisp, easy-to-use controls, extensive on-screen menu includes a focus control to keep the picture sharp; ho-hum graphics, expensive.	619
6	Wyse Technologies WY-17PS 800/997-0014 http://www.wyse.com	uew	\$919	80	good/ very good	FEATURES: 15.9-inch viewable screen, .25mm Oiamondtron tube, up to 101-Hz refresh rate <sup>1</sup> , Level 2b PnP ready, three-year warranty, toll-free support 9 hours on weekdays. PROS/CONS: Oetailed type and images, same controls as Continental; expensive, rear on/off switch is hard to reach.	620
7	ViewSonic PT770 909/869-7976 http://www.viewsonic.com	new	\$899	80	very good/ good	FEATURES: 15.9-inch viewable screen, .25mm Diamondtron tube, up to 101-Hz refresh rate', Level 2b PnP ready, three-year warranty, 11-hour weekday toll-free support. PROS/CONS: Type is very sharp, vivid graphics, easy to adjust, color correction software; two faint lines visible across screen.	621
8	Dell UltraScan D1726T-HS 800/289-3355 http://www.dell.com	new	\$7 <b>99</b>	80	good/ good	FEATURES: 15.7-inch viewable screen, .25mm Trinitron tube, up to 105-Hz refresh rate <sup>1</sup> , Level 2b PnP ready, three-year warranty, 24-hour daily toll-free support. PROS/CONS: Crisp text and graphics, easy controls (press a button, and the appropriate adjustment gauge appears); two faint lines across screen, no degauss button.	di i ina dalamini il ili anc
9	Mitsubishi Diamond Scan 17HX 714/236-6352 http://www.mela-itg.com	new	\$849	77	satisfactory/ satisfactory	FEATURES: 15.4-inch viewable screen, .26mm dot pitch tube, up to 105-Hz refresh rate <sup>1</sup> , Level 2b PnP ready, color and image correction software, three-year warranty, 8.5-hour weekday toll-free support. PROS/CONS: Extensive on-screen menus, easily adjustable controls; letter and picture details look slightly fuzzy.	623
10	Sony Multiscan 17sell 800/352-7669 http://www.sel.sony.com	<b>new</b>	\$1159	76	very good/ good	<b>FEATURES:</b> 15.7-inch viewable screen, .25mm Trinitron tube, up to 100-Hz refresh rate <sup>1</sup> , Level 2b PnP ready, three-year warranty, 15 hours of daily toll-free support. <b>PROS/CONS:</b> Crisp text detail rivals the IBM's, bright graphics, intuitive on-screen controls; most expensive monitor on chart, two faint lines visible across picture.	624
	Best Buy http://www.pcworl	d.com/t10mo	nitors				



STARTING THIS MONTH we're testing monitors with a greater variety of graphics and text screens. Of the 25 brand-new 17inch models we saw, the IBM P70 displays the best-looking text and brightest graphics. Its on-screen menus are logical and work well in tandem with the control buttons. If you can live with less intuitive on-screen menus and a slightly smaller screen, your next best bet is Panasonic's PanaSync S17, which costs \$200 less. For the full review, see page 147.

HOW WE TEST We use a ten-member jury to rate a monitor's text and graphics quality. We evaluate each unit on how well it can display typical business letters, 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. For more information about all products in this table, circle reader service no. 901.

'Highest refresh rate at 1024 by 768 resolution. Level 2b Plug and Play monitors and graphics cards can communicate bidirectionally. However, Windows 95 does not fully utilize monitor Plug and Play.

labe Swan Build-to-Order Case pation: Military 100 god: Computerize the regimen Sho. Long-range goal: Become application developer in the private jects

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#### SwanNote-Plus/CD 133 \$3999

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   3.5" Modular Floppy Disk Drive
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# TOP 10 GRAPHICS BOARDS

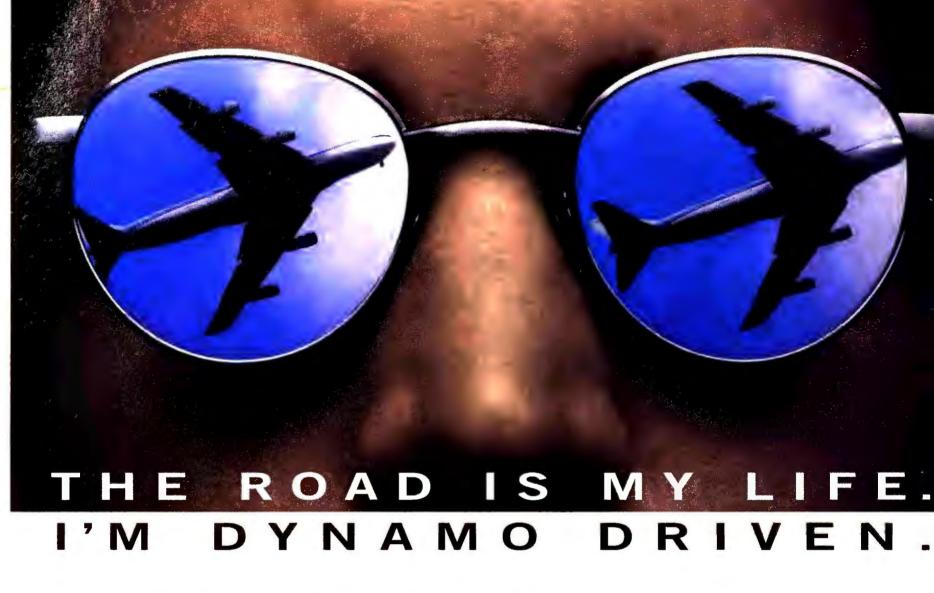
<u>ــــــــــــــــــــــــــــــــــــ</u>	CDADUICS BOADDS	Last	Street price	Overall	PC WorldBench		Reader service
1	Diamond Stealth 3D 2000XL 800/468-5846 http://www.diamondmm.com	reviewed	\$179	rating 93	graphics score  183  very good	FEATURES: 2M8 of EDO DRAM, 100-Hz refresh rate at 1024 by 768, 3-D acceleration, bundled games, Mediamatics MPEG software, DirectVideo, S3 Virge chip. PROS/CONS: Low-cost 3-D card performs like a board with costlier memory, good utilities, excellent MPEG playback; tech support can be hard to reach.	number 661
2	STB Lightspeed 128 888/234-8750 http://www.stb.com	Aug 96	\$229	92	186 very good	FEATURES: 2.25M8 of MDRAM, 120-Hz refresh rate at 1024 by 76B, bilinear video interpolation, Xing MPEG software, DirectVideo, Tseng Labs ET6000 chip. PROS/CONS: Performs well in business and graphics programs, fast yet inexpensive, perfect AVI video playback, excellent MPEG, lifetime warranty; no 3-D acceleration.	662
3	Matrox MGA Millennium 800/361-1408 http://www.matrox.com	June 96	\$269	91	184 very good	FEATURES: 2M8 of WRAM, 120-Hz refresh rate at 1024 by 768, 3-0 acceleration, optional MPEG and TV tuner cards, CompCore MPEG software, DirectVideo, Matrox MGA-2064W chip. PROS/CONS: Fast, high refresh rates, holds 8M8, superb AVI video; poor MPEG, version in PCs often slower than retail version.	663
4	STB Powergraph 64 Video 888/234-8750 http://www.stb.com	June 96	\$139	91	175 good	FEATURES: 2MB of EDO DRAM, 120-Hz refresh rate at 1024 by 768, optional MPEG and TV tuner cards, Xing MPEG software, S3 Trio64V+ chip. PROS/CONS: Big price drop, good MPEG playback, lifetime warranty, toll-free support; not the best choice for image editing because it holds only 2MB of RAM.	664
5	ATI 3D Xpression 905/882-2600 http://www.atitech.ca	new	\$199	89	174 good	FEATURES: 2M8 of EDO ORAM, 100-Hz refresh rate at 1024 by 768, 3-D acceleration, optional MPEG and TV tuner module, ATI MPEG software, ATI 3D Rage chip. PROS/CONS: Affordable all-in-one graphics board with 3-D functions, faster in Windows than ATI Video Xpression, good MPEG playback; not ideal for high resolutions.	665
6	Hercules Terminator 64/Video 800/532-0600 http://www.hercules.com	June 96	\$179	86	172 good	FEATURES: 2M8 of EDO DRAM, 90-Hz refresh rate at 1024 by 768, optional MPEG and TV tuner cards, Xing MPEG software, S3 Trio64V+ chip. PROS/CONS: Low-cost board with extensive software utilities, good MPEG playback; performance good for many applications but not for complex, high-resolution graphics.	666
7	Paradise Pipeline 64 800/978-3079 http://www.paradisemmp.com	new	\$129	85	168 satisfactory	FEATURES: 2MB of EDO DRAM, 75-Hz refresh rate at 1024 by 768, Mediamatics MPEG software, Philips 9710 chip, PROS/CONS: Cheap, no-nonsense board, intuitive software utilities, excellent MPEG playback; struggles at 16.8 million colors, low refresh rates can lead to annoying flicker at higher resolutions.	667
8	Diamond Stealth64 Video 2201TV 800/468-5846 http://www.diamondmm.com	July 96	\$224	84	175 good	FEATURES: 2M8 of EDO DRAM, 100-Hz refresh rate at 1024 by 768, built-in TV tuner, optional MPEG card, Mediamatics MPEG software, S3 Trio64V+ chip. PROS/CONS: TV on your PC without compromising Windows performance, excellent MPEG playback; not suited for complex graphics, readers tell us it's hard to get tech support.	668
9	Diamond Stealth64 Video 3200 800/468-5846 http://www.diamondmm.com	June 96	\$269	84	176 good	FEATURES: 2M8 of VRAM, 120-Hz refresh rate at 1024 by 768, CompCore MPEG software, S3 Vision968 chip. PROS/CONS: One-time top VRAM board now runs well with new Win 95 driver, good MPEG playback; adequate performance if you dabble in graphics apps, but you can't upgrade the memory.	669
10	Hercules Terminator Professional 800/532-0600 http://www.hercules.com	June 96	\$279	84	178 good	FEATURES: 2MB of VRAM, 120-Hz refresh rate at 1024 by 76B, Xing MPEG software, S3 Vision96B chip. PROS/CONS: Good for graphics pros, who might opt for an extra 2MB to display more colors, supports high refresh rates to reduce flicker, good MPEG playback; a bit pricey, poor documentation.	670
	Best Buy Windows 95-certifi	ed Plug an <b>d</b> P	lay	http://www.	pcworld.com/t10grap	phics	



GET READY TO ENTER THAT THIRD DIMENSION: Our new leader, Diamond's Stealth 3D 2000XL, and the fifth-place ATI 3D Xpression are both good, inexpensive boards for viewing basic 3-D. The 2000XL is the better card for business applications. Our third newcomer, the Paradise Pipeline 64, is not

particularly fast or flashy, but it's a good upgrade board if your current card is ancient and you work mainly with basic Windows programs. Too slow to make the chart: ATI's Video Xpression, and two gaming boards with built-in sound-Diamond's Edge 3D 2200XL and Jazz's 3D Magic.

HOW WE TEST We tested boards under Win 95 with PC WorldBench 1.0 at 800 by 600 resolution at 16.8 million colors (reported here) and at 1024 by 768 at 65,536 colors, on a Dell Dimension XPS P133c with 16MB of EDO RAM and 256K of pipeline-burst cache. 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. For more information about all products in this table, circle reader service no. 912.



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# TOP 10 MODEMS

五							
	EXTERNAL MODEMS	Month tested	Street price (6/15/96)	Overall rating	Average time to send five file types (min:sec)	Comments	Reader service number
1	Motorola Lifestyle 28.8 800/566-3266 http://www.mot.com/mims/isg/	Mar 96	\$200	89	4:12	FEATURES: Fax Class 1 only, stores two phone numbers for callback, password protection, Caller ID, QuickLink II fax/data software, five-year warranty, toll-free support, built-in help screens.  PROS/CONS: Best performer on chart, attractive price, good support; feature set is minimal.	640
2	Microcom DeskPorte 28.8P 800/822-8224 http://www.microcom.com	<b>A</b> pr 96	\$190	87	4:36	FEATURES: V.FC, MNP-10, Fax Class 1 and 2.0 (standard), serial cable, FlashROM, parallel port connection, callback, password protection, Faxworks 3.0, five-year warranty, overnight replacement. PROS/CONS: Very good performer, low price, great feature set; support policies are average.	641
3	U.S. Robotics Sportster 28.8 V.34 Faxmodem 800/342-5877 http://www.usr.com	Aug 96	\$199	86	4:33	FEATURES: 33.6-kbps connectivity, V.FC, Fax Class 1 and 2.0 (standard), must replace chip to upgrade, manual volume control, OuickLink II fax/data package, five-year warranty, PROS/CONS: Very good performance, affordable, light and small; basic support policies, manual could be clearer.	642
4	Cardinal Technologies MVP288XV 800/775-0899 http://www.cardtech.com	May 96	\$185	86	4:44	FEATURES: V.FC, MNP-10EC, Fax Class 1 and 2 (protocol), FlashROM, manual volume control, voice mail, Radish Voice-View, Faxworks 3.0 With Voice, lifetime warranty. PROS/CONS: Great price for this feature-laden unit; so-so performance, \$25 shipping and handling fee for each return after one year.	643
5	Zoom V.34X Fax/Data Modem 800/631-3116 http://www.zoomtel.com	July 96	\$169	86	4:43	FEATURES: V.FC, MNP-10EC, Fax Class 1 and 2 (protocol), Winfax Lite and Comit for Windows Lite, seven-year warranty, 14.5 hours of support per weekday, overnight replacement. PROS/CONS: One of the cheapest external modems around, very good support policies; a little sparse on features.	644
	PC CARD MODEMS				1	A STATE OF THE STA	
1	Zoom V.34C 800/631-3116 http://www.zoomtel.com	Mar 96	\$199	88	4:55	FEATURES: MNP-10EC, Fax Class 1 and 2 (protocol), FlashROM, direct connect to cellular phones, Winfax Lite and Comit for Windows Lite, two-year warranty, 14.5 hours of support per weekday, overnight replacement. PROS/CONS: One of the cheapest modems on chart; installation was troublesome.	645
2	Hayes Optima 288 V.34+Fax for PCMCIA With EZjack 770/840-9200 http://www.hayes.com	Feb 96	\$269	87	4:32	FEATURES: V.FC, Fax Class 1 and 2 (protocol), FlashROM, built-in phone jack, 230-kbps modem-to-PC speed, distinctive ring, callback, Caller ID, SmartCom, five-year warranty, toli-free support. PROS/CONS: Excellent performer, feature-packed, great support policies; price is a little high.	646
3	Megahertz XJ4288 800/527-8677 http://www.megahertz.com	July 96	\$300	87	4:50	FEATURES: V.FC, MNP-10EC, Fax Class 1 and 2 (protocol), FlashROM, built-in phone jack, 230-kbps modem-to-PC speed, direct connect to cellular phones, digital line alert, five-year warranty. PROS/CONS: Feature-rich, excellent manuals, flawless installation; priclest unit on chart.	647
4	TDK Systems DF2814 800/999-4835 http://www.tdksystems.com	May 96	\$199	86	4:37	FEATURES: V,FC, MNP-10EC, Fax Class 1, FlashROM, 300-kbps modem-to-PC speed, direct connection to cellular phones, callback, OuickLink II, five-year warranty, toll-free support. PROS/CONS: Very good performer, great price, good support policies; installation required a support call.	648
5	MultiTech Systems MultiModem LT 800/328-9717 http://www.multitech.com	Apr 96	\$249	86	5:20	FEATURES: V.32ter, Fax Class 2 (protocol), FlashROM, phone cable has two jacks, MultiExpress/MultiExpressFax software, five-year warranty, toll-free support, overnight replacement. PROS/CONS: Competitive support policies, installation went off without a hitch; slowest performer on chart.	649
1	Best Buy Windows 95-certifi						



SPEED AND AFFORDABILITY are the highlights of Motorola's Lifestyle 28.8 and Zoom's V.34C, which remain the external and PC Card modem Best Buys for another month. The Lifestyle also offers toll-free tech support and a decent five-

year warranty. Zoom's tech support isn't toll-free, but it is available 14.5 hours per weekday and 8 hours a day on weekends—some of the longest hours around. TDK joins Zoom this month in the under-\$200 club with a \$40 price drop.

HOW WE TEST We tested throughputs for a pair of identical modems on a simulated public-service telephone network using five file types and 55 line conditions. The overall rating is based on price (3 to 20 percent), features and ease of use (32 to 38 percent), performance (40 to 46 percent), and support (8 to 13 percent). Data based on tests designed and conducted by the PC World Test Center. All rights reserved. For more information about all products in this table, circle reader service no. 904.

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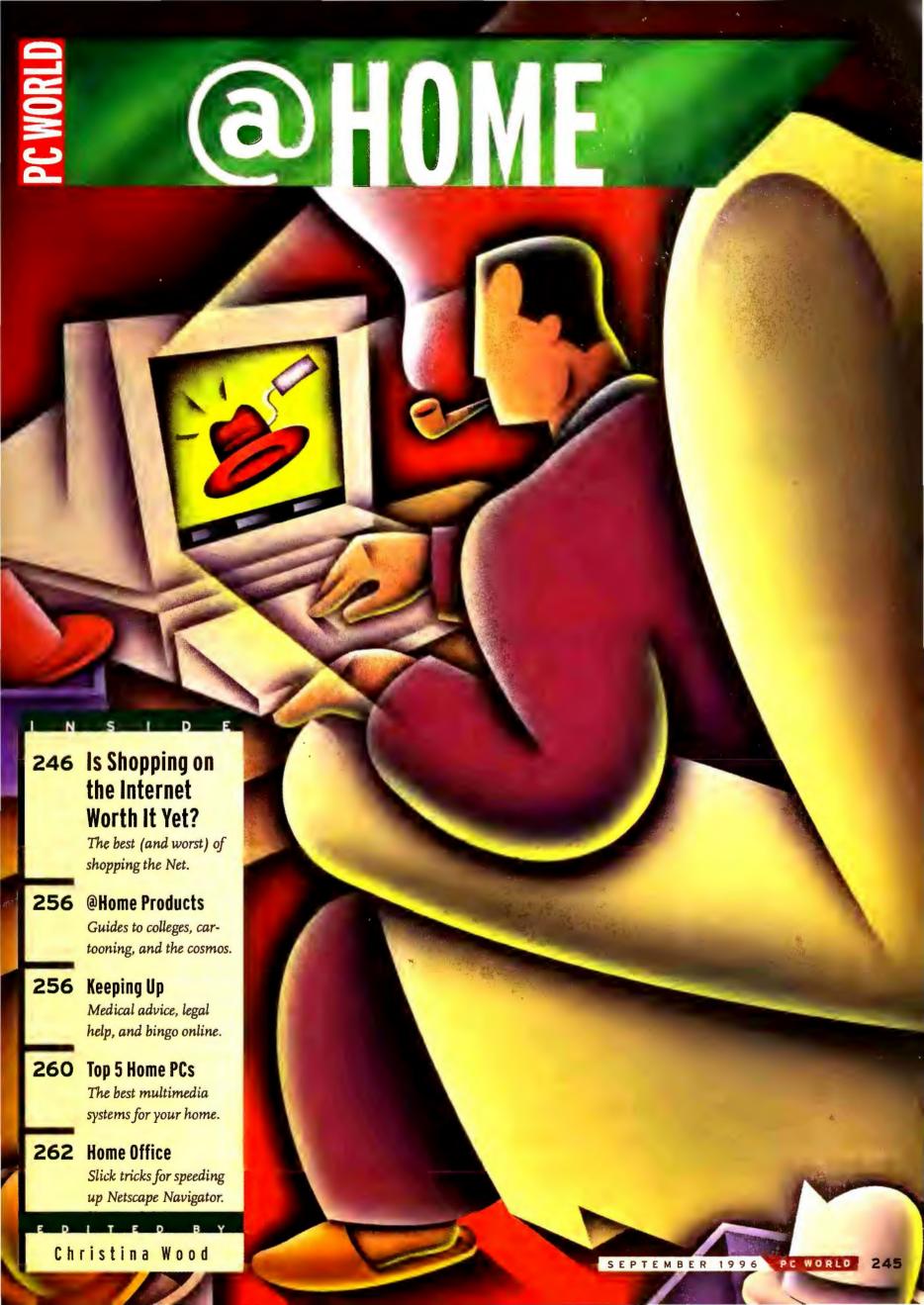








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# Is Shopping on the Internet Worth It Yet?

You can buy just about anything online and at great prices. So what's the catch?

PC World went on a shopping spree to find out.

#### BY ROBERTA FURGER

THERE HAS TO BE A BETTER WAY TO SHOP.

Anyone who has ever been caught in the gridlock of a crowded shopping mall parking lot knows it. Anyone who has been stuck listening to an endlessly repeating "your call is important to us; please continue holding" has wished for it.

Online shopping just might free us from those frustrations. Its proponents promise incredible selection, great prices, and no crowds or waiting. Sounds appealing, to be sure. But we were still skeptical. For all the mountains of goodies available online, you can't try on the clothes, you can't browse the books, you can't see the plants, and you can't handle the merchandise.

Does the convenience of online shopping make it worthwhile? Armed with a fistful of credit cards, *PC World* editors went cybershopping to find out. We took our cue from the online services—which are scrambling to reinvent themselves as Web-based information carriers—and did most of our shopping on the Internet,

though we also checked out the selections available on America Online, CompuServe, and Prodigy.

While you can buy anything from amino acid tablets to xylophones online, we focused on more common products and services: books and music CDs, flowers and gifts, computer hardware and software, plants and gardening supplies—even automobiles (see "Kicking Tires Online"). We purchased from a wide range of cybershops—tried-andtrue merchants like Smith & Hawken and Egghead as well as Internet upstarts such as Music Blvd. and the Santa Barbara Heirloom Seedling Nursery. We even tried out a new grocery shopping service to see if life's biggest shopping hassle could be automated by computer (see "The Online Supermarket"). Our goal: to scope out the selection, compare prices, and test the customer service offered by online merchants.

Each category offers a staggering array of vendors, from those with niche merchandise to giant online superstores with vast and varied inventories.

ILLUSTRATIONS BY JEFF KOEGEL



A query on Infoseek—a major World Wide Web search site—for "book stores" returned a daunting 9800 possibilities, while a search for "music stores" yielded a mind-boggling 107,000 URLs. But start checking out the sites themselves and you'll soon discover that those numbers are misleading: Many sites consist of nothing more than advertising, and others belong to obscure vendors with few products and questionable policies.

There are some terrific online merchants, but be prepared to spend timea lot of time—seeking them out. You're likely to encounter many duds before you discover the ones that combine low prices, attractive selections, and reliable customer service. And don't be surprised if a gem you find on Tuesday has vanished by Thursday. Many small merchants—and some larger ones—are having trouble keeping their sites up and running consistently.

Faced with the preponderance of small, unknown shops on the Web, you may be tempted to fall back on the known players. Unfortunately, while that may be the quick and easy way to go, it doesn't always get you the best price, selection, or customer service, as we discovered.

#### **Customer Service?** Don't Count on It

THE BEST MAIL-ORDER COMPANIES excel at customer service. They answer their phones quickly, notify you immediately of back-ordered products, and don't gouge you on shipping charges. Online merchants should be just as responsive.

But many aren't. A few examples: We ordered an 8MB SIMM from Internet Shopping Network (http://www.internet.net). The package arrived on schedule, but it came from an unfamiliar company called MicroTech and contained no documentation or invoice. Repeated e-mail messages to Internet Shopping Network's customer service department went unanswered, so we sent the product back and contacted our credit card company to have the charge removed. The music CD that we ordered from 1-800MusicNow (http://www.1800

musicnow.mci.com) was not shrinkwrapped. When we explained the problem to a customer service rep, we were all but accused of lying and were told to pay the return freight to send the CD back. We kept the CD, but you can bet we won't shop there again.

Questions that vendors can easily answer when you buy over the phone become much harder to resolve when you order from the World Wide Web. Online companies rarely note when items are back-ordered, so you have to wait for a follow-up e-mail or phone message indicating when the order will be shipped. The same is true for final billing information: Few online merchants automatically compute sales tax, shipping charges, and product pricing.

Order processing isn't necessarily a real-time proposition, either. For example, we ordered some make-your-own stepping-stones from Eddie Bauer's America Online site (keyword Eddie Bauer) and followed up with a phone call to find out when the items would be shipped. The customer service rep

couldn't tell us, though, since the order hadn't yet been retrieved from the AOL system and entered into Eddie Bauer's order entry system. The lesson: Ordering online doesn't necessarily speed up an order. So if you need your merchandise

But if you don't mind some bumpy roads along the way, there are bargains to be found online. Following is a list of the sites we felt offered competitive pricing and broad selection. They aren't perfect, but are good examples of what you can expect when you shop online.

#### **Compact Discs: From** Amadeus to ZZ Top

in a hurry, use the phone.

DOZENS OF MUSIC STORES operate online, and many supply sound bytes so you can sample a new or unknown artist before making a purchase. Title selection can range from a few small-edition cult items to thousands of CDs from

every musical genre. At \$3 to

\$4 off list price, CDs from online outlets generally cost about what you'd pay at a chain record store. Of course, you have to pay for shipping, too—generally

around \$2 to \$5 per shipment.

#### **◆ CDWORLD**

#### (http://www.cdworld.com)

This site carries a whopping 100,000 titlesall discounted \$2 to \$4 off list-and you can search them by artist, title, label, or genre. Highlighted CDs feature cover art, song selections, and sample tracks for downloading. The site accepts credit cards and sends quick e-mail responses indicating total charges. CDworld offers a pleasant shopping environment as well as conscientious customer service.

#### **♦ MUSIC BLVD.**

#### (http://www.musicblvd.com)

A whopping 150,000 currently available titles are available on this site. Music Blvd. boasts 24hour shopping, seven days a week, and accepts all major credit cards. You register once in a secure site, and your credit card number need never be entered

again. Opened CDs can be returned within 30 days of purchase. You can search by music category, then by artist or album title. Album covers are displayed along with song selections and lengths. Another nice feature: Music Blvd. suggests new artists, based on CDs you've listened to or purchased. This feature, together with the attentive customer service, will have us shopping at Music Blvd. again.

#### **◆ 1-800MUSICNOW**

#### (http://www.1800 musicnow.mci.com)

You can listen to this site's huge selection of 30-second album track samples. But for that reason, 1-800 MusicNow doesn't let you return discs that are not physically defective. Given the aforementioned hassle with our order and a snafu with a second order, we won't be doing any more shopping here. Still, it's a great place to listen to new music before buying the CDs elsewhere.

#### **◆ TOWER RECORDS ON AMERICA** ONLINE (keyword tower)

This is the only site on the online services that really stands out. Known for its chain of retail shops around the globe, Tower's AOL store features some 150,000 CD and cassette titles, at the same prices found in its stores. Sale prices noted in Tower's monthly Pulse magazine are honored online, though not changing weekly store specials. The AOL site lacks sound clip previews,



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online, you point and click, type in a query, and scroll through Web sites such as Internet Shopping Network (top left) and NECX Direct (right). Have a complaint? E-mail it to the merchant. Some, like Egghead (above), will confirm your message instantly, but actual replies take longer.

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but you can view album covers for each title. The shipping surcharge is a flat \$4.25 per order. Tower was putting together a Web site store as we went to press.

#### PCs. Peripherals, and More

BUYING HARDWARE AND SOFTWARE online should be faster and easier than going to your local superstore or ordering products over the phone. As with books and music CDs for sale online, often there are no images to look at, so the absence of high-quality photos does not really matter. Once you've done your research and decided on a product, you can devote your attention to comparing price and service options. There are plenty of sites to choose from on the Web and the online services. However, we found CompuServe's shopping interface too tedious (all stores use the same one), and on all the commercial services, the pricing was not competitive with either mail-order sales or the deals available on most Web sites. And even the Web site merchants do not seem all that competitive with their retail or mailorder counterparts. Here's a sampling of what we found.

#### **♦ INTERNET SHOPPING NETWORK** (http://internet.net)

Check out this site for an unbeatable combination: a huge selection of PC hardware and software at very competitive prices. ISN isn't perfect, though. The customer service staff is slow to respond to inquiries and started paying attention to our questions only when we identified ourselves as PC World shoppers. We ordered a NEC Multi-Spin 4X4 CD-ROM drive and the 8MB SIMM mentioned earlier, which we ultimately returned. The customer service difficulties might be the result of some technical problems with the site. Let's hope ISN squares those away fast. Slow service is the only real blemish that we found here.

#### ◆ EGGHEAD (http://www.egghead.com)

This disappointing site is difficult to navigate, many products are not competitively priced, and the customer service leaves much to be desired. We ordered an EIDE controller and an I/O card and asked for

rush delivery. The EIDE controller arrived on schedule, but a faded invoice indicated that the I/O card was back-ordered. We emailed the customer service department asking them to cancel the order. Despite our cancellation, the I/O arrived two days later. Only after repeated e-mail messages and phone calls did we get a credit.

#### ◆ NECX (http://www.necx.com)

More than 1000 companies offer 25,000 hardware and software products on this site. All the big brands-and a lot of the smaller ones-are represented. Pricing is competitive with retail stores and mailorder companies. But NECX really shines when it comes to providing information. Besides brief articles authored in-house on

> how to buy specific items such as modems or printers, the site features short write-ups on each of the products sold. And NECX has one extra goodie: It offers

information about each vendor, including the company's name, address, phone number, and links to its home page.

#### **CYBERIAN OUTPOST**

(http://www.cybout.com/cyberian.html) This online merchant has an international feel. Click a flag to read customer service information in that country's language, including Japanese, German, and Spanish. Tracking your order is easy-just type in the order number to get the status. But Cyberian Outpost isn't perfect: It offers a moneyback guarantee only on products whose manufacturers provide that protection. And although it has a great selection of kids' educational and entertainment titles, some major hardware vendors-including Compaq and Dell-are not represented.

#### ◆ PC Zone (http://www2.pcy.mci.net/ marketplace/PCZone/index.html)

This site is the mail-order merchant's Web counterpart. The PC Zone site is still under construction, so you probably won't find a huge selection available. When we stopped by, there were about 3000 products to choose from-far fewer than at other sites. The policies aren't as generous, either: PC

Zone doesn't provide a money-back guarantee or price protection.

## Tips for Shopping by Modem



Always pay with a credit card. That way you'll still have recourse to the bank if the order gets botched.

2

Doing last-minute shopping? Make sure that the orders you submit are received in real time and that the delivery date is quaranteed. Otherwise, order by phone.

If an online merchant has not verified your order by return e-mail within 12 hours, call to see whether the company got your order. Always scrutinize the merchant's customer service policies (returns, refunds, shipping fees) before finalizing an order.

4

Print or save the page that lists your order, the final price, and other information.

5

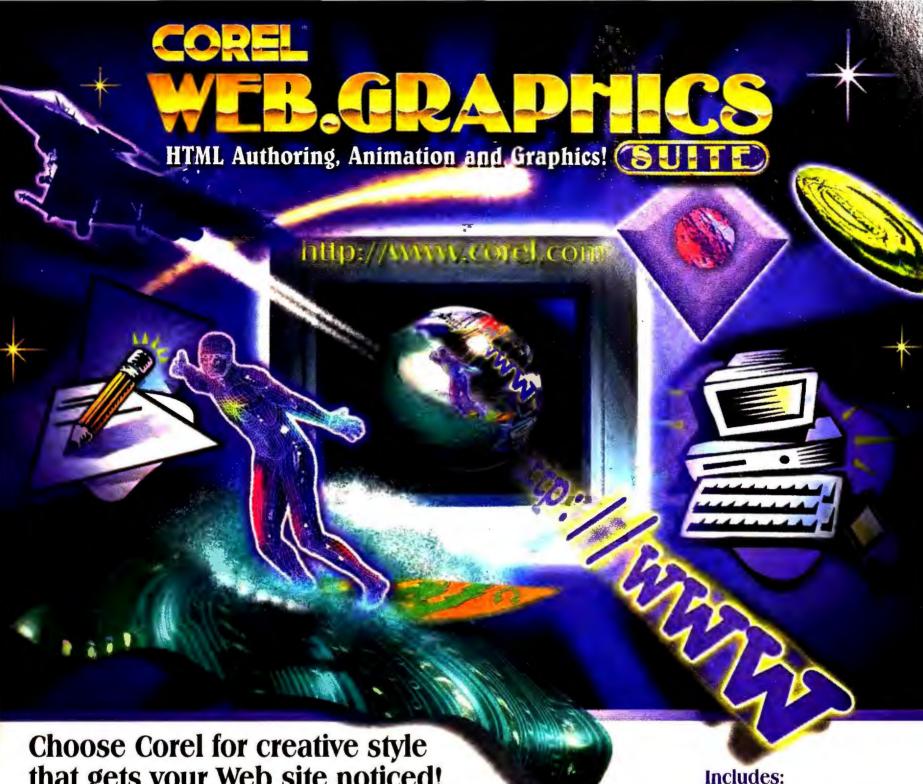
Visit a site several times before placing an order. If you frequently have trouble accessing a site, order elsewhere.

MICHAEL S. LASKY

#### **Books: Reading Between** the Lines

THERE ARE DOZENS of bookstore sites

online—from mammoth superstores selling just about every title in print to smaller boutiques specializing in hard-to-find books or niche subject areas. When we did our shopping, the biggest names in the retail book business had established



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only a limited presence in the online world: The Web site for Borders, the growing national book and music store, was under construction but should be accepting online orders by the time you read this. None of the other major chains—such as Barnes & Noble, Waldenbooks, or Crown Books—had any Web presence at all. But a few good sites online do offer selection and convenience, making this a time-saving way to keep up on your reading.

#### **◆ AMAZON.COM**

#### (http://www.amazon.com)

This is hands-down the best place to hunt for books online. There are more than a million titles available, and most titles you order arrive within three days. Amazon.com features attractive, clean screens; some include scanned book covers. You can search for books using more than 20 subject categories, or by author, title, or keyword. All books are discounted at least 10 percent (20 and 30 percent for bestsellers), and customer service is first-rate. Of the two books we purchased, one was back-ordered (information we were given when we placed the order and again an hour later in a follow-up e-mail message); the in-stock book arrived three days after we ordered. A couple of days later, we sent an e-mail message asking Amazon.com to cancel shipment of the back-ordered book, and we received e-mail confirmation within five minutes. It's too bad all Internet shopping sites aren't run this well.

#### **◆ AMERICA ONLINE'S READ USA** (keyword: ReadUSA)

This AOL merchant features a text-based catalog (no jacket covers pictured) of a broad selection of books, almost all discounted 20 percent-national best-sellers are 35 percent off. Shipping and handling tops out at \$5.95 per order. Searching for a particular book is difficult, however, since you're forced to do the author, title, and subject search all on one query line. Once we found what we want-

ed we placed our order;

the shipment arrived ten days later. Pricing is all right, but on the whole Read USA was not a particularly friendly place to shop.

◆ BOOKSITE (http://www.booksite.com) Stop by this Web merchant for everything from top best-sellers to obscure volumes, 200,000 titles in all. BookSite is the Internet alter ego of Rutherford's Book Shoppe. a full-service bookstore in Columbus, Ohio. Navigation is easy, and the site makes attractive use of book-cover graphics. But searching for a specific book is a chore: Instead of providing separate search fields for title, author, and subject, the search feature offers only one query line. This cumbersome setup yields every single book with an author or title that contains the search string. Still, BookSite has redeeming qualities: You get quick e-mail confirmation of orders; shipping is \$3.85 per order for Priority Mail or ground UPS. Two special services might make you rely on this site: BookSite's Personal Reminder

## **Kicking Tires Online**



You wouldn't want to actually buy a new car online (there are no test drives on this highway), but cyberspace is full of great places to research a car purchase. And that's important, because buying a new car is like scuba diving in industrial waste: You need to know exactly what you're getting into.

Most of the online services follow the same pattern: You set the criteria for the type of car you want-say, a station wagon for less than \$15,000, with dual airbagsand the service supplies a list of prospects, complete with important statistics and maybe pictures and reviews. Alas, without getting something in return, none of the

online services will give you the dealer invoice price-the amount dealers pay the manufacturer for a car, and a valuable reference figure to have when you bargain.

There are scads of auto buying services online. Here are the ones that impressed me most.

#### **COMMERCIAL SERVICES**

CompuServe has a crankcase full of forums for potential car buyers. There's Auto-By-Tel (go autobytel), the Automobile Information Center (go ai), Consumer Reports (go consumer), and AutoVantage (go AV). (Consumer Reports and AutoVantage are also available on America Online, with the keywords consumer and autovantage.) But the only standout here is the AutoNet New Car Showroom (go newcar).

If you know what you want, AutoNet is the cheapest way to get a dealer invoice price. Select Get Reports: By Vehicle Make and Model, then pick a make and a model; in the next list select the model's Data Sheet.



You'll get a table of statistics, and \$1.50 will be charged to your CompuServe account.

#### INTERNET AUTOS

I found two services on the Web worth mentioning: AutoSite and Edmund's Automobile Buyer's Guides. If we go by a strict definition of online information-through your modem and into your life-AutoSite (http:// www.autosite.com) is your best bet. The interface is clumsy, but not hard to figure out. And once you get the information, AutoSite furnishes illuminating explanations. If you're wondering what the blazes a destination charge is, just click the term for a definition. This feature is an absolute must if you're not an automotive expert.

Service lets you enter five dates to remember (such as birthdays and anniversaries) and sends you an e-mail reminder one week before each date. The Eyes service notifies you by e-mail when new books in interest areas you have selected are released.

#### Flower Power

IF YOU SEND A LOT OF FLOWERS to out-of-town relatives, friends, and business associates, you know how hard it is to find florists you can trust to send pretty arrangements on time. Usually you just hand over your credit card information and hope for the best. Well, sending flowers online takes some of the mystery-and worry-out of the process. On the best sites, you can preview large, clear photos of plants or arrangements before placing your order.

The trouble is, not all sites have accurate or even enticing photos, or give you all the information you'd like about the type of flowers included or the dimen-

AutoSite's free information is worth every penny you pay for it. But to get any real value beyond the most basic facts, you have to register as a site member. Enrollment costs \$9.95 for 30 days, which is probably all the time you need to choose a car. Once you've paid, you can log on with a password, and you'll have access to table after table of detailed information, including as many of those all-important dealer invoice prices as you can download.

But \$9.95 buys you much more at the Edmund's Automobile Buyer's Guides site (http://www.edmund.com), even though the site itself has little to offer. It is one of the few places where you can order Edmund's Buyer's Guide: New Cars, a \$9.95 CD-ROM that blows away the online sources, as well as other discs. Look up a car, and you get four tables of data, a list of options that are calculated into the price as you check them off, and a review. Edmund's Buyer's Guide isn't a fancy multimedia toy: The disc contains little video, and it doesn't come in a fancy box-but it has all the information you need, including that precious dealer price, and it's fast and easy to use.

LINCOLN SPECTOR

#### FLOWERS ONLINE: BLOSSOM OR BUST?





WHAT YOU SEE IS WHAT YOU GET? The pictures at all florist sites show what you might get. The flowers on the left are what we ordered. What arrived is on the right.

sions of an arrangement. Delivery can also be problematic. Some online florists include a notepad where you can record special instructions, such as delivery time. But others require you to call them if the order needs special attention. One word of advice when using any of these services: Call or send e-mail to confirm that delivery was on schedule.

#### **◆ FLOWERLINK**

(http://flowerlink.com/ html/menu.html) This site is a great resource for finding local florists throughout the country. It's much better, in fact, than the similar FTD Web site. We found names and phone numbers for florists in cities as diverse as Placerville. California, and Winetka, Illinois. If the florist suggested has its own home page, you'll get a direct link to that site.

#### **◆ 1-800-FLOWERS**

#### (http://www.1800 flowers.com)

One of the first online florists, 1-800-Flowers still has one of the best selections and displays. In addition to maintaining a Web site, it's also available on AOL and Prodigy. You can review arrangements by occasion (birthday bouquets, get-well arrangements), and most are accompanied by photos. The first time we ordered, the entire process worked without a hitch, and the flowers were delivered on the date requested. The second order was never delivered. Unfortunately, we didn't discover this until a few days after the expected delivery date, due to conflicting voice mail and e-mail messages about the order. Eventually we received a \$10 gift certificate for our trouble. Despite the mix-up, we would probably shop here again: They made up for the problems we had, and they have a great selection of flowers.

#### **♦ PLAZA FLOWERS**

#### (http://www.pflorist.com)

This Pennsylvania florist works with a network of local florists throughout the United States and offers a beautiful assortment of unusual flowers and exotic plants. The flowers aren't cheap-we spent nearly \$54 on a medium-size arrangement-but the gushing thanks we got from the recipient convinced us it was worth the money. Although you place the order online, you don't enter any credit card information. Instead, a company representative calls you and takes payment information over the phone. We placed our order three days before we wanted the flowers sent and specified a date and time for the delivery. But as with our second 1-800-Flowers order, the arrangement didn't arrive on schedule. When we called the assigned store to complain, the staff told us the local florist had missed the order. After apologizing profusely, the manager offered to cancel the order, to send a larger arrangement for the same price, or to send a second arrangement or plant at no charge. We opted for the last choice.

#### Garden Supplies: Still Not a Growth Industry

COMPARED WITH BUYING BOOKS and CDs, shopping for gardening supplies online is still downright prehis-

toric. We scoured AOL, CompuServe, and Prodigy but couldn't find any merchants selling plants, seeds, or tools. The selection is no better on the Web. Most sites are difficult to find, have minimal selection, and provide even fewer photos. We did find a few products worth purchasing online, but all in all it's

much easier just to call a toll-free number and request a catalog.

#### **♦ SANTA BARBARA HEIRLOOM SEEDLING NURSERY**

#### (http://www.silcom.com/heirloom)

Try this site for an extensive selection of herb and vegetable seeds and plants. But be warned: Once you factor in the exorbitant shipping costs, you end up paying handsomely. We ultimately purchased an assortment of herb and vegetable seedlings. The 24 plants cost us about \$70. but the shipping tacked on a whopping \$21.80. And the customer service was spotty: We received a prompt e-mail message alerting us to a problem with our order-but when we later sent a return e-mail asking about the delivery date, we received no reply. The order arrived on schedule.

#### **◆ SMITH & HAWKEN**

The premier gardening equipment supplier

items were in stock, and we received made our purchase, we could browse the site, but had to call orders in to S&H's 800 line. There's now support for online trans-

#### (http://www.smith-hawken.com)

has its own Web site, but you won't find much there. The limited selection is accompanied by fuzzy photos-a problem if you're thinking of ordering one of their \$800 garden chairs, for example. We ordered "Camomile Lawn" seeds, a pruner, and a hand weeder. All three our order in about a week. At the time we

actions using all major credit cards.

#### <u>It Ain't Gonna Be Easy</u>

IS ONLINE SHOPPING worth the trouble? It depends on what you're looking for. If you want to buy books, music CDs, or PC hardware and software, you can save a lot of time-and some money—ordering online. And if you're shopping for a car, there's no faster way to go from intimidated to armed-forfierce-negotiating than by spending a few hours online. But for most other products, retail stores and mail-order catalogs are preferable.

If you do decide to fire up your modem instead of your car, expect to invest some time pinpointing merchants that provide the service and selection you need. Then cross your fingers and hope the URL is still functioning the next time you want to place an order.

Roberta Furger is a contributing editor for PC World. Michael S. Lasky and Lincoln Spector are senior associate editors. Senior associate editor Yael Li-Ron and freelance writer Leslie Crawford contributed to this article.

## The Online Supermarket

No matter what the day or time, it seems my local supermarket is always crowded. As much as I like food, I dread shopping for it. So Peapod, a national online grocery and drugstore shopping and delivery service, seemed to offer the perfect solution. Why not let their minions cruise the aisles, fight the crowds, and deliver the goods to my door while I channel surf?

Already established in Chicago and the San Francisco Bay Area, the service will be expanding later this year to Boston and Columbus, I downloaded the free Peapod software from its Web site (http://www.peapod.com) and put it to the test.

First, I dialed in to a local access number. selected my preferred supermarket, and browsed categories such as produce, frozen, and household products. Clicking a category got me listings of the items in stock, including package size and price.

> Peapod even noted when items were on sale in the market that was nearest to my house.

> > I ordered some potato chips (would they be uncrushed?), a frozen



carrot cake (would it still be frozen?), yogurt and a package of refrigerated sliced turkey (would they be cold?), and a cantaloupe and honeydew melon (would they be ripe and unbruised?).

The cost of having Peapod push the shopping cart and deliver the goods to my door was \$6.95 plus 5 percent of the order total. I was allowed to arrange for delivery-within a 90-minute range-from as soon as three hours after the time I placed my order to any time later in the week. Payment is by credit card in advance or check upon delivery.

Two items weren't available, so I got rain checks. Everything else arrived in good shape, except the frozen cake (defrosted) and melons (not quite ripe).

The order came in the first half-hour of the 90-minute time slot I had designated.

On the whole, I enjoyed the experience. I probably won't order produce again-I prefer to hand-select it anyway-but for other

> groceries, this is definitely a convenient way to shop. -M.L.



**CURE FOR SHOPPING CART BLUES: Using** Peapod's online grocery shopping service, you order by product category. Your packages are delivered at times you designate.

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# College Smarts, Easy Arts, the Sea and the Stars

#### SCHOOL DAZE

APPLYING TO COLLEGE is no trivial task. It's confusing to select a school and major, find the tuition money, and keep track of the process. A new CD-ROM, CollegeEdge, can help. First it interviewed me on my

#### **Your Picture Here**

Thinking about buying a color scanner to digitize your snapshots, but wishing for a legitimate business purpose to justify the expense? The EasyPhoto SmartPage scanner may be the answer. The \$299 machine scans at up to 300 dpi in over 16 million colors. Eight-by-ten photos scan in 6 minutes; snapshots take less than 2. Installing the SmartPage's SCSI card took only 15 minutes. The beta unit we tested scanned a little dark, but the EasyPhoto software makes it easy to brighten photos, remove 🏄 scratches, and adjust colors. You can also scan documents in gray scale, then use Xerox's TextBridge OCR software to turn them into editable text. The SmartPage's ease and low price make it a smart deal. (See "Low-Cost Scanners: Up Close and Personal" in April.)

-John Goddard

#### EasyPhoto SmartPage

GRADE: A-; STREET PRICE: \$299; Storm Software, Inc.; 800/275-5734

READER SERVICE NO. 767

THE EASYPHOTO SMARTPAGE makes color scanning a snap.

career goals, college criteria, and interests. It told me I should consider studying linguistics, computer science, or home economics. Linguistics sounded interesting, so I looked for a school that offers a degree in the field and a really good tan. After another lengthy interview I was finally presented with the one college that met my needs: Hawaii Pacific University. I was able to read all about the demographics of the student body at HPU, but there were no photos or video clips to give me a feel for the campus. The disc does offer a universal college application and a scheduler to keep track of the whole process. But with its awkward interface and lack of multimedia, CollegeEdge fails to make the grade. -Yael Li-Ron

#### CollegeEdge

Grade: C-; STREET PRICE: \$49; SNAP Technologies, 415/778-6262

READER SERVICE NO. 673

#### **ART FROM DOODLES**

IF ALL THE DOODLING that goes on in staff meetings is any evidence, many people would love to be able to sketch a quick cartoon. Take a few lessons from How to Draw Cartoons, based on the book Everything You Wanted To Know About Cartoon-

> ing But Were Afraid To Draw, and you might find those meetings a lot more fun. This guide takes you step by step through the process of drawing simple cartoon characters. Like the book, this title provides a good overview to constructing faces and features, then gives you the freedom to create on your own. The disc includes dozens of sound effects to add to your art and 700 car-

#### KEEPING UP

#### Sick and Ye Shall Find

Are you suffering from confusion, delirium, agitation, or dementia? You might have Organic Brain Syndrome. Or you might just be spending too much time at your PC. In either case, you can do a quick self-diagnosis by dialing up America's HouseCall Network (http://www.housecall.com), an online med-

> information provided by the American Academy of Family Physi-

ical database with

cians. You'll get the scoop on more than 350 diseases, includ-

ing symptoms, treatments, and the nasty medical fees you could incur. Coverage of some topics (such as alternative medicine) is skimpy, and the site's search engine is limited and slow. But most of the information is just what the doctor (would have) ordered.

#### Nolo Contender

The folks at America Online and Nolo Press are conspiring to make lawyers obsolete (one can hope). Nolo-the preeminent publisher of self-help law books and software-offers free legal seminars each week at its AOL site. Each Tuesday between 6 p.m. and 7 p.m. PST, a Nolo author hosts a chat session on a particular area of the law. (September's topic is small business.) Just use the keyword Nolo and click the chat icon. You can also find Nolo's self-help law center on the World Wide Web at http://www.nolo.com.

toons to study and use. It ran achingly slow at times, though, and I doubt it'll ever make me cartoonist enough to give up my day job. —Gabrielle Mitchell ▶

#### **How to Draw Cartoons**

Grade: B-; LIST PRICE: \$49.95; Diamar Interactive: 800/234-2627

READER SERVICE NO.674



Want to know the national debt-right down to the penny? Check it out on America Online (keyword public debt).

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#### TOO LITTLE, TOO LATE

LIKE ITS MESSIANIC HERO, the Who's Tommy continues to rise from the dead. The 1969 album has become a stadium rock extravaganza, a loopy movie, a sanitized Broadway musical, and recently,



THE TOMMY CD-ROM takes you on an amazing journey from the days of peace, love, and pinball to the nihilistic nineties.

a CD-ROM. (Can a sitcom be far behind?) Pete Townshend Presents Tommy: Then and Now blends all of these elements into a digital stew that is sometimes fascinating, but ultimately unsatisfying. The disc opens with a beautiful montage of songs and images; click to launch video clips and compare the album, film, and stage versions of each song. But the clips are far too brief-with performances this rich, I wanted more. You also get rare concert footage, musings by Pete Townshend and mates, and an archive filled with Who trivia. If nothing else, this CD-ROM proves that the music-not the mediumis truly the message. —Daniel Tynan

#### Pete Townshend Presents Tommy: Then and Now

Grade: B-; STREET PRICE: \$44.95; Interplay; 800/468-3772, 714/553-6678

READER SERVICE NO. 678



88 percent of teens in homes with PCs say they use the machines for homework. But when

asked to name their favorite software, 65 percent named games. Only 9 percent said educational programs.

SOURCE: THE CONSUMER ELECTRONICS MANUFACTURER'S

#### **PLANET SIMULATION**

I ADMIT IT: I'm bad at simulation games. But I don't let my lack of talent stop me from trying. And though Accolade's Deadlock: Planetary Conquest is a game I'll never win, I had fun losing. You

> make decisions about where to settle your colonists, what to build, and how to allocate your resources. You're pitted against up to six other alien races for control of this new planet. If you choose to play against human opponents (over the Internet or via modem), get ready for an even bigger challenge. All the players develop their strategies simultaneously, and it's difficult to keep up. If you like to lose, you'll have a good time. I certainly did. —G.M.

#### Deadlock: Planetary Conquest

Grade: B; LIST PRICE: \$59.95; Accolade; 800/245-7744

READER SERVICE NO. 675

#### DOWN BY THE SEA

AIMED AT KIDS 6 to 12 years old, One Small Square: Seashore might snag a few fans among adults as well. You can explore 3-D representations of the shore and use the magnifying glass cursor to zoom in on microecosystems. As you move around, you trigger narrated animations and full-screen video clips about everything from tides and crabs to sea birds and sperm whales. The charming graphics resemble coloring books, and the navigation tools are easy to use. This disc achieves a fine balance between education and entertainment. — Derk Richardson

#### One Small Square: Seashore

Grade: A.; LIST PRICE: \$34.95; Virgin Sound and Vision; 800/814-3530

READER SERVICE NO. 676

#### STARGAZING

Discover Astronomy takes you on a galactic voyage that starts with the Big Bang and keeps right on going. Adults and children can enjoy 3-D simulations of the sun, moon, stars, and more, all explained by Dr. Jacqueline Mitton, author of the Pen-

#### KEEPING UP

#### Scratch That

Even a small scratch can turn your Myst CD into a \$50 coaster. Now MacTec may have an answer. Simply mail in your damaged disc, and MacTec will repair it and send it back within two to four weeks. MacTec claims it can restore music and video CDs as well as CD-ROMs, but can't fix cracked or deeply scarred discs. The service costs \$11.99 for CD-ROMs and \$5.99 for music CDs. MacTec Products; 800/293-0067.

#### And Bingo Was Its Name-0

Too tuckered to haul your butt down to the local Elks Lodge for the weekly bingo night? The Bingo Zone (http://www.bingozone.com) has a solution-and you don't have to wait for the weekend. It costs no money to play, and winners can take home up to \$20 per game (a check will arrive in the mail). But screen redraws can be slow, even on a high-speed phone line. The virtual bingo hall is open from 10 a.m. to 4 a.m. EST on weekdays and 24 hours on weekends.

#### **Browser Ball**

Instant Sports (http://www.InstantSports

.com/ballpark.html) offers animated updates of every major-league baseball game in the country. You'll need Windows 95 and Netscape Navigator 2.0. But even on a split T1 line, the updates flow at a

leisurely pace-kinda like the game itself.

-Daniel Tynan

guin Dictionary of Astronomy. See how craters form when meteorites impact the surface of a moon, and find your way around the night sky using animated lessons. Despite the heavy use of text, children age 6 and up will enjoy the visuals. But if your kids are science fiction or space movie fans, they may have seen a lot of this already. Discover Astronomy is really for beginners. —*Aoife McEvoy* ■

#### Discover Astronomy

Grade: B; STREET PRICE: \$14.95; Maris Multimedia, 800/336-2947

READER SERVICE NO. 677



# AudioVision opens your eyes to a powerful new world of interactive communication.

Whether your friends and family are halfway around the world or just down the street, AudioVision lets you see them face-to-face with eye-popping live digital video. Just add a popular digital camera such as those from Connectix or Vivitar (or even a camcorder with video capture board) to your PC with AudioVision, and you now have a powerful digital video phone that can communicate using two-way live video and audio sessions.

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AudioVision is also the only product to offer VMail™ which allows you to record and send video e-mail messages over the Internet that any Windows user can view – even if they don't have AudioVision. With VMail, you can be heard and seen anywhere in the world for free. AudioVision was designed to be a good 'Internet Citizen' and is optimized to run fast over

Works with popular digital video cameras and camcorders

standard telephone lines, thanks to its powerful compression technology. In fact, it's as much as three times more efficient than other products.

Simultaneous, real-time file transfer makes AudioVision the perfect small

business communication solution too. But let's face it, AudioVision is just plain cool and will forever change communication – and for about \$100.

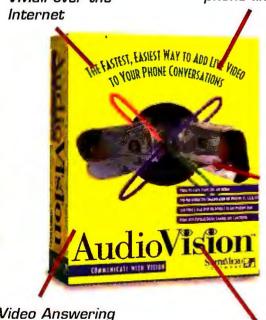
#### Buy AudioVision now and connect a friend for \$40 off.

Inside every AudioVision box is a coupon for \$40 off the purchase price of another copy of AudioVision. Once you try it, you'll want to hook

up your friends, family, colleagues – everybody – and let them all see what they've only heard before.







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# TOP 5 HOME PCs

SYSTEMS	Street price	Overall rating	PC World- Bench score	Reliability/ service	Setup rating	Comments	Reader service number
Dell Dimension P-100t 800/613-3355 http://www.dell.com	\$1999	77	173 very good	good/ best	satisfactory	FEATURES: P-100, 16MB of RAM, 1GB hard disk, BX CO-ROM drive, 2B.8-kbps modem, 15-inch monitor, Microsoft Office. PROS/CONS: Bare-bones mail-order machine, great price, great performance for a P-100, excellent service. Assembly not as user-friendly as with many of the other home systems.	635
Compag Presario 9240 800/345-1518 http://www.compag.com	\$2498	76	147 good	good/ good	good	FEATURES: P-133, 16MB of RAM, 1.2GB hard disk, 4X rewritable PD-CO-ROM drive, 2B.B-kbps modem, 15-inch monitor, answering machine, eight home software titles. PROS/CONS: Great new price. PD-CD-ROM drive stores 650MB on its special CDs and plays standard CD-ROMs at 4X speed. Performance not exceptional for a P-133.	636
Gateway 2000 P5-166 Family PC 800/846-2000 http://www.gw2k.com	\$2699	73	199 outstanding	fair/ good	good	FEATURES: P-166, 16MB of RAM, 2.5GB hard disk, BX CD-ROM drive, 28.B-kbps fax-modem with voice mail, 17-inch monitor, 16 home software titles. PROS/CONS: Very fast, good price, high-end features. Gateway's so-so reputation for reliability and phone-based tech support make this a system for the confident user.	637
Hewlett-Packard Pavilion 7170 800/724-6631 http://www.hp.com	\$3248	73	168 good	good/ good	very good	FEATURES: P-166, 16MB of RAM, 2GB hard disk, 6X CO-ROM drive, 2B.B-kbps modem, 15-inch monitor, answering machine, 30 home software titles, voice mail. PROS/CONS: Hardware MPEG, wavetable sound, great software bundle. Relatively high price, must use HP's Multimedia Monitor (price included here) for voice mail to work.	638
Compag Presario 9234 800/345-1518 http://www.compag.com	\$2298	73	129 satisfactory	good/ good	good	FEATURES: P-120, 16MB of RAM, 1.6GB hard disk, 4X CO-ROM drive, 2B.B-kbps modem, 15-inch monitor, answering machine, eight home software titles. PROS/CONS: Low price, Compag's reputation for reliability. But P-120 processor and 4X CD-ROM drive aren't state-of-the-art, speed is so-so, and software bundle is unexceptional.	639
	Dell Dimension P-100t 800/613-3355 http://www.dell.com  Compaq Presario 9240 800/345-1518 http://www.compaq.com  Gateway 2000 P5-166 Family PC 800/846-2000 http://www.gw2k.com  Hewlett-Packard Pavilion 7170 800/724-6631 http://www.hp.com  Compaq Presario 9234 800/345-1518	Dell Dimension P-100t 800/613-3355 http://www.dell.com  Compaq Presario 9240 800/345-1518 http://www.compaq.com  Gateway 2000 P5-166 Family PC 800/846-2000 http://www.gw2k.com  Hewlett-Packard Pavilion 7170 800/724-6631 http://www.hp.com  Compaq Presario 9234 800/345-1518  \$2298	Dell Dimension P-100t   S1999   77	Systems   Street price   Overall price   Street p	SYSTEMS  Street price rating Bench score Reliability/ service  Dell Dimension P-100t 800/613-3355 http://www.dell.com  S1999  T7  173 yery good best  Compaq Presario 9240 800/345-1518 http://www.compaq.com  S2498  T6  147 good/ good  Gateway 2000 P5-166 Family PC 800/846-2000 http://www.gw2k.com  Hewlett-Packard Pavilion 7170 800/724-6631 http://www.hp.com  S3248  T3  168 good/ good  Compaq Presario 9234 800/345-1518  S2298  T3  129 good/ good	SYSTEMS  Street price rating score Reliability/ Setup rating  Dell Dimension P-100t 800/613-3355 http://www.dell.com  S1999  77	Dell Dimension P-100t 800/613-3355 http://www.dell.com  S1999 77 173 good/ 9ood 9ood 9ood 9ood 9ood 9ood 9ood

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 Monitor survey. For more information about all products in this table, circle reader service no. 903.



CHEAPER MEMORY AND STIFF COMPETITION bring lower prices and better value to this month's Top 5. A price drop from Compaq lifts the Presario 9240, with its nifty

rewritable PD-CD-ROM drive that serves both as a backup device and as a 4X CD-ROM drive, to number two on our chart. A lower price also pushes the simpler Presario 9234 back into the Top 5.

And this month there's new blood in the chart from Gateway 2000. The competitively priced P5-166 Family PC—a speed demon that comes loaded with a 2.5GB hard drive, a 17-inch monitor, and Altec speakers—takes the number three slot. This system will give you a lot for your money. Only Gateway's service and reliability scores kept it from reaching the top of this month's list.

Once again the Dell Dimension P-100t captures the number one spot. This barebones budget system offers great performance—it's as fast as many P-133s—but at a P-100 price.

But remember, Gateway and Dell systems are available only through mail order, and that means you'll have to handle any technical problems over the tele-

phone. For that reason, these computers are best suited for the buyer who wants lots of power and is willing to pop the lid if the need arises.

We tested one new machine that didn't make the chart: the Netis N5166C. The Netis came loaded for

bear with 32MB of RAM and, as a result, it ran through our tests with blazing speed. But performance isn't everything. The company's mediocre service and reliability scores kept it out of the running.

Two machines that dropped off the Top 5 chart this month may make a quick return. The Micron Home MPC Pro, we've been told, has an all-new configuration. We'll test the new version next month. We'll also take a look at a final production model of the Hewlett-Packard Pavilion 7130P. The 7130P is a solid family PC with a built-in scanner and a good, home-oriented software package. Ac-

cording to the company, the newer version will perform better than the preproduction model that we tested. We'll see.

-Kirk Steers ■

Kirk Steers is a contributing editor for PC World.



**DELL IS STILL THE WINNER with its** P-100t, a fast, low-cost system.



# If you think file transfer is all we do, you need some time away from the office.

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TRAVELING SOFTWARE

Circle 239 on reader service card

# Speedup Tricks for Internet Surfing

YOU FOUND ME. Good. What with my column's new location, I was worried. I wanted to put a hot link on the last page pointing to this one, but my editor nixed the idea.

Let's face it: Finding something in print is even harder than finding it online, although at least you don't have to wait while words and pictures slowly appear on a piece of paper. Not that getting around the Internet is a piece of cake. We all know it's a major hassle, which brings us to this month's topic: cool tricks for getting more out of your online time.

I've written these tips specifically for Netscape Navigator, not only because it's the most popular Web browser around, but also because it's my favorite. If you don't have Navigator, it's easy to get ahold of: You've probably seen the "Netscape Now" button on dozens of Web pages (it's become more ubiquitous than AOL start-up disks). But in case you haven't, the address is http://home .netscape.com/comprod/mirror/index .html. (For the record: International Data Group, the parent company of PC World, is a minority shareholder in Netscape Communications.)

#### **CLEAN, QUICK BACKGROUNDS**

EVERY TOM, DICK, and Harriet with a page on the World Wide Web seems to feel morally obligated to design it with a highly textured, gaudily colored background. These Andy Warhol wanna-bes drive me crazy-even my ultrafast ISDN phone line chokes on backgrounds of patterned oak trees, bricks, and fish scales. With a modem, they're ridiculous.

Tell your browser to stick with your own background, and you'll save seconds of download time-sometimes minutes. In Navigator, select Options General Prefer-

"Every Tom, Dick, and Harriet with a Web page feels obligated to give it a highly textured, gaudily colored background."

ences and click the Colors tab. Check Always Use My Colors and click OK. Your screens will be drab, but fast-and probably easier to read.

#### LICKETY-SPLIT SEARCHES

IF I'M LOOKING FOR something specific on a page I've never browsed before, I use <Ctrl>-F to bring up Navigator's handy Find tool. Then I can type, for example, 'Trek' to find all the Star Trek movies on a film review Web page. If that's taking too long, I use <Ctrl>-N to open up another window on a different site. <Ctrl>-<Tab> lets me pop between the two pages.

You can find some of Navigator's best features by simply clicking on something-almost anything-with the right mouse button. For example, right-clicking a link will let you add a bookmark, go backward or forward, or copy the link to the Clipboard.

#### **UP FOR GRABS**

THROUGHOUT A typical workday, I

bump into addresses for tons of enticing Web locations and Usenet newsgroups. Some are so compelling that I want to drop everything, log on to the

Web, and pay a visit.

Instead, I use URL Grabber, an ingenious shareware utility that floats on my desktop, waiting for me to copy and paste addresses into it, adding descriptions as I wish.

Then, when I want to explore, Grabber launches Navigator, displays a page with my URLs as links, and lets me click merrily away.

You can try a demo of the Windows 95 version, limited to three URLs, as grabro5.zip on PC World Online. If you register the program, it will let you stash away an unlimited number of URLs. You say you haven't upgraded to Windows 95 yet?

Don't fret, you're still in luck. The author of URL Grabber has agreed to let Home Office readers download a demo copy of the Windows 3.x version, available as grab.zip on PC World Online. This trial version will let you grab up to 5 URLs.

Now that you know my new location, you can put a bookmark here—at least the paper kind.

#### **Netscape Navigator**

\$49; Netscape Communications Corp.; 800/638-7483; http://www.netscape.com

READER SERVICE NO. 739

#### **URL Grabber 95**

\$19.95; URL Grabber (demo versions) free on PC World Online; Brooklyn North Software Works; 800/349-1422, 902/493-6080, 902/835-2600 (fax); http://www.brooknorth.com/

READER SERVICE NO. 74D

Find files from this article at http://www.pcworld.com. Contributing Editor Steve Bass is a licensed marriage and family therapist and president of the Pasadena IBM Users Group.



Blaster AWE32 PnP still

reigns supreme.

## THE BEST OF THE WEBZINES

#### DIANE MEHTA

THE GREAT THING ABOUT THE WORLD WIDE WEB is that anyone can publish an electronic magazine at little cost. The bad thing is that so many people do. The ease of electronic publishing has spawned the Webzine, an entirely new genre that merges many characteristics of traditional print magazines with some aspects of broadcast media.

What separates a Webzine from other Web sites? A Webzine updates its content on a regular schedule, using interactivity and multimedia in ways that print publications can only dream of. And a true electronic zine is an entity unto itself—not an extension of an existing publication, TV show, or company product line.

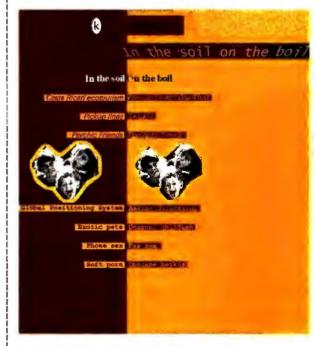
True, most Webzines devote themselves to ephemera, kitsch, and tedious ravings. But a handful of well-written zines can compete with their paperbound brethren in content, design savvy, and journalistic integrity. We identified eight that explore culture, politics, and literature and exploit the electronic medium with verve and originality.

Since these zines update their content regularly, our review is a virtual snapshot in time. However, all archive their articles and discussion threads, so you can browse earlier material. Here, in alphabetical order, are some Webzines worth the connection charges.

Think the Web lacks intelligent content and lively commentary? These multimedia Webzines merit bookmarks in your browser.

#### CAKE TIMES WWW.CAKETIMES.COM

WITH ITS DEADPAN humor, colorful images, and snappy text, this zine suits an audience ranging from Letterman fans to first-year philosophy students. An amusing interactive soap opera called "Cineclips" invites you to write your own endings. A literary cafe game consists of matching an excerpt from a famous work (say, Huckleberry Finn), to



CAKE TIMES' ECCENTRIC humor and nonlinear exposition make it worth a surf.

the name of a fictional restaurant (the Top O' the Mark Twain). There's also an "In the Soil/On the Boil" column (a ripoff of Wired's "Wired/Tired"), a designan-ad-banner exercise for people fed up with dull Webmercials, and some clever news items. Though the content is sliced a bit thin, Cake Times is a still a treat.

#### **FEED** WWW.FEEDMAG.COM

IF YOUR BRAIN NEEDS stimulation, hurry to Feed, where leftist views of politics and culture are expressed in stories on Pat Buchanan's populism, the panic over child sexual abuse, and other newsworthy topics. The graphics are clean, the pages easy to navigate, and the links smart and useful. Feed even provides explanatory captions to the links, so you don't end up looking at a recipe for chicken salad. Here you'll find intelligent discussions of books, issues, politics, and journalism. Feed may lack puzzles and polls (not necessarily a deficiency), but the columns are chock-full of strong opinions. The "Fil-



FEED'S LIVELY DISCUSSION area focuses on critical commentary and opinions.

ter Five" section includes witty, topical briefs, such as an item about the resurgence of Hush Puppies and sound bites from the Republican primaries. In a piece on the best and worst of 1995, Feed reviews the events and personalities of the year with wit and originality.

#### HOTWIRED WWW.HOTWIRED.COM

GEARED TOWARD EVERYONE from digerati to urban hipsters, HotWired showcases popular culture with trend updates, interviews, politics, and reviews. HotWired's "Piazza" section offers numerous chat forums, including ones especially for sci-fi enthusiasts and politically minded surfers. The "Covert Culture" interview series is devoted to fringe personalities. "Netizen," HotWired's political arena, hosts discussion groups and posts worthwhile audio of speeches, news, and

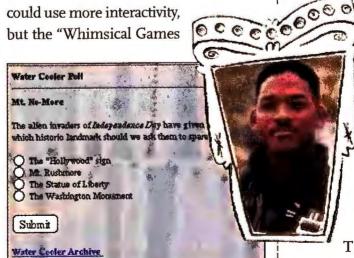


POP PHENOMENA AND political news figure prominently in HotWired's versatile zine.

commentary. You'll also find reviews and features that focus on TV, music, art, and books. The "Pop" section offers a live chat series with celebrities such as Yoko Ono and members of the punk band Pavement. "Zines" is a unique daily review of obscure print magazines; the daily Web site review, "Surf du Jour," covers its beat with similar freshness and eclecticism. HotWired's stories range from politically insightful to entertainingly irreverent.

#### MR. SHOWBIZ WWW.MRSHOWBIZ.COM

STARWAVE'S WEBZINE focuses on kitschand-tell celebrity gossip and other light fare of the E! channel variety. News topics range from hamburgers to the similarities between Mae West and Dennis Rodman. On the iconographic side, you get haiku by Elvis devotees and a picture of the national headquarters of Kentucky Fried Chicken. The zine's celebrity interviews



i

MR. SHOWBIZ FEEDS your Hollywood hunger.

of Skill," in which you identify celebrity quotes, is fun and quick—perfect for this medium. Daily celebrity snapshots and vocabulary words are two good reasons to surf here, and a third is the gleefully smarmy tabloid section, "The Wonderful World of Mr. Showbiz." Stargazers will appreciate the interactive tools provided for locating celebrity bios and browsing the top 250 music albums.

#### SALON WWW.SALON1999.COM

IN STARK CONTRAST TO the entertainment-oriented Mr. Showbiz, Salon concentrates on highbrow literary commentary for the New Yorker crowd. Articles are concise, and Salon's minimalist look eases the pain of reading on screen. Salon posts audio when appropriate, as in a story featuring clips of accomplished poets reading good poetry-something as rare on the Web as on paper. You'll get thoughtful features, comics, quotes, and interviews. Occasionally, a bad article



SALON HAS A SPARE design and a controversial outlook on literary and political happenings.

sneaks in, such as a self-congratulatory piece on how the author now wears all white instead of black. Perhaps the best

> featuring urbane opinions about the media, including pieces on print and online magazines criticizing other magazines. You'll also find insightful music and book

section is the "Media Circus,"

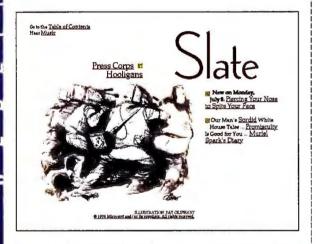
reviews and a timely "Newsreal" section about politics.

#### SLATE WWW.SLATE.COM

THE DEBUT ISSUE OF the much-hyped Slate attempts to fulfill editor Michael Kinsley's promise to maintain editorial independence from owner Microsoft. The zine's first debate involved disputation over whether Microsoft's monopolistic behavior inhibits competition. Unfortunately, the panelists were unable to reach a conclusion.

Kinsley, former New Republic editor and cohost of CNN's "Crossfire," clearly wants to produce an online cross between Harper's and the New York Times Magazine. But little besides the interactive component sets Slate apart from intellectually and politically oriented print journals.

You get the usual reviews of books, movies, and TV shows; a weekly poem selected by Robert Pinsky, former poetry editor of the New Republic (the first poem chosen was by 1996 Nobel Laureate Seamus Heaney); a cartoon strip; an interactive puzzle; a William Safire-style column on language deconstruction; and plenty of political commentary.



SLATE LAUNCHED with a bang, not a whimper.

Slate has one other thing in common with its print cousins: Starting in November, readers will have to pay a subscription fee of \$19.95 a year.

#### STIM WWW.STIM.COM

A Prodigy zine for Gen-Xers, Stim admirably attempts to use multimedia innovatively, but the downside is long waits and interminable downloads. The screens are bright and peppy, characteristic of Stim's youthful verve: The editors happily distribute pop observations instead of Salon's highbrow erudition. The "truth or dare" column is one of the more original interactive sections: You e-mail your questions (truths) or suggestions (dares) to Stim. A story on charlatan psychics and several embarrassingly bad poems rank among the zine's weak-



STIM IS BOLD, a bit kitschy, and thoroughly multimedia-happy.

er offerings. "Build Your Own Sex Symbol," a story about the pin-up girl craze of the 1940s, would have been fun if it had really let you build your own pin-up instead of limiting itself to a rundown of the technology of retouching. Stim's interactive areas let you chat graphically using avatars or (if you own the right gear) to videoconference with your pals.

#### **URBAN DESIRES** WWW.DESIRES.COM

THIS ZINE'S ECLECTIC and entertaining stories focus on metropolitan events and people. An article about prostitutes even includes an e-mail address for the subjects. One time-waster lets you create Mondrian-like art by using mouse clicks. You also get interactive comics, such as a spine-chilling, black-and-white story of New York rats and subways-a gory interactive mystery where clicking on an item highlighted in color launches sound bites. Some amateur rants, fiction, and



URBAN DESIRES: The bizarre in pop culture.

reviews supplement these offerings.

Urban Desires makes wise use of multimedia, mixing stories with graphics, short audio clips, and easy navigation buttons. The "Performance" area has



#### The Best Zines Money Can Buy

AT THE MOMENT, WEBZINES are essentially free. But as in many other areas of the Web, that's about to change.

Many electronic publishers are discovering that advertising revenue alone doesn't cover the cost of producing fresh Web content. So, like their print cousins, they're selling subscriptions. Trendsetter Microsoft has decided to charge an annual subscription of \$19.95 for its Webzine, Slate, starting November 1. Not to be outpriced, the Wall Street Journal has announced that it will charge \$49 per year (\$29 for subscribers of the print version) for access to its Web site. The electronic versions of Playboy and the New York Times are among the Webzines poised to follow suit.

What will it take to convince people to pay for information they're used to obtaining gratis? According to Dan Ludlum, an analyst with the market research firm International Data Corporation, Webzines will have to add more interactive elements. such as searchable databases of sports statistics or personal finance information.

With the added revenue from subscriptions, many Webzines should be able to improve the quality of their content. But as the competition for paying subscribers heats up, more zines will go belly up.

-D.M.

thoughtful reviews and interviews, and a good selection of movie clips. The music section offers interesting interviews, audio samples, and videos.

up &

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# Mayhem Reigns as X-Com Meets Crusader

#### ENTERTAINMENT

IF YOU CROSS MICROPROSE'S X-Com and Origin's Crusader—two demigods from last year's gaming pantheon—what do you get? Eidos Interactive's answer is the delightful but finicky Total Mayhem.

As in X-Com, you lead a band of soldiers through increasingly intricate mis(robotic monsters) and coerce their more vulnerable members to join your forces. You can control your soldiers as a unit or individually, positioning them strategically for the ultimate ambush.

Along the way, you search for keys that unlock secret levels. It helps to pick up nearly everything you find: You'll need



SEEK AND YE SHALL DESTROY: But Total Mayhem's mechs are thinking the same thing.

sions, blasting enemies while trying to regain control of your planet. Unlike X-Com, however, Total Mayhem plays in real time: Take too long pondering a move, and you risk getting shot. The action unfolds in three-quarter view, with highdefinition SVGA graphics that are sharp but less breathtaking than Crusader's.

You manage your forces' operations from Mayhem Base, where you receive briefs on all 20 missions, upgrade armor

and shields, recruit soldiers, and acquire and sell weapons and ammo. In each mission you use laser and plasma rifles and explosives to battle mechanoids

spare batteries to keep your shields and your servos charged, medic kits to heal wounds, and (of course) extra ammo.

Mayhem's multiplayer option permits up to six networked Windows 95 users to dispense with the solo game's altruistic missions in favor of a nerve-racking demolition-derby-style game of laser tag. The last soldier standing wins.

But Total Mayhem isn't a total triumph: Exacting controls make maneuvering sol-

> diers around corners, through doorways, and alongside buildings needlessly difficult. Frustrated users have also reported numerous installation problems, for which

Eidos volunteered little or no support. The company has posted a list of compatible video cards on its CompuServe site, however, as well as a patch that it claims should fix most installation errors.

If they can get it to run, X-Com and Crusader fans looking for hybrid strategy-adventure action will find Total Mayhem totally absorbing. -Joe Hutsko

**Total Mayhem** \$49.95 list; Eidos Interactive; 415/616-2022.

READER SERVICE NO. 741

#### **3-D DUKEFEST**

LIKE ITS POPULAR arcade ancestor, Virtua Fighter PC has stunning visuals, fastpaced action, and virtually no instructions on how to play it. In the arcade, gamers willingly burn quarters figuring



out ambiguous controls. But on the PC, that approach just doesn't cut it.

With fast-moving polygonal characters and free-floating camera angles, Virtua Fighter PC is technologically impressive. In terms of combat, this fighting game recycles Street Fighter II: Each character possesses an arsenal of attacks and defenses, and play consists of an endless string of hand-to-hand dustups. But of



VIRTUA FIGHTER doesn't hold back when it comes to full-contact action.

course the point of this dazzler isn't to play, but to watch. Why else would the programmers include a No Player option for sitting back and enjoying the full glory of real-time 3-D animation?

The game's only fault is its omission of helpful documentation. The manual and help file explain only the most generic moves (kick, punch, and jump). A lot of trial and error goes into discovering the six-key combination that makes your character do a leaping knee kick followed by a somersault. And only the most persistent gamers will find time to sleuth out each character's unique hidden moves. A detailed description of the attacks and defenses at your disposal would even the playing field between your characters and the ones the computer controls. Without such guidance, playing Virtua Fighter PC



is like trying to play chess without knowing what moves the pieces can make.

But watching two computer-controlled characters (who apparently had access to a detailed manual) duke it out is astounding. By contrast, in the match I waged against a friend, the two fighters faced away from each other, jabbing and kicking into space. -Jeffrey Adam Young Virtua Fighter PC

\$49 street; Sega Entertainment; 888/734-2472.

READER SERVICE NO. 742

Grade: C

#### DOUBLE-HEADER AT THE **VIRTUAL PARK**

WITH THE PENNANT races heating up, two new baseball titles get you into the swing without using weighted donuts: Tim McCarver's The Way Baseball Works and the 1996 version of Tony La Russa 3.

The Way Baseball Works focuses on the fundamentals, attempting to distill the sport into its essential elements. Unfortunately, this two-disc package fails to connect most of the time.

The first disc is divided into four sections. In the first, Fox announcer (and longtime Cardinals catcher) McCarver analyzes different game situations, letting you know how each player at each position should react, depending on the play. For instance, after a batter bunts, McCarver explains the reactions of each player involved in the play. After a weak segment on batting and a quick tutorial on scoring and statistics, the guide gets

FASTBALL CURVE CHANGE-UP SPLITFINGER . DEFENSE BALLS STRIKES OUTS INNING

CHOOSE YOUR PITCH CAREFULLY in Tony La Russa 3, or the eager batter may swat that julced-up orb right out of the ballpark.

physical, analyzing hitting and pitching in terms of the physics of bat and ball.

The second disc summarizes the rules of the game, offers comprehensive historical highlights, and provides a glossary of terms. Although it's a thoughtful production, it isn't particularly exciting.

Prefer more action and less analysis? Tony

La Russa 3, a perennial MVP contender among baseball simulations, offers a roster of new options, such as head-to-head statistics showing how a particular pitcher and batter have fared



against one another in previous matchups.

The disc also lets you vary the speed of different aspects of game play, improving the arcade aspect. The statistics, league play (with free agents and trades), and other fantasy league options that baseball fans have come to love are top-notch, though the batting and fielding are still a bit tough to master. If you already own the 1995 edition, the new version offers too little new material to warrant upgrading; but if you don't, the 1996 edition is a steal. -Hugh Foster

#### Tim McCarver's The Way Baseball Works

\$39.95 street; Byron Preiss Multimedia; 800/945-3155. Grade: B=

READER SERVICE NO. 743

#### Tony La Russa Baseball 3: 1996 Edition

\$39.95 list; Stormfront Studios; 800/245-4525.

READER SERVICE NO. 744

#### **MYSTERY TOMB**

You'll find that it's easy to get lost in Mojave's Secrets of the Luxor—for hours at a time. And in this graphics-intensive adventure, time is of the essence.

In the role of a renowned archeologist, you explore the chilling 3-D catacombs and breathtaking chambers of a tomb filled with technology far more advanced than our own. Figuring out how past, present, and future fit together is no small feat. Unraveling Luxor's secrets and puzzles-from dismantling bone-crushing traps to hacking into a peer's expedition computer—will take even die-hard players a long time.

Luckily, you don't tackle this project empty-handed. Useful provisions include an instant camera for taking snapshots of your discoveries (such as a wall of intricate

hieroglyphics); a journal swollen with descriptive prose, illustrations, and clues; a miniature Hi-8 video player for watching prerecorded clips; and a virtual headset that makes clever use of QuickTime VR, letting you scan completely around a room for passages and clues that are invisible to the naked eye. Not since Activision's Spycraft have in-game gadgets been so much fun to use.

Smooth transitions ease the way from one mostly static scene to the next. Even



simple tasks, such as throwing switches or turning knobs, are well animated and convincingly real. The screen suddenly goes black, however, any time you

access the Options menu (to change sound levels, save games, or access your inventory). In a game that propels you so deeply into another time and place, this sudden visual break is jarring.

Nevertheless, with its twisted premise and its effective use of QuickTime VR, Secrets of the Luxor provides a commendably Myst-ical escape. To triumph, adventurers must exercise special care to leave no stone unturned. —Joe Hutsko

#### Secrets of the Luxor

\$49 street; Mojave; 800/678-7282. Grade: B+ READER SERVICE NO. 745

#### REPTILE HEAVEN

Talk about the evolution of the dinosaurs: First there was Knowledge Adventure's 3-D Dinosaur Adventure; then came Microsoft's Dinosaurs; and now there's Dinotopia, the multimedia adventure game based on James Gurney's lavishly illustrated book of the same name. Intended for anyone older than 8 who has an affection for terrible lizards, Dinotopia is fanciful and fun, though its performance occasionally wobbles.

The plot is simple: Following a shipwreck, a protagonist named Nathan explores a charmed island where humans and dinosaurs live together in harmony. As Nathan wanders the island in search of his lost sister, he learns Dino-speak, discovers dinosaur habitats, and explores the ghostly wreck of the ship.

This adventure game is full of riddles to solve. As you explore the enchanted isle, you collect tools that will help you solve the central mystery.

Dinotopia's use of video is unique. Click on a graphic of a dinosaur, and realistic dinosaur puppets talk to you. Unfortunately, these intriguing clips are marred by imperfect replay quality; even on my Pentium-166, response was sometimes halting, images blurred around the edges, and the animals' lips were out of sync. Despite these disappointments, the game is refreshingly creative and nonviolent—a welcome addition to any young dinosaurlover's collection. -Bronwyn Fryer

#### Dinotopia

\$49.98 list; Turner Interactive; 800/294-0022. Grade: B+

READER SERVICE NO. 746



IF YOU TIRE OF ROAMING Dinotopia's charmed island, you can tour the world beneath it.

#### BE NORMAL - IT'S THE LAW

IMAGINE A WORLD where lying around passively watching TV and eating junk food is not only encouraged but required by law. Sound like a dream come true? In the challenging puzzle game Normality, you become an inhabitant of a warped world where police enforce the couch potato lifestyle and where asserting your individuality can get you arrested.

The game takes place in Neutropolis, a dark and polluted city controlled by a villainous dictator. Using mind-altering giz-



mos implanted in common consumer goods, this evil ruler keeps a majority of the population in a vegetative state. Refusal to submit lands you in prison for some intensive social reprogramming.

You play Kent, a scruffy Gen-Xer under arrest for being different. First, the Norm police force you to listen to hours of elevator music in an attempt to Normalize you; then they lock you in your apartment and order you to watch television. Of course, escape is your main objective. Once you succeed, you and fellow freethinkers form a resistance squad bent on overthrowing the evil regime.

Despite Normality's intriguing plot, the puzzles are a little too difficult to solve. I spent hours in the first room alone trying to figure out which inventory pieces I needed to get to the next clue. Hard-core puzzle freaks may relish Normality, but there's a limit to the amount of time I'm willing to spend on a game without seeing some results. -Richard Popko

#### Normality

\$49.95 list; Interplay Productions;

800/468-3775. Grade: C

READER SERVICE NO. 747



AVAILABLE NOW FOR MS-DOS WINDOWS 95 AND MACINTOSH COMING TO 32-BIT GAME SYSTEMS IN 1997

DOWNLOAD THE MECHWARRIOR 2 DEMO AT HTTP://WWW ACTIVISION.COM

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#### REFERENCE

#### **WILL POWER TIMES TWO**

Before we "kill all the lawyers," as one of Shakespeare's characters advised, we'd do well to check out Kiplinger's Home Legal Advisor and Quicken Family Lawyer.

Consulting the easy-to-use Kiplinger's sure beats spending a fortune on legal bills. This excellent resource for putting together a legal document isn't meant to



ABC-TV'S LEGAL EAGLE Arthur Miller offers advice in Quicken Family Lawyer.

replace a lawyer, but it promises to save you a lot of time, energy, and money in the stages before you hire one.

A graphic of a desktop (complete with banker's lamp) lets you open documents, change your user profile, or get video tips from virtual legal experts on how to use each document. The well-designed disc contains 68 legal forms ranging from prenuptial agreements to wills. You can fill in the blanks with an integrated Windows word processor before printing documents and presenting them to a professional eye. (A friendly voice coaches you along the way, and an extensive help section takes over where the voice leaves off.)

You even get help with such useful endeavors as getting your name removed from junk-mail lists; and the entire Kiplinger's Handbook of Personal Law is included. Probably the only people who won't like the disc are lawyers.

Another digital attorney, Quicken Family Lawyer, has been around a while, but version 7.0 adds lots of new features that make it easier to prepare legal documents such as wills and affidavits.

Family Lawyer's biggest improvement is its simplified data entry box. You answer questions in the top half of the screen, while the bottom half shows you the document with the new information in place. A checklist tells you what information to gather before you start filling in the blanks. A Document Suggestions Wizard identifies legal documents you're likely to need to complete a given form.

While markedly improved over previous versions, the \$49 package lacks the audio coaching and solid integration of the Kiplinger's disc. The sales-heavy introduction skimps on useful information.

On the other hand, you get 12 more documents with Quicken than you get with Kiplinger's, and a built-in Netscape Navigator module lets you tap into the Parsons Web site to track legislative and -Bronwyn Fryer software changes.

#### Kiplinger's Home Legal Advisor Deluxe Multimedia

\$29.95 street; Block Financial; 800/813-7940. Grade: A-

READER SERVICE NO. 748

#### Quicken Family Lawyer 7.0

\$49 list; Intuit/Parsons Technology; 319/395-9626. Grade: B+

READER SERVICE NO. 749

#### AN IMPRESSIONIST IN YOUR LIVING ROOM

COULDN'T MAKE IT to Philadelphia this summer for the blockbuster Cézanne exhibit? Then why not host your own major cultural event with Corbis's Paul Cézanne: Portrait of My World? Of course, a digital display of the French master's works can't replace seeing his Impressionist paintings in person, but the disc compensates by providing a meticulous examination of Cézanne's life, paintings, influences, and contemporaries.

The disc presents five environments (studio, train station, landscape, museum, and cafe) that showcase important paintings and feature voice-over commentary taken from the artist's writings.

Clicking a Works button brings up numerous key paintings by Cézanne and other artists of the period, along with textual analysis. The paintings, which you can zoom in on, aren't identified by name or painter until you click a second timea minor annoyance. Navigation would be easier with more on-screen tools, but a handy and innovative QuickMove function does show you areas you missed.

The tour begins and ends with Cézanne's Les Grandes Baigneuses (The Large Bathers). It's intensely satisfying to find the famous painting looks different after the disc's hours of education than it did before. Cézanne once said, "With an apple, I want to astonish Paris!" Ninety years after his death, he continues to astonish the world. -Kimberly Stein

Paul Cézanne: Portrait of My World \$49.95 list; Corbis; 800/246-2065.

Grade: A-

READER SERVICE NO. 750



A TOUR OF PAUL CEZANNE'S life and times begins in the artist's studio in Aix-en-Provence.

#### TWENTY YEARS OF AIR SUPERIORITY

HEY, TECHNO-RAMBO, are you ready to win this time? Then check out Wings: Saigon to Persian Gulf, the third installment in the Discovery Channel's planned five-disc history of military aviation. This offering, which covers the years of America's rise from superpower palooka to peerless global police officer, presents the same sensibly designed menu of features that its two predecessors used.

and (a sad vestige of an unexceptional, imprecise past) the helicopter evacuation of Saigon in 1975. Anyone seeking insight into the political and historical sources of these conflicts will find Wings' coverage arid. But fans of handsome aircraft and we're-number-one technology will have a blast. -Steven Gray

#### Wings: Saigon to Persian Gulf

\$39.95 list; Maris Multimedia/Discovery Channel Multimedia; 800/678-3343, Grade: B

READER SERVICE NO. 751



THE SOVIET MIG-31 Foxhound "poses a serious threat," according to Wings.

For appetizers you can inspect 3-D warplane models, amble through virtual air bases, watch air combat animations, and test your flying skills with three simulations.

All the meat and most of the potatoes, however, are contained in two other sections: An impressive database of 524 aircraft and 279 weapons contains photos of each plus extensive accounts of developmental history, design variants, and buyer nations (but no cost information); and a compressed Theaters of War history of the years 1975 to 1996 offers chronologies, maps, and 33 short videos.

Wings adopts a Pentagon-based view of history, so the execution of U.S. military planning tends to be characterized as "precise" and "exceptional." Events that receive video attention include the Arab-Israeli conflict, the 1986 U.S. bombing of Libya, Desert Shield/Storm (in great detail), the U.N. air campaign in Bosnia,

#### PROPAGANDA AND PERFECTION

"IN AMERICA, we're often what we buy," states narrator Rick Prelinger in Voyager's Our Secret Century CD-ROM



A 1946 ADVERTISEMENT by Allied Chemical and Dye promotes coal products.

series. The series surveys the numerous conformity, industrial, and safety films produced from the 1930s to the 1960s. Prelinger characterizes these films as secret because, although they do chronicle the United States' historical past, they emerged out of corporate sponsorship of products and educational instruction.

Each disc's well-designed interface lets you quickly access the films, which vary in length from several minutes to almost half an hour. You also get links to historical commentary and criticism, interviews, articles, and a useful search tool.

Volume 1 of this set, The Rainbow Is Yours, effectively shows how the corporate-sponsored product-design films of the 1950s influenced this country by creating an ideal of a modernistic, consumption-driven society.

Volume 2, Capitalist Realism, includes 1930s industrial short films, such as the story of Valley Town, a steel town that fell from prosperity during the Depression. This film, like many others, was part of a publicity campaign to persuade people that corporations would help remedy the joblessness caused by automation.

The Behavior Offensive, Volume 3, documents the social guidance films produced between 1945 and 1960. From Coronet Instructional's Shy Guy to Centro Films' What About Prejudice, viewers get a rare glimpse of how these movies sought to instruct youth in the nuances of becoming conforming citizens.

Finally, Volume 4, Menace and Jeopardy, examines safety films of the 1940s and 1950s, developed in reaction to the wartime death tolls and intended to prevent accidents in homes and factories.

For anyone interested in film, popular culture, history, or pure nostalgia, these discs are priceless. -Diane Mehta

Our Secret Century, Volumes 1-2 and 3-4

\$29.95 list per two-volume disc; Voyager; 800/446-2001. Grade: A

READER SERVICE NO. 752

#### **WORLDS BEYOND OUR OWN**

FOR BEGINNING and more experienced astronomy buffs, Nine Worlds provides an eye-opening visual tour of the solar system. Star Trek: The Next Generation star Patrick Stewart lends his distinctive voice

to this multimedia guide, which gathers together a rich array of photographs, video clips, and animated drawings, as well as a series of enlightening interviews with professional astronomers.

Nine Worlds lets you explore specific planets, read about planetary observation and science through the lens of history, and tap into a helpful resource section that includes advice on how to buy a telescope. You also get a small selection of astronomy-based shareware.

A fine design organizes the content.



STAR TREK LUMINARY Patrick Stewart provides narration for Nine Planets' lively exploration of the solar system.

Control panels suggest a graceful steel construction on the deck of a space station. Background music and sound effects enhance the experience. Observational tools on the CD-ROM are lightyears ahead of those supplied in books and television documentaries. To check a planet's surface temperature, for instance, you simply drag and drop a thermometer icon onto a graphic of the planet.

The program also explains the ways different cultures have interpreted the skyfrom the pre-Columbian Maya of Meso-America to scientists working with the Hubble Space Telescope, and it illuminates astronomy's development over the centuries. Add a night sky guidebook and a decent telescope, and you'll have everything you need to embark on planetary peregrinations. -Peter Scisco

#### Nine Worlds

\$39.95 list; Palladium Interactive; 800/910-2696. Grade: B

READER SERVICE NO. 753

#### **HOME IMPROVEMENT**

Who needs "This Old House" when you have this old mouse? As every homeowner knows, something always needs fixing, be it a leaky faucet or a lousy paint job. So a good multimedia program illustrating how to make repairs would be a godsend. Now three CD-ROMs promise divine succor: Philips Media's Better Homes and Gardens 101 Weekend Projects, Microsoft's Reader's Digest Complete Do-It-Yourself Guide, and Parsons' Black & Decker Everyday Home Repair.

> With its step-by-step video clips, Better Homes and Gardens 101 Weekend Projects goes beyond conventional home improvement magazines and books, allowing you to observe exactly how to create a faux-marble finish, say, or cover an ottoman or design a space-efficient closet. It even one-ups how-to TV programs: If you want to see a step again, click for instant replay. Once you're ready to leave the comfort of

your monitor and get to work, you can print instructions, lists of materials, and diagrams for building anything from a birdhouse to an art deco bookcase.

While some projects are more ambitious than others (you might want to start with lampshade painting and save building the garden shed for next summer), instructions for all of them are laid out so thoroughly that even the novice do-it-yourselfer won't panic. The title doesn't pre-

tend to be comprehensive. But it will give you the confidence to tackle any of the jobs it covers.

Reader's Digest Complete Do-It-Yourself Guide. based on the Reader's Digest New Complete Do-It-Yourself Manual, and Black & Decker Everyday Home Repair, compiled from the Black & Decker Home Improvement Library, fall short of the mark. Of the two, Read-

er's Digest's is the more ambitious. What it lacks in simplicity, it compensates for in

depth—leaving no how-to nook or cranny untouched. For example, the information on replacing exterior caulking or repairing a chimney is comprehensive; but attempting each project involves wading through vast drifts of text. And though the disc includes 65 video clips, these are hard to find. As a result, despite the CD-ROM's efforts to make the instructions friendly, with folksy music and amiable tour guides, it's easy to get lost.

Similarly, the Black & Decker disc fails to simplify admittedly difficult repair jobs. Video clips are wasted on chatty pep talks that offer little information. Instead, photographs (which you could get from a book) illustrate complicated tasks like plastering a hole in the wall. The explanations are equally frustrating: They're loaded with professional terms that confuse rather than clarify. (There's a glossary, but you must interrupt the lesson to get to it.) As they say in the trade, back to the drawing board. -Leslie Crawford

#### Better Homes and Gardens 101 **Weekend Projects**

\$39.99 list (\$45.95 with related book); Philips Media; 800/883-3767. Grade: A

READER SERVICE ND. 754

#### Reader's Digest Complete Do-It-Yourself Guide

\$34.95 street; Microsoft; 800/426-9400.

Grade: C+

READER SERVICE ND. 755

#### Black & Decker Everyday Home Repairs

\$29 list; Parsons Technology/Intuit; 800/223-6925, Grade: C READER SERVICE NO. 756



BRING A GARDEN into your home with a weeken project from the Better Homes and Gardens disc.



# ls Your Computer Sound Asleep?

**HERE'S YOUR WAKE-UP CALL.** Yamaha WaveForce sound upgrade cards will shock your old sound card to life like six cups of double espresso, double caff.

**WaveForce** upgrade cards replace the outdated music functions of your sound card. Now you get 4MB of wavetable sounds right out of professional Yamaha keyboards. Plus three on-

board professional digital effects processors. And the control and extra

features of the Yamaha XG MIDI format. So every nuance of music and games are dramatically reproduced. And General MIDI software sounds better than ever.

If you have a sound card with a WaveBlaster™ connector, choose the

DB50XG daughter board. Or, if your PC has an

available card slot, fill it with the SW60XG and get better

sound quality than an audio CD. The SW60XG includes 18-bit digital to analog converters (DAC). Compared to the 16-bit sound of audio CDs and the 16-bit DAC of other sound cards, the SW60XG doubles and then doubles again the dynamic range. You'll hear louder louds, softer softs, less noise and incomparable performance.

So get a **WaveForce** DB50XG or SW60XG and wake up to the way your computer should sound. WaveForce sound upgrade cards and Yamaha YST multimedia speakers are available at your favorite computer retailers.

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THE WAY YOUR COMPUTER
SHOULD SOUND.

To receive product literature, call (800) 823-6414 Ext.402 or http://www.yamaha.com. ©1996 Yamaha Corporation of America, Computer Related Products, 6600 Orangethorpe Avenue, Buena Park, CA 90620. All rights reserved. Yamaha, WaveForce and the Yamaha logo are registered trademarks of Yamaha Corporation of America. WaveBlaster is a registered trademark of Creative Labs.















not enough TIME?

Try

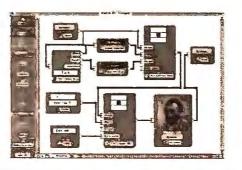
# Batch It!

The Easy To Use Image Processing Program!

Graphic designers and multimedia and internet site developers agree that Gryphon Batch-It! is the easiest and most comprehensive image processing program around. Batch It! is a powerful combination of image processing and batch-mode capabilities in a friendly, easy to use interface. No knowledge of scripting or programming is needed to use this program, yet it performs complex operations with ease. Batch It! can perform a series of operations on one or more images such as resizing, adjusting brightness, sharpness, contrast, color, and converting images to numerous different file formats. It even processes in the background.

Batch It! supports these file formats and more: BMP/DIB, GIF, JPEG, PICT, TARGA, TIFF, CMYK, RGB and EPS output. Files may be opened and saved in many popular file formats, even those o other platforms.

Batch It! is available as a hybrid CD-ROM for Macintosh® PPC, Windows® 3.1 & Windows® '95.



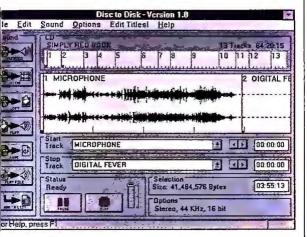


Gryphon Software Corporation 7220 Trade Street, Suite 120 San Diego, California 92121 (619) 536-8815 (619) 536-8932 Fax WWW: http://www.gryphonsw.com



I HAVE A PENTIUM-120 with a CD-ROM drive and a wavetable sound card. I also have an audio CD, which includes a song containing 2 minutes of music that I want to extract and save as a sound file. Finally, I want the 2-minute segment to play continuously. Is there a way to accomplish this on my PC?

Ron Velten, Scarsdale, New York The hardest part of the job you want to do involves getting the 2 minutes of music off the CD and into your computer. My son accomplished this (with an



DISC-TO-DISK'S UTILITIES let you copy audio files from an audio CD to your hard drive-if you have a SCSI CD-ROM drive.

annoying passage from a Nirvana disc that, against my will, I now know by heart) in very primitive fashion, by holding a microphone against a speaker and using Windows' Sound Recorder to record the music. Of course, you won't get great sound quality or balanced stereo this way—but with Nirvana, at least, I doubt that it matters a whole lot.

Fortunately, three utilities offer alternatives: Disc-to-Disk, Sound Impression, and Sound Forge XP. Disc-to-Disk for Windows, at \$99, copies audio files from a SCSI CD-ROM drive to your hard drive. You can then save the file in WAV, QuickTime, or other format. But Disc-to-Disk doesn't work with IDE CD-ROM drives, which predominate in prepackaged off-the-shelf multimedia systems.

Sound Impression, a utility from Midisoft (800/776-6434), can handle both SCSI and IDE CD-ROM drives, but this Windows program hasn't been updated since 1994 and doesn't have the range of tools you'll find in Disc-to-Disk. On the other hand, it costs only \$35, and it does work under Windows 95.

# 00:00:10.24

**USE SOUND FORGE TO RECORD music** from any source and master it with various effects and processing tools.

Sound Forge, which is produced by Sonic Foundry (800/577-6642), doesn't directly access the CD-ROM drive; but if the drive is connected to your sound card, it can record whatever you play. The drawback is that you might lose some audio quality as the sound is converted to analog, and then back to digital. The \$149 Sound Forge also includes an array of solid editing and special effects tools.

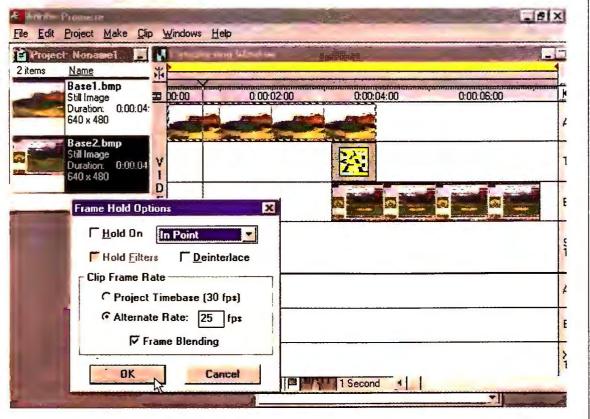
IN JUNE 1995 I PURCHASED a 90-MHz Pentium system equipped with 8MB of RAM and an ESS

ES688 sound card on the system board. The machine also came with Windows 3.1 preinstalled. A few months later, I upgraded the sound card to a Creative Labs Sound Blaster AWE32, which worked just fine. Then, in January 1996 I upgraded to Windows 95. Ever since, I have had problems with fluttering audio and stuttering video clips when I run various multimedia applications. For example, the sound of the clips included on the Windows 95 CD-ROM flutters; and the accompanying video features less-thandesirable resolution, as well as pausing intermittently. When I exit the clip, the music briefly continues to play (with no sound problems) after the video playback has ended.

Terry Kimble, Topeka, Kansas EVIDENTLY YOU RUN into difficulty only when playing videos with sound. This type of fluttering, jerky video happens when a system is struggling to synchronize the speed of the sound with the speed of the video. If the speeds fall out of sync (because the video lags behind the audio), Windows drops frames from the video to enable it to catch up.

### Solution of the Month

ARE YOUR ADOBE PREMIERE CLIPS JERKY, especially when you use slow-motion effects? To make them run smoothly, first slow down the frame rate; then go to the Frame Hold Options dialog box and click the Frame Blending box. This will establish a fluid transition from one frame to the next. Richard Anderson, Chicago



AFTER YOU CLICK THE OK button, playback will smooth noticeably.

Your problem may be due to any of several causes. First, since AVI and WAV files are CPU- and memory-intensive, your woes could stem from your having insufficient memory, even with 8MB. Make sure no other applications are running, and try the video clip again. If it plays more smoothly, you can probably improve your system's performance and run additional applications by adding memory.

If that doesn't solve your problem, try copying the video file in question from the Windows CD-ROM to your hard drive. If playback improves when you subsequently run the clip from the hard drive, you need a new, faster CD-ROM drive.

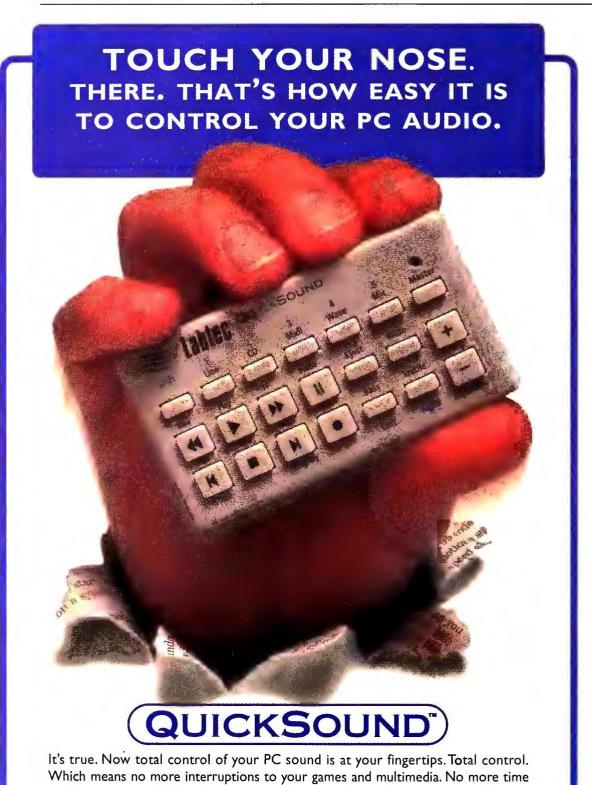
Next, make sure that the driver for your video card is up to date. Call your video card's manufacturer to identify the latest driver. You can check the date of your cur-



THE THREE LIKELIEST CAUSES of fluttering video clips are low memory, a slow CD-ROM drive, and uncooperative video drivers.

rent driver by opening the Windows/System subdirectory, right-clicking the file name, and selecting Properties from the pop-up menu. If you don't happen to know your current video driver's file name, double-click Display in Control Panel; then click the Settings tab followed by the Change Display Type button.

If the problem persists or if you have sound problems when not running video, make sure you're using the Sound Blaster driver for Windows 95, and check your IRQs and memory settings to ensure there are no conflicts with other equipment. You do this by going to the Control Panel, double-clicking System, and then selecting the Device Manager tab. Device Manager is supposed to alert you to any conflicts for the selected device (click the Properties button, and then the Resources tab); but in my experience, it has often failed to report an existing conflict. The safest course is to make your own list of the settings for all your equipment directly from the equipment itself and then compare these settings with the ones listed in Device Manager. If you have a conflict, consult the manuals for your devices to determine how to change their settings. Even better, call Creative Labs and download its latest driver. The company's BBS is 405/742-6660. You can visit its Web page at http://www.creativelabs.com.





I HAVE A COMPAQ PRESARIO 9536 with an S3 Trio 64V+ video card and a Scenic/MX2 MPEG

Circle 132 on reader service card

delays as you work. Now you'll never have to leave your applications or fiddle

With QuickSound, a simple touch is all it takes.

QUICKMUTE

featuring QuickMute for instant silence

Visit your retailer or go to http://www.labtec.com.

with on-screen controls to set volume, adjust tone or skip tracks.

Labtec.

# The smallest, lightest, brightest multimedia projector is now an even brighter choice.



Turn your bright ideas into brilliance.
Introducing the Epson ELP-3300, the world's smallest, lightest and brightest multimedia projector. Now you can make brilliant presentations anytime and anywhere without turning off the lights.

The world leader in high performance, portable projectors. The revolutionary ELP-3300 shines 75% brighter than ordinary single-LCD projectors, is about the size of a briefcase and weighs less than 17 pounds. Epson's breakthrough prism technology and three separate Poly-Silicon LCD's generate incredible detail, visibly better brightness (350 lumens) and superior color reproduction.

Easy-to-Use & Versatile. In just seconds, you can connect to any PC, Mac, VCR or camcorder. The ELP-3300 supports full-motion video, colorful text, animated graphics and stereo sound to address a broad range of presentation needs. And for added confidence on the road, Epson's exclusive Extra Care Road Service Program can offer a replacement unit, usually overnight.

Call for a free video. Call 1-800-442-1977, ask for operator 3088 and we'll send you a free video on the benefits of the revolutionary ELP-3300. Or visit our Web site at http://www.epson.com and see for yourself why Epson is the brighter







Epson's Prism Technology, and 3 advanced LCD's (not just 1)

Weighs under 17 pounds.

YOU'VE GOT TO SEE IT IN



COLOR.1M

decoder. Since I upgraded from Windows 3.1 to Windows 95, I can no longer play MPEG videos. I installed Compag's driver update for Windows 95, which was supposed to update all my drivers, but it didn't work. Now when I try to play MPEG videos, I get a System Device Error message. I also downloaded the generic drivers from S3; these work for my video card, but not for the MPEG device. I know my computer can play MPEG, but how can I get it to work in Windows 95?

Erica Heth, Chicago THE SUPPORT STAFF at S3 recommends against using generic drivers for subsystems on Compaq computers, unless you receive instructions to do so from Compaq support technicians. That's because Compaq rewrites the BIOS code for many of the subsystems it incorporates, necessitating the use of proprietary drivers for these components. This warning would apply to the video drivers you've downloaded-although they seem to be working for you—as well as to any MPEG decoder drivers.

Compag's tech support staffers were unable to determine the cause of your problems from the description you provided, but they suggested that you may be able to resolve it by removing and reinstalling Compag's Windows 95 drivers.

To obtain a new set of Compag-supplied drivers, you can call Compaq's bulletin board at 713/518-1418 or visit its Web site (http://www.compaq.com) and download two files: SP1417 for the video drivers and SP1441 for the MPEG drivers.

For readers whose systems use off-theshelf components, S3's Web site at http://www.s3.com offers drivers for numerous products and operating environments. This page has links to S3's FTP server; try the pub/bbs/mxdrv directory and look for a file named cw952206.zipat press time the current file for the Scenic/MX2 MPEG decoder operating under Windows 95. Again, it's best not to try these drivers with Compaq systems unless Compaq recommends it.

OVER A YEAR AGO, I bought a Reveal TV card-the TV300-for displaying TV broadcasts on my com-

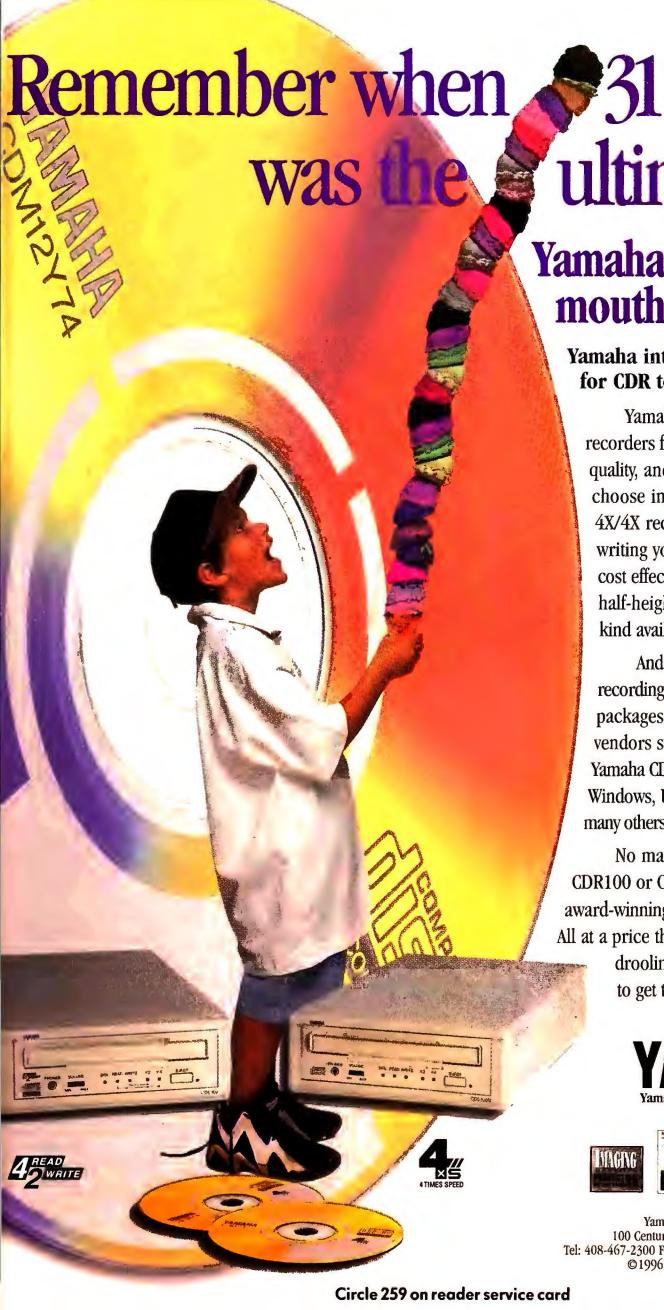
puter monitor. It worked great in Windows 3.1, but not in Windows 95 because there are no drivers. When I checked the Reveal forum on CompuServe (go reveal) and the Reveal Web site (http://www.reveal.com) I discovered that drivers are available for the TV500 model, but not for the TV300. I like the card and don't want to buy a new one. Is there any way I can get it to work with Windows 95?

Colin Mason, Atlanta SORRY TO BE THE BEARER of bad news, but if you want to work in Windows 95 you'll have to give your TV300 the old heave-ho. Reveal doesn't have Windows 95 drivers for the card, and it doesn't plan to introduce any. In fact, Reveal hasn't sold the TV300 through its normal retail channels since late 1994.

The TV500, meanwhile, tips the scales at a list price of \$249; and alas, the company offers no special discount to TV300 owners who want to upgrade. You can reach Reveal at 800/326-2222.



Circle 157 on reader service card



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No matter whether you choose our CDR100 or CDR102 series, you'll get Yamaha award-winning quality, service, and support.

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# TOP 5 SOUND BOARDS

	Product	Last reviewed	Street price	Overall rating	Audio score	Comments	Reader service number
1	Creative Labs Sound Blaster AWE32 PnP 800/998-5227 http://www.creativelabs.com	June 96	\$250	92	92	FEATURES: Plug and Play, 512K of RAM expandable to 28MB for downloadable MIDI sounds, DSP for MIDI effects, Sound Font editing software, IDE interface. PROS/COHS: Top-quality wavetable sound, flexible MIDI composition software, trouble-free installation, good frequency response; noisy microphone input.	655
2	CrystaLake Model 110 503/222-2603 http://www.crystalake.com	Aug 96	\$169	92	87	<b>FEATURES:</b> Plug and Play, 3-D sound with fully adjustable center fill and effect depth, stereo microphone input, IDE interface. <b>PROS/CONS:</b> High-quality wavetable MIDI sound, realistic 3-D effects, low noise, good frequency response, inexpensive, three-year warranty, no reverb or chorus.	656
3	CrystaLake Model 140 503/222-2603 http://www.crystalake.com	June 96	\$269	90	87	FEATURES: Plug and Play, 3-D sound with fully adjustable center fill and effect depth, reverb and chorus, stereo microphone input, IDE interface. PROS/COMS: High-quality wavetable MIDI sound, realistic 3-D effects, low noise, good frequency response, good microphone input, three-year warranty; poor cross-talk figures.	657
4	Advanced Gravis UltraSound Plug & Play Pro 800/663-8558 http://www.gravis.com	May 96	\$199	89	85	FEATURES: Plug and Play, 512K of RAM upgradable to 8MB, IDE interface. PROS/CONS: Excellent audio performance, good microphone input, professional-grade wave editing and MIDI software; mediocre MIDI sounds, awkward procedures for switching game and MIDI modes in DOS.	658
5	Creative Labs Sound Blaster 32 800/998-5227 http://www.creativelabs.com	May 96	\$170	89	90	FEATURES: Plug and Play, OK of RAM expandable to 28MB for downloadable MIDI sounds, IDE interface, PROS/CONS: Top-quality wavetable sound, good frequency response for wave playback and line input recording, inexpensive, trouble-free installation, clear documentation; poor frequency response on microphone input.	659

THIS MONTH WE TESTED TURTLE BEACH SYSTEMS' TROPEZ PLUS. Despite being a top-end sound board, the Tropez Plus could not break into our Top 5. It features full game compatibility, Plug and Play Installation, and 4MB of wavetable instrument sound. Installation is easy, but if you want to play DOS games, you'll have to edit a DOS shortcut Icon to make them work the first time. On our lab tests for wave playback and line-level recording, the Tropez Plus achieved the best results of any sound board we've recently tested. But recording quality from the microphone input is dismal due to excessive noise and extremely poor frequency response.

METHODOLOGY: All boards are tested on an Audio System Precision 2 workstation to determine frequency response, cross talk, noise and distortion, and other characteristics. We judge MIDI and wave audio quality by comparing sample sounds against original source material on DAT. Overall ratings are based on performance (40 percent), features (25 percent), price (25 percent), and support (10 percent). For all ratings, higher is better. Data are based on tests designed and conducted by the PC World Test Center. All rights reserved. For more information about all products in this table, circle reader service no. 906.

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658	Advanced Gravis UltraSound Plug & Play Pro	M20
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743	Byron Preiss Multimedia Tim McCarver's The Way Baseball Works	M7
744	Stormfront Studios Tony La Russa Baseball 3: 1996 Edition	M7 .
745	Mojave Secrets of the Luxor	M7.
746	Turner Interactive Dinotopla	M8
747	Interplay Productions Normality	M8
748	Block Financial Kiplinger's Home Legal Advisor Deluxe Multimedia	M10
749	Intuit/Parsons Technology Quicken Family Lawyer 7.0	M10
750	Corbis Paul Cezanne: Portrait of My World	M10
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752	Voyager Our Secret Century, Volumes 1-2 and 3-4	M11
753	Palladium Interactive Nine Worlds	M11
754	Better Homes and Gardens 101 Weekend Projects	M12
755	Reader's Digest Complete Do-It-Yourself Guide	M12
756	Black & Decker Everyday Home Repairs	M12

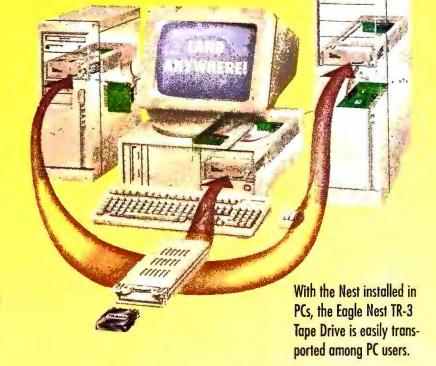


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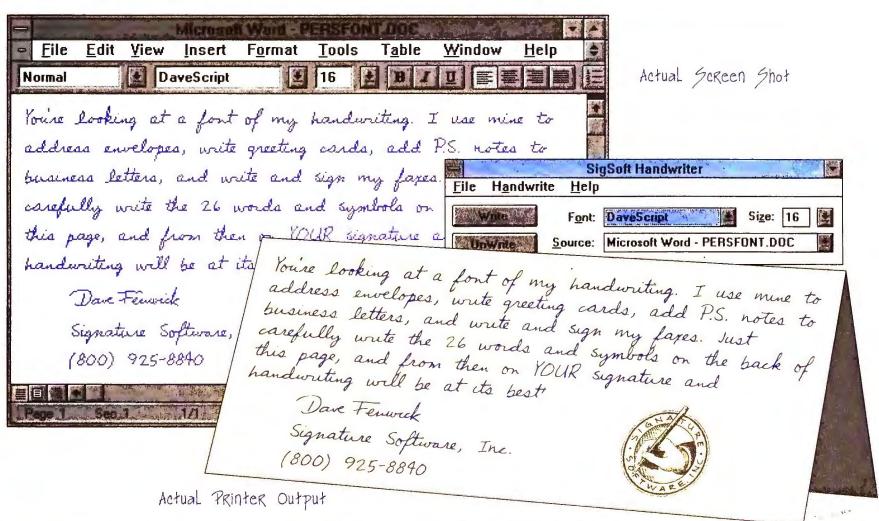
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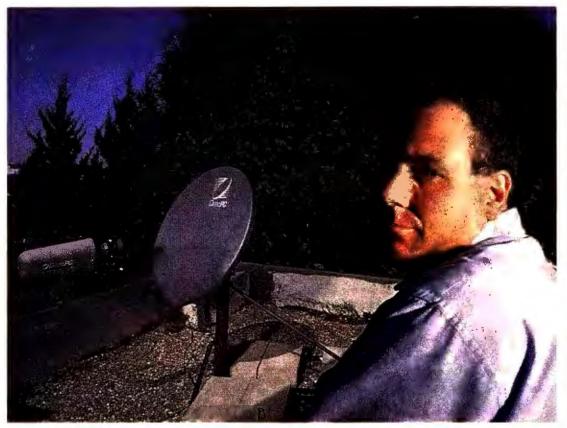






### REAL PROBLEM. REAL SOLUTION

I can't get ISDN. Isn't there another way to get quick access to the Web? —Brad Wood



BRAD WOOD NEEDED A FAST WAY TO GET ONTO THE WEB-and not just from work.

IF DIAL-UP ACCESS to the Internet seems like crawling through mud, and higher-speed ISDN service is unavailable or too expensive, who are you going to call?

ISDN wasn't an option for Brad Wood, a communications engineer and project manager with Sandia National Laboratory in Albuquerque, New Mexico, as his local phone company charged an eye-popping \$400 a month for the service. This month Wood tells us about a satellite hookup to the Net that made more sense for him. -Editor

### PROBLEM: GET ON THE WEB **FAST, WITHOUT ISDN**

ANYONE WHO SURFS the Net knows that tapping into the World Wide Web with a 28.8-kilobits-per-second modem is about as much fun as skinning a porcupine.

As a communications engineer, project manager, and researcher studying security technologies for a national laboratory, I have a job that depends on how fast I can surf. My colleagues and customersincluding the U.S. Department of State, the U.S. Department of Energy, and private corporations—call on me for the latest information on security technologies. I collect almost all of this information via e-mail, newsgroups, FTP, and Web sites.

Back in the good old days of 1994, I did my research in off-hours at home, using a 14.4-kbps modem connected to an IBM ThinkPad notebook. It didn't take me long to notice that as more and more nontextual information became available on the

Web, access became painfully slow. As I called up Web sites and downloaded graphics, I found I had to work much harder and longer to get less information.

For years I've been searching for a costeffective method of surfing the Net from home. I'd been holding out for ISDN because I thought it would be the answer to the speed problem. After all, I use ISDN at work, five miles from my house. However, ISDN service is not readily available throughout most of the Albuquerque metropolitan area. Worse, the service isn't regulated in New Mexico, and US West quoted a fee of more than \$400 a month to bring ISDN to my home.

I began sniffing around for other options. Connecting through my office net would have been expensive and slow. I also looked into wireless technology, but my home is just too far from the lab.

### SATELLITE SERVICE

ONE DAY I WAS reading an industry publication when I came upon an article about DirecPC, a low-cost, satellite-based Internet service from Hughes Network Systems. I sent an e-mail to the company asking for information.

In a few days I received some literature about the product, and found out that DirecPC supports online software downloading, online video, and a service called Turbo Internet. (At 400 kbps, Turbo Internet is many times faster than my 14.4kbps dial-up modem.)

I decided to purchase DirecPC, which ran me around \$1200. (It now costs \$699.) This price included a rooftop satellite dish setup, a receiver on a PC expansion card, and Windows software. The monthly base service charge is \$15.95, which includes the first 30MB of material accessed by Turbo Internet.

Hughes Network Systems will set everything up for you for \$400, but I took the "I'm happily surfing

the Internet from

home at speeds

that are far faster

than ISDN."

do-it-yourself route. The first step was to install the antenna, a 24-inch fiberglass dish that either mounts onto a metal pipe cemented vertically into the ground or fits

onto a nonpenetrating, sledlike rooftop mount. I chose the latter, and held the rooftop mount down with concrete blocks.

After setting up the dish, I installed the receiver—a standard ISA expansion card—in my ThinkPad's

docking station. My PC ran a Plug and Play setup that configured the hardware automatically.

Installing the software wasn't difficult. I was happy to discover that the Turbo Internet drivers run with the common Trumpet Winsock shareware program (available from Hughes) and FTP Software Corporation's TCP/IP stacks. It also works great with Netscape Navigator, as well as with Internet e-mail systems like Qualcomm's Eudora Pro.

The DirecPC setup program—which includes Explorer and is a kind of satellitebased bulletin board system—helped me direct the satellite dish to the right location. I entered my zip code and, with the

### SOLUTION: SATELLITE DISH

Dish out your Internet access with a satellite link, which can help you surf faster than anyone on the block. Here are four things you need to know about the DirecPC link.

It's not terribly cheap. It costs \$700 and up to install and \$16 to thousands per month to use, depending on the services you choose and how long you're online. The receiver supports PCs only. If you have a Mac or a laptop, you're out of luck. Your site must be right. You'll need a protected rooftop or yard where you can

'Tis better to receive. Downloading takes place at 400 kbps, but uploading still crawls along at analog speeds.

install the dish.

help of a compass and an on-screen set of graphical signal-strength readings, I found the satellite with little fine pointing—and with signal quality to spare.

> Ever since I installed DirecPC, I've been able to get a lot of good work done fast. To borrow a phrase, DirecPC rips. In fact, it seems as fast as the T3 line at work. Now I can retrieve huge e-mail messages that used to clog my system for

hours. I'm spending an average of 12 hours a week searching the Web for mountains of data. To get the same amount of information with my old 14.4kbps modem would take something like 400 hours—hard to fit into a week!

DirecPC isn't perfect. For one thing, the satellite dish is a receive-only terminal; you still must send data via modem on a dial-up line. If you click on a link within your Web browser, for example, you send the link's address to the Web server over the phone line at whatever speed your modem supports, and the response is routed over the satellite system. And unfortunately, if you work outside the continental United States or Canada, you can't use the system. Finally, the actual satellite receiver is an ISA card; users of Macintoshes and laptops are out of luck. (Hughes recently stopped supporting laptops and docking stations, so I switched to my wife's 486 for Webcrawling.)

But I'm happily surfing the Net from home at speeds that are far faster than ISDN, and DirecPC was easy to set up and run. For someone like me, for whom Net surfing is another part of work, this is by far the fastest, most economical solution. • DirecPC \$699 plus \$400 installation and \$15.95 per month; Hughes Network Systems; 800/347-3272; http://www.hsn.com

READER SERVICE NO. 660

Edited by Bronwyn Fryer

Bronwyn Fryer is a contributing editor for PC World. If you use PCs to manage people and other resources in a business environment, we want to hear from youwe pay \$300 for published columns. See page 12 for contact information.

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step-by-step Upgrade Guide column. Check out PC World Online's broadened Here's How coverage at http:// www.pcworld.com/hereshow.html.

### Repartition or compress? ◆ Disk Manager pros and cons ◆ Take out a new user license

### COMPRESS THAT DRIVE WITH **DRIVESPACE 3**



I HAVE A Pentium system with a 1.6GB hard disk partitioned as a single drive. The hard disk is more

than half full, and before it becomes completely full, I'd like to free up some additional room. I know that repartitioning the drive

into several smaller logical drives will reduce space wasted in large clusters, but can't I just compress the drive instead?

Ron Vernon, Long Beach, California REPARTITIONING IS quite a lot of work. First, you have to back up the entire drive, then repartition it, format each of the new logical drives, reinstall Windows, and finally restore your backup.

If you're willing to pay for the convenience, you can use PowerQuest's \$50 PartitionMagic utility to shrink your existing partition and create new ones in the resulting free space. Reducing your 1.6GB C: drive to just under 1MB will save you many megabytes of wasted "cluster slack."

But if you're not up to repartitioning, then yes, you can just compress the drive. Disk compression utilities combine all the files on your disk into one large compressed volume file.

If you're using Windows 95 and already own Microsoft Plus, I recommend its DriveSpace 3 utility, which supports compressed volumes as large as 2GB and uses economical 512-byte clusters.

Unavoidably, disk compression does slow your system's performance, because files are compressed and decompressed each time they're written to and read from the hard disk. But on a Pentium system like yours, you shouldn't experience any noticeable slowdown.

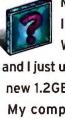
If you do, DriveSpace 3 lets your compressed volume file contain both compressed and uncompressed files, so you can choose not to compress applications or documents that you use regularly.

· PartitionMagic \$50; PowerQuest Corp.; 800/757-5044; http://www.powerquest.com READER SERVICE NO. 671

· Microsoft Plus \$54.95; Microsoft Corp.; 800/426-9400; http://www.microsoft.com

READER SERVICE NO. 672

SHOULD I DUMP DISK MANAGER?



MY SYSTEM IS RUNNING Windows 95,

and I just upgraded to a new 1.2GB hard drive. My computer's relatively old BIOS recognizes only 500MB of the new drive, so I installed Ontrack's Disk Manager software to make the entire drive visible. Is there any risk in using disk management software? I recently had some boot-

up problems that caused my hard drive to vanish temporarily.

John Lanzelotti, Orlando, Florida THERE'S NO SERIOUS danger in using Disk Manager or any other drive geometry "shim" utility, as long as you take the proper steps when repartitioning or moving your drives.

The main problem occurs when you install a drive as a slave in a two-drive system, partition it with Disk Manager (which installs the hidden Disk Manager software on the master drive), and then swap the two drives. When you attempt to boot the computer with the new drive, you'll receive an error message saying that the partitioned drive is unreadable: The Disk Manager software is no longer on the boot drive and hence isn't loaded.

Disk Manager won't affect performance, and as long as you have version 7.03 or later, it should work without a hitch with Windows 95. My only gripe with utilities like Disk Manager is that they insert an extra layer of complexity into configuring your hardware. New hard disks and controllers remove much of this complexity: Just plug them in, and with a few exceptions, the rest is automatic.

If you're planning on upgrading your system board, BIOS, or disk controllerany of which will likely allow you to transcend the 1024-cylinder/512MB hard disk ceiling-you should remove Disk Manager. That's simple enough: Back up your hard disk, partition and format it with the fdisk and format commands, and then restore your backup.

### **CHANGING YOUR IDENTITY IN** WINDOWS 95



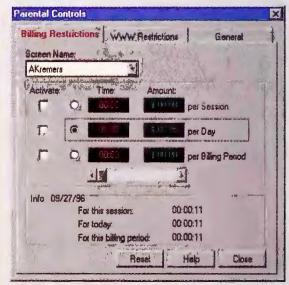
THE NOVEMBER 1995 Help Line explained how to change the licensed user information stored in

Windows 3.x and Windows for Workgroups ["A Change of Identity"]. I'd like to do the same thing in Windows 95.

I've tried editing the contents of the serialno.ini file mentioned in November's

### Limit Your Kids' Online Time

POWERWATCH for AOL, from BPS Software, helps you limit the amount of time each user of your America Online account can spend online. You set the time limit per day or per billing period. When the day or billing period limit is reached, the user is logged off and prevented from logging back on until the next day or billing period. You can download Power-Watch from BPS Software's Web page (http://www.bpssoft.com/pwrwatch.htm). PowerWatch also lets you restrict the Web pages your kids can access. Try the evaluation version before registering.



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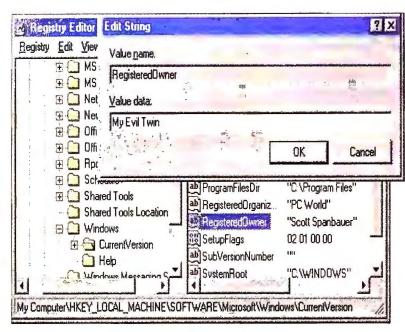


FIGURE 1: IF YOU'VE INHERITED A PC, you can change the licensed user information by editing the Windows Registry.

column, but it has no effect on the name displayed in the About Windows dialog box.

Gary Ware, Towanda, Kansas JUST WHEN YOU were beginning to master the art of .ini file editing-wham! It's a paradigm shift.

As you've probably heard a zillion times by now, Windows 95 and applications that are built for it store most of their configuration settings in the Registry rather than in .ini files. The Registry can be highly confusing, and Microsoft clearly didn't intend for the average user to start mucking around in it.

To change the licensed user data stored

in the Registry, which you may want to do if you inherited your PC from someone else, follow the steps outlined below.

- 1. Back up these files in the Windows folder: user.dat, user.dao, system.dat, and system.dao. If you don't see these files, choose View Options in My Computer or Explorer, click the View tab, select Show all files, and then click OK.
- 2. Select Start-Run, type regedit in the Open box of the Run dialog box, and click OK to launch the Registry Editor.
- 3. Select *Edit Find* in the Registry Editor dialog box, enter Registered-Owner in the Find What field of the Find dialog box, make sure the Values check box is selected, and then click the Find Next button.

4. Double-click RegisteredOwner in the righthand pane of the Registry Editor; then in the resulting dialog box, replace the contents of the 'Value data' field with whatever you want (see FIGURE 1). Click OK and exit the Registry Editor.

Select Help. About Windows 95 in the Control Panel to see the alteration you've made. To change the organization you're listed under, follow the same steps for RegisteredOrganization.

Note that these changes will not be reflected in your regular applications.

### SKIP SCHEDULE+ LOG-ON

I WANT TO PUT a Shortcut to Schedule+ in my Startup folder so I can see my schedule whenever I start Windows 95. Unfortunately, Schedule+ asks for a user name and a password each time it starts up, and it doesn't appear to accept any command-line parameters.

I managed to prevent the password dialog box from appearing by making the password blank. But I still have to click OK or press <Enter> to accept the user name (which

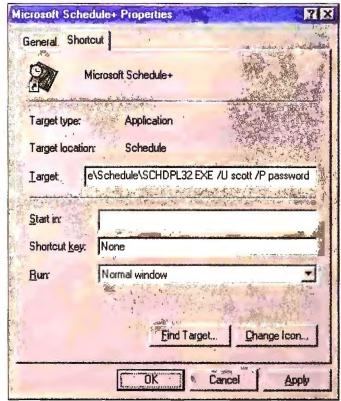


FIGURE 2: BYPASS SCHEDULE+ PROMPTS by adding commands to its Shortcut properties.

### A More Exact Extract

AS MENTIONED IN April's Help Line, the extract tool can be used to copy Windows' compressed installation

files from .cab (cabinet) files ["Pulling System Files From Cabinets"]. Your explanation left out one important command-line parameter, /a, which allows you to search all cabinet files for a particular compressed file with only one command. For example, the command extract /a /y c:\windows\system d:\win95\ win95\_02.cab comdlg32.dll searches win95\_02.cab and all subsequent sequentially numbered .cab files for the file comdlg32.dll.

Furthermore, the command extract /a /d d:\win95\ win95 02.cab filename likewise searches each sequential .cab file starting with win95\_02.cab for the file you type in place of filename. And it does all this in DOS, which is much faster than any Explorer add-on.

Brad Goodwin, Soquel, California

appears automatically in the Schedule+ logon dialog box). Is there some way to automate the entire process?

Dan Liggett, Internet IT WOULD HAVE BEEN so easy to add this little tidbit to the program's documentation or on-screen help, but no, you have to do it yourself.

Right-click the Start button, select Explore, and navigate to your Schedule+ Shortcut (you'll find it in c:\windows\start menu\programs). Right-click the Shortcut, select Properties, and click the Shortcut tab. To the end of the Target command line, add /U username, as in FIGURE 2. You can also add /P password to launch a password-protected Schedule+ file.

Obviously, anyone with access to your computer can open your Schedule+ calendar, but no one can read the file from another networked computer.

Find files from this article and additional tips at http://www.pcworld .com/hereshow.html. Answer Line welcomes your questions and tips and pays \$50 for published items. Scott Spanbauer is a PC World contributing editor and author of The No B.S. Guide to Windows 95 (No Starch Press, 1996, 800/420-7240). See page 12 for contact information.



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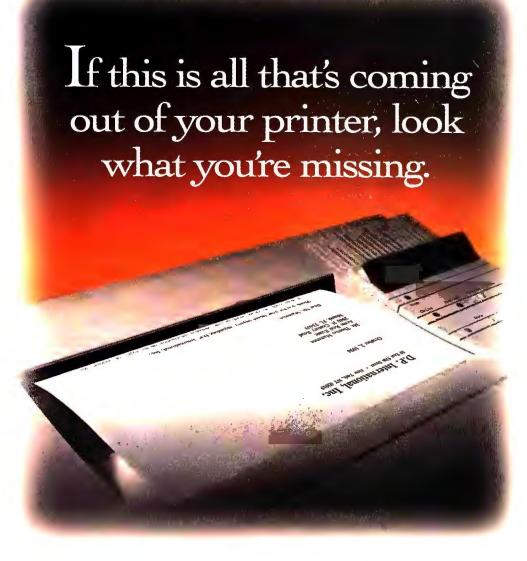
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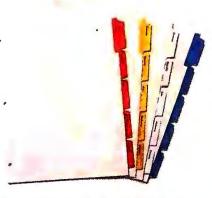
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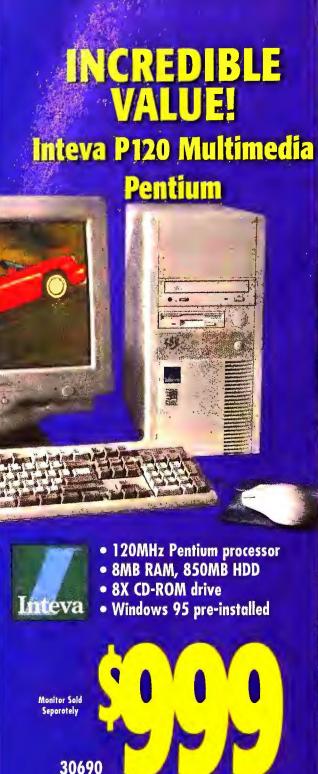
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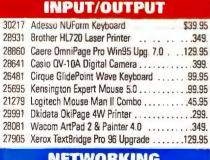
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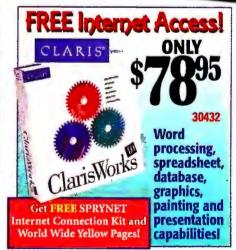


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## Paste Without Waste, Calculate Square Roots

WINDOWS 3.X AND 95

YOU'RE TYPING ALONG in WordPad (Windows 95) or Windows Write (Windows 3.x) and decide you need a special character from the Wingdings fontmaybe a fancy bullet or a tiny icon. You launch Windows Character Map, select Wingdings from the Font list, double-click the character you want, click Copy, switch back to your application, and paste.

Oops! That's not what you selected! Well, it is-but it's the wrong font and the wrong size.

The problem is that the Wingdings font doesn't export its format correctly from Character Map. With Write the problem gets worse: It's difficult to paste any formatting information from other applications into Write. For example, if you're pasting 24-point BlippoBlack from Microsoft Word into a Write document formatted with 12-point Arial, chances are you'll get 12-point Arial, just like the rest of your document. Sometimes that's okay. Sometimes it's not.

What to do? You could select each item you paste and manually reapply the formatting and font you need. This is easy enough for WordPad users—just select a font from the Format Bar. And if you're not dealing with Wingdings, you can control the format of pasted text by choosing Edit-Paste Special. When you want to be sure the imported text retains its original size and typeface, select Formatted Text (RTF) in the Paste Special dialog box and click OK. When you want the pasted text to adopt the formatting of its new context, select Unformatted Text and click OK.

Write users can manually reformat text by choosing Character. Fonts, but this gets painfully slow if you're pasting a lot of special characters. Here's a solution: At the end of your document, create one line in each font you'll want for imported text. Then when you need, say, a Wingdings

character, just jump to the end of your document and paste the character in the Wingdings line. Select it and choose Edit-Cut (or press <Ctrl>-X). Then move to where you want the character and paste it again—and enjoy a real change of paste.

### THE ROOT OF THE PROBLEM IN CALCULATOR

IF YOU USE the Windows Calculator program, you may have been stymied (and surprised) by its lack of a square root button in Scientific mode. To see what I mean, launch Calculator and choose View-Standard. The sqrt button is plainly visible near the upper right corner. But choose View. Scientific, and the button disappears. The problem and solution are the same in both the Windows 3.1 and Windows 95 versions of Calculator. Although it requires a few more keystrokes or mouse clicks, you can still calculate a square root in Scientific mode without jumping through too many hoops.

First, enter as you usually would a number for which you need the square root. Then select the Inv check box and click the  $x^2$  button. For the keyboard equivalent, press I followed by @. If that's too many keystrokes, you can always use Windows Recorder in Windows 3.x to shorten the steps to a single function key.

## Divide Your Desktop, Boot Directly to DOS

IF YOUR WINDOWS 95 Desktop is a mess of files, folders, and Shortcuts, create wallpaper that divides the Desktop into useful categories-inbox, outbox, or whatever you want (see FIGURE 1).

To create wallpaper that fills your screen, you first need to know the size of your Desktop (this is also known as your screen resolution).

Right-click the Desktop and choose

Properties. Click the Settings tab, and in the Desktop Area look for the line that says something like "800 by 600 pixels" or "1024 by 768 pixels." Make a note of these numbers, then click Cancel.

Next, start Paint and choose Image. Attributes or press <Ctrl>-E. Then, under Units, click Pels.

In the Width and Height boxes, type, in the same order, the numbers you saw in the Desktop properties sheet.

> The next step is to divide up your canvas, creating circles, boxes, or other delimiters, using the appropriate Paint tools. Use the text tool to label your categories.

> When you're finished, go ahead and save the file, and then choose File-Set As Wallpaper (Centered).

Exit Paint and move your icons into the proper locations. Voilà! Now all you have to do is remember to keep this desk clean.



FIGURE 1: ORGANIZE YOUR WINDOWS 95 DESKTOP with creatively compartmentalized wallpaper.



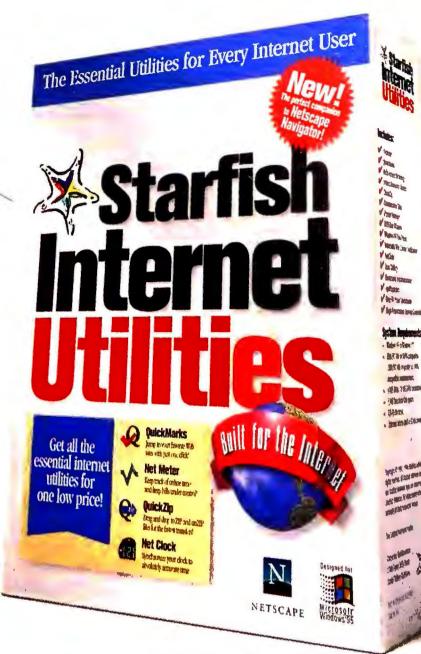
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### **CUSTOM START-UPS**

IF YOU FIND yourself switching to MS-DOS mode as soon as you start Windows 95, you can avoid the agonizing wait while Windows loads and boot directly to DOS by editing the msdos.sys file. You can make Windows start in MS-DOS mode, start with your previous version of DOS, or start with a menu of options.

Pretty handy, yes?

Here's how: First, using My Computer or Explorer, find a file called msdos.sys in the root (the topmost folder) of your C: drive. (If you don't see it, choose View Options, select the View tab, then click Show all files and then OK.) If you're using DriveSpace or other disk compression software, you'll need to find the version of this file that's on your host drive (E:, H:, or some other drive letter in Explorer or My Computer).

Once you've found the file, safeguard it by making a backup copy.

Next, right-click msdos.sys and choose Properties (or select the file name and press <Alt>-<Enter>). Uncheck the Readonly check box and click OK. Right-click msdos.sys and choose Open With. Select Notepad or another text editor from the list, and click OK.

Once inside, take a look around. Find the [Options] line; you'll make all your changes underneath this heading.

Don't mess with the series of

'xxx...' lines you'll find at the bottom of the file; they ensure that the msdos.sys file is large enough for applications that expect it to be at least 1024 bytes.

Look for a line that begins Boot-GUI=1. To force Windows into MS-DOS mode, change this line to read BootGUI=0. If you don't see the Boot-

GUI=1 line, go ahead and add a line that reads BootGUI=o.

C. Omit tasicher entre

Now, when you switch on your machine, Windows will start in MS-DOS mode. When you want Windows 95, just type win at the DOS prompt.

However, if you upgraded from DOS or Windows 3.x and want to start in your previous version of DOS, add a line that reads BootMulti=1 to msdos.sys. Thereafter, press-

### **Hide Background Applications**

ICON CORRAL 2.0 lets you designate which applications should be hidden from the Taskbar and the <Alt>-<Tab> list, placing the application's icon in the "tray" area of

> the Taskbar instead. Price: \$5. Available on PC World Online as iconcor2.zip.

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ing <F4> when you see the 'Starting Windows' message on your screen will make your PC boot to your earlier version of DOS. If you need to change

these settings once you're in your old DOS, you'll have to edit msdos.w40 (not msdos.sys).

If you just want to see the menu of possible start-up options when you turn on your computer, add the line BootMenu=1 to msdos.sys. This will make the menu appear for something like 30 seconds when you start up your PC.

If you don't press a key, Windows 95

will start in the normal way. If you can't see the menu because of the Windows start-up graphic, add a line that reads Logo=0.

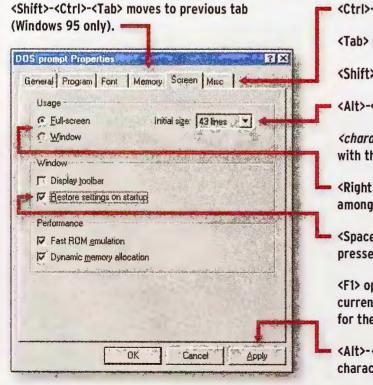
If you don't want the menu to appear automatically, add the BootMulti=1 line as instructed above and then press <F8> to make the menu appear when your screen says 'Starting Windows'. If you don't press a key, Windows 95 will start.

When you have tweaked msdos.sys to your liking, reboot your computer and see Windows start the way you want.

If anything goes wrong, restore msdos.sys from the backup copy and try again if you've got the patience. But if everything's set correctly, you'll finally be able to open Windows in the way that you desire.

### STEP BY STEP

### Navigate Dialog Boxes Faster Using Keystrokes



<Ctrl>-<Tab> moves to next tab (Windows 95 only).

<Tab> moves to next option.

<Shift>-<Tab> moves to previous option.

<Alt>-<Down> opens a selected drop-down list.

<character> moves you to the first item starting with that character in a list.

<Right> and <Left> or <Up> and <Down> switch among option buttons or move through a list.

<Space> checks or unchecks a selected box or presses the current button (in dotted outline).

<F1> opens a "What's This?" explanation for the current option (Windows 95 only) or a help window for the entire dialog box.

<Alt>-<character> selects the option with that character underlined.

STANDARD KEYBOARD SHORTCUTS work in most applications for Windows 3.x and Windows 95.



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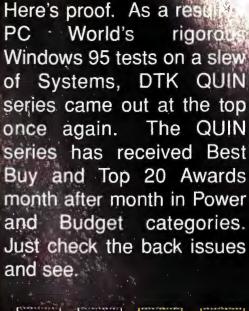


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### Watch Who Uses Your PC, Ax Toolboxes in Norton

IF YOU'RE USING WINDOWS 3.x on a network, you may share one or more of your directories with others in your workgroup. Ever wonder who among them is using your files? That information is just a few keystrokes away.

WINDOWS 3

In File Manager, select any directory with the shared-directory icon (a hand holding a folder) or any file within a shared resource, and press <Alt>-<Enter> to see its properties. Click Open by or press <alt>-0. The Network Properties dialog box</a> (see FIGURE 2) shows the share name of the resource (the name under 'On Share'), which files are open, who opened them, and each user's access level (for example, 'Modify'). You can also see, under 'Open Count,' how many times a file has been opened in the current Windows session.

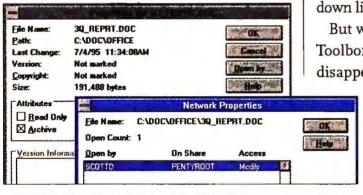


FIGURE 2: WHO'S USING YOUR FILES? Take a peek with the Network Properties box in the Windows 3.1 File Manager.

If you don't want your cohorts using one of these files, select it and click Close Files. However, you should use this drastic measure only as a last resort, as it could cause the current user to lose information that has not yet been saved.

### **UNBUTTONING NORTON'S QUICK ACCESS GROUPS**

THE NORTON DESKTOP for Windows 3.x has a nifty space-saving feature that lets you turn your Quick Access groups (the equivalent of Program Manager groups) into toolboxes. Application icons will then

appear as buttons without the usual (and often redundant) text underneath.

To implement this feature, just double-



FIGURE 3: TIRED OF TOOLBOXES? Change Norton Desktop Quick Access groups with a command that's hidden on the Control menu.

click the icon of the group you want to open and choose Options. View Group As. Select Toolbox from the resulting dropdown list, and click OK.

But what if you change your mind? In Toolbox view, the menu for your group disappears, leaving you to wonder how

you can ever get it back.

In Toolbox view, the View Group As command is on the control menu. Just click the control menu box, choose View Group As, and change to a less crowded view of your icons (see FIGURE 3).

To make all groups appear in the same view (List, Icon, or Toolbox), check Change All Groups in the View Group As dialog box; then click OK.

Next month: Windows NT tips.

Find files from this article and additional tips at http://www .pcworld.com/windows.html. Contributing Editor Scott Dunn is a principal author of the PC Bible, 2nd Edition (Peachpit Press, 1995, 800/283-9444). Windows welcomes your tips and questions and pays \$50 for published items. See page 12 for contact information.

### Clean Up After Deleted Apps

I uninstalled CorelDraw in Windows 3.x, but in my word processor I still see 'CorelDRAW! Graphic' on the list of

possible objects to insert. How do I remove it?

Terry Chow, Internet

If you merely delete the directory in which you installed an application, you've only partly removed that software from your system. Chances are, files still lurk in Windows' system directories. The only foolproof method of ridding your system of an app is to contact the manufacturer for a complete list of files to remove (and who has time for that?). Otherwise, you must guess which files belong to the application-and should save backup copies of the files you remove in case you guess wrong.

In your case, you need to remove Object Linking and Embedding information, which is often stored in two places, the infamous win.ini file and the registration database.

Here's the remedy. Make a backup copy of the reg.dat and win.ini files in your Windows directory. (Use these backups to restore the files if problems crop up.) Next, start the Registration Info Editor: Choose File Run in Program Manager or File Manager, type regedit, and click OK. The window displays a list of file types; you should be able to spot the same words that you see in your word processor's Insert Object dialog box (in your case, 'CorelDRAW! Graphic').

Select the file type and choose Edit Delete File Type, or just press < Delete > and click Yes to confirm the deletion.

That should fix up your word processor; you may need to restart it to see the change. But other information is probably still lurking in win.ini. To open win.ini in a text editor, choose File Run in Program Manager or File Manager, type win.ini, and click OK. Search for the [embedding] heading and find a line that refers to your application (in CorelDraw's case, the line begins with CDraw=). You can delete the line or, if you're afraid you might need it again, just put a semicolon at the beginning of the line to disable it.

That takes care of OLE, but while you're in win.ini, it's a good idea to look in [extensions] or other areas for additional references to your defunct software. Try searching for the program's executable file name or old file extension and disable or delete those lines as well.

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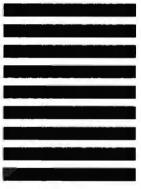
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## Save Web Pages, Open Multiple Documents

### WORD PROCESSING GEORGE CAMPBELL

WEB PAGES ARE simply ASCII text files with embedded HTML codes. When you want to send the text of a Web page as an e-mail message or use it for some offline purpose, you need to save the file to disk, then strip out all of its HTML codes. You can remove the codes using any of today's word processors, but each program requires a different technique.

FIGURE 1 illustrates how to save a Web page in Netscape Navigator, then how to

strip its HTML codes in Word, WordPerfect, and Word Pro. (See "Saving Web Page Info to Disk," in February's Online for instructions on saving an HTML document to disk.)

In Word 6.0 for Windows and Word 7.0 for Windows 95, you must use the Pattern Matching feature in the Replace dialog box to replace the codes, but the process is far from intuitive. Here's how to remove the codes in both versions of Word:

- 1. Select File Open, select All Files in the 'Files of type' drop-down list, and open the HTML document you want to strip.
- 2. Select Edit Replace. In the Replace dialog box, type \<\*\> in the Find What box, check the Use Pattern Matching box, and click Replace All. After all the codes are removed, you may have to delete a few excess blank lines.

In WordPerfect 6.1 for Windows, you can't automatically strip out all HTML codes; Word-Perfect just can't handle punctuation in a search. But you can get rid of most of the codes, leaving just a few to remove manually:

- 1. Select File Open, choose All Files (\*.\*) in the List Files of Type drop-down list, and open the HTML document.
- 2. When WordPerfect prompts you to select a file type, choose ASCII (DOS) Text in the Convert File Format From dropdown list, then click *OK*.
- 3. Select Edit. Find and Replace. Type < in the Find box, then select Match. Codes.
- 4. In the Codes dialog box, choose
- \* (Many Char) from the Find Codes list, then click Insert and Close.
- 5. Type >, and then click Replace All. Confirm that the 'Replace With' line says

'<Nothing>', then click Close.

This will remove most of the HTML codes from the document. You'll have to delete any remaining codes or blank lines from the file manually. When you're done, save the document with a new file name. choosing ASCII (DOS) Text (\*.\*) in the Save File as Type list.

If you use Word Pro you're in luck: Word Pro can open and edit an HTML file directly. The text of the file looks the same in Word Pro as it does on the Web-formatting and all. As a result, you just have to save the document in ASCII format to remove the HTML codes from the file.

- 1. Select File Open, select HTML (\*HTM) from the Files of type drop-down list, and open the HTML file.
- 2. Once the file has finished loading, select File. Save As, enter a new name, and select the Text-ASCII (DOS) (\*.\*) file type. The resulting file will be clean as a whistle, with no HTML codes at all.

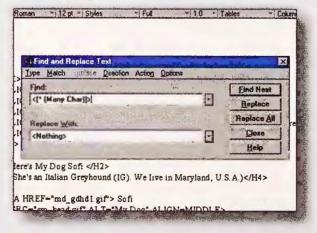
### STEP BY STEP

### Strip HTML Coding From a Page on the World Wide Web

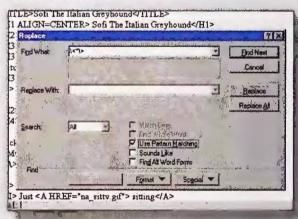
In your Web browser, select File • Save As and select HTML as the Save As type.



In WordPerfect, you can use Find and Replace to get rid of most codes, but you'll need to remove some manually.



In Word, use Pattern Matching to replace HTML codes with blanks.



In Word Pro, open the file as an HTML file type, then simply save it as an ASCII file. The HTML codes are stripped from the file automatically.

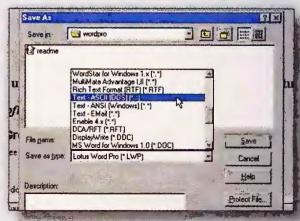


FIGURE 1: WANT TO USE WEB PAGE TEXT FOR OFFLINE PURPOSES? Word, WordPerfect, and Word Pro can strip any Web page of all its HTML codes.

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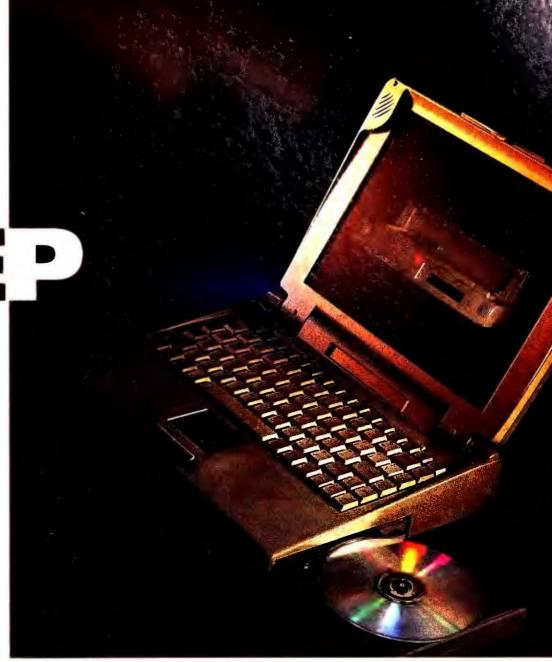
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### **OPEN MULTIPLE DOCUMENTS** IN ONE PASS

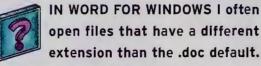
IT'S OFTEN HANDY to open multiple documents in a single operation. Fortunately, in all the current word processors, this is a snap. After selecting File Open, hold down **<Ctrl>** as you click each file you want to open. Then click OK or Open to open all the documents simultaneously, each in its own window.

### **CHANGE WORD'S DEFAULT FONT** AND TYPE SIZE

MANY WORD USERS OVERLOOK an easy way to change the default font and type size for their documents. While you could make these changes in the normal.dot template, it's usually quicker to open a new document, select Format. Font, choose a font and type size in the Font dialog box, then click Default. Click Yes when asked to confirm the change.

Contributing Editor George Campbell is a contributor to The PC Bible (Peachpit Press, 1995, 510/548-4393).

### Show All File Types by Default in Word's File Open Dialog Box



While it's not a lot of work to drop down the file types list to choose All Files (\*.\*), it's annoying to have to do it almost every time I start Word. I haven't been able to find a way to change this default. Can you help?

> Arden Wilson, Vancouver, British Columbia, Canada

YOU CAN ALTER this dialog box, but you'll have to create a WordBasic macro to do it. Here's how in both Word 6.0 and 7.0:

- 1. Start Word, then select Tools Macro.
- 2. Type FileOpen in the Macro Name text box, then click Create.
- 3. You'll see a few lines of macro code in the editing window. Select and delete all the existing code.
- 4. Type the macro shown in FIGURE 2 exactly as it appears. Don't forget the quotation marks in the fifth line.
- 5. Select File Save All and click Yes when

asked if you want to save the changes.

6. Close the macro window.

The next time you use the File Open command, Word will show you all files, rather than just the standard .doc files.

If you made a typing mistake in your macro codes that causes the File Open command not to work, or if you later decide that you want to go back to the original defaults, just select Tools • Macro, choose the FileOpen macro you created, then click Delete, Yes, and Close. The next time you load Word, the File Open dialog box will return to its normal operation.

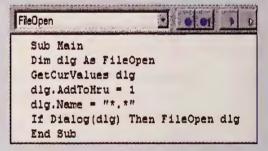


FIGURE 2: DISPLAY ALL FILE TYPES in Word's File Open dialog with this macro.

# Calculating Dates, Displaying Minimums

SPREADSHEETS RICHARD SCOVILLE

LET ME START off with a big "thank you" this month to all you readers. Your constant, gentle bombardment of questions, suggestions, and tips has taught me an enormous amount about spreadsheets and is the source of the information I pass along every month.

Here's a jewel submitted by Shane Devenshire of Walnut Creek, California, easily the most prolific of all PC World spreadsheet tipsters:

Regular spreadsheet date serial numbers are integers that represent the dates between January 1, 1900 (day 1) and December 31, 2099 (day 73,050). September 1, 1996, then, is day 35,309. Many

businesses, however, need to know a date's number within a year: While January 1 is day 1, September 1 is either day 244 or day 245, depending upon whether it's a leap year, and so on.

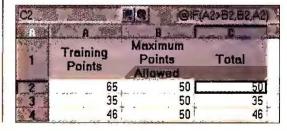
This Excel formula converts a date serial number in cell A1 into the day of the year: =int(mod(A1-1,365.25)+1). The mod() function calculates the remainder (modulus) when one number is divided by another, so dividing a date value by 365.25 gives the number of days since the beginning of the current year. (Subtracting one from the year value and adding it back to the modulus prevents the last day of the year from appearing as zero.)

If you're using Quattro Pro or 1-2-3, enter the following formula: @int(@mod(A1-1,365.25)+1). If you're working in 1-2-3 release 5, you can enter this special calendar function to return the number of the day within the year: @dateinfo(A1,12).

### A MINIMALIST APPROACH TO MAXIMUMS

READERS OFTEN COME up with better solutions than I do. In March I answered a question from a reader who wanted to report employees' training credits up to a maximum of 50 credits a year. I gave a rather complicated solution that involved an @if function, illustrated in the figure below. (See "Creating If-Then Formulas," Spreadsheets, March.)

Abderrahim Bouazza of Rabat, Morocco suggested a much simpler approach: If the employees' actual credits are in cell A2, the formula @min(A2,50) yields the credits up to a limit of 50.





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### **Recording Sheet Names** in Excel Worksheets

I'M USING EXCEL 5.0, and I'd like to display the name of the current sheet (the name that appears on

the sheet tab at the bottom of the screen) in a cell in the worksheet. Got any ideas?

Michael Poirier, America Online LOTS. I'VE BEEN looking for a good excuse to show how to build custom Excel functions, and since there's no built-in Excel information function that returns the current sheet name into a designated cell, I guess this is my chance. You can store your new function in a personal macro workbook so that it's available for any workbook, and you can include it in the Function Wizard with the other information functions. Just follow the steps outlined below and illustrated in FIGURE 3. 1. If you have a personal macro workbook, unhide it so that you can add your new function to it: Select Window. Unhide, select the file personal, and click OK.

If you don't have a personal macro workbook (the Unhide option will be grayed out), start in a blank worksheet; you'll create a personal macro workbook with the following steps.

- 2. Create your custom function by selecting Insert. Macro. Module, and entering the macro shown in the figure.
- 3. Add your new custom function to Excel's list of regular functions: Select Tools. Macro, select SheetName, and click Options. In the Macro Options dialog box, enter the following in the Description field: Returns name of the worksheet where reference is located. Otherwise, returns active sheet. In the Function Category field, select Information from the drop-down list. The Function Category determines where your macro will show up in the Function Wizard, and the Description is the text that will appear when you select the function in the wizard's list. In the Status Bar Text field, enter Name of active sheet, then click OK and Close.
- 4. Now, hide and save your personal macro workbook: Select Window. Hide to hide the workbook, then exit from Excel. whereupon Excel will prompt you to save the hidden workbook. If you started with your personal.xls, just confirm the save. If you started with a blank sheet, navigate to your Excel\Xlstart directory and save the

file as personal. Because files in this directory are opened automatically whenever you start Excel, your function will be available for use in all future workbooks.

5. When you're ready to use your new function, select Insert • Function. In step 1 of the Function Wizard, select Information in the Function Category list, select personal.xls!SheetName in the Function Name list, and click Next. In step 2, enter a cell address in the 'reference' field and click Finish. Excel returns the name of the current sheet in the active cell. To get the name of a sheet other than the current one, in step 2 enter sheetx!a1, where sheetx is the name of the other sheet.

To bypass the Function Wizard, just enter the formula =personal.xls!sheetname(A1) in a cell in the worksheet where you want the sheet name to appear. Excel will return the name of the current sheet. To return the name of another sheet in the current workbook, enter the formula =personal.xls!sheetname(sheetx!A1), where *sheetx* is the name of the other sheet.

Contributing Editor Richard Scoville is a software training consultant in Chapel Hill, North Carolina.

### STEP BY STEP

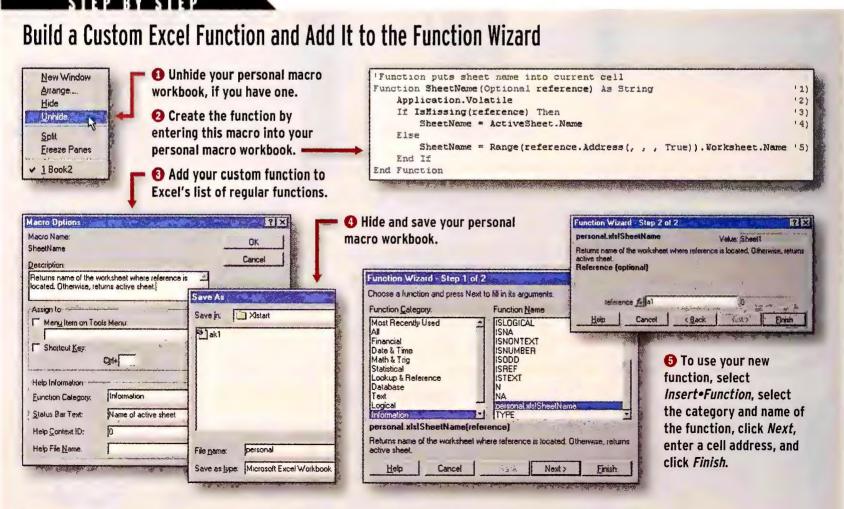


FIGURE 3: CREATE THIS FUNCTION TO RETURN THE CURRENT SHEET NAME, and add it to Excel's other information functions.

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# Search an Access Database for Two Words at Once

BY CELESTE ROBINSON

WHEN YOU WANT to search an Access database for all records that contain a specific word—say, pepper—the Edit•Find command is fine. But if you want records that contain both pepper and fiery, you need a query. Here we create one that lets us search for two words. We'll attach the query to a search form, where you enter the words, and a display form to show the records. The steps are shown in **FIGURE 4**. 1. To create the query, open the sample Northwind database, click the Queries tab, then click New. Leave Design View highlighted and click OK. In the Show Table dialog box, double-click Products and click Close. In the Query window, click and drag the \* under Products in the top half of the window to the Field row of the first column in the query grid. Click and drag the ProductName field to the second column of the grid and uncheck its box in the Show row. In the Criteria row for ProductName, type Like "\*" & [Forms]![Find Products]![Word 1] & "\*" And Like "\*" & [Forms]![Find Products]![Word 2] & "\*". Save the query as Find Products.

2. Now we create the display form. You can copy an existing form or design a new one. Here, we'll revise the Product List form. In the Database window, click the Forms tab, highlight Product List, and click Design. Right-click the title bar of the form and click Properties. Click the Data tab in the resulting dialog box to show the Record Source property. From the Record Source menu, select the Find Products query we created earlier. Close the form and save your changes.

3. Now you're ready to create the search form. In the Database window, click the Forms tab, then click New. Leave Design View highlighted and click OK.

Next, click the Text Box tool in the Toolbox and use it to add a text object to the

form. Right-click the new object, choose Properties, click the Other tab, and change the Name property to Word 1. Right-click the label box to the left of the object, choose Properties, click All, and change the Caption property to First word. Click the text box again and choose Edit-Duplicate. Change the Name property to Word 2 and the Caption property to Second word.

In the Toolbox, click Command, then draw a button under the text objects. In the first step of the Command Button Wizard, click Form Operations in the Categories list, and click Open Form in the

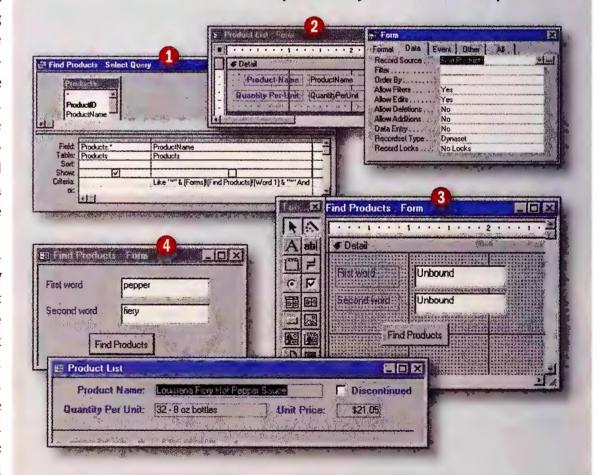
Actions list, Click Next, select Product List for the form you want the button to open. and click Next. For the third step, click Next. In the fourth step, click Text, enter Find Products for the button's label, and click Next. In the final step, enter Find Products for the button's name, and click Finish. Save the form as Find Products.

4. To use your new search form, click the Forms tab in the Database window, select Find Products, and click Open. Type the words you want to search for and click Find Products. The matching records will appear in the form you created in step 2. ■

Contributing Editor Celeste Robinson is coauthor of Mastering Paradox 7 for Windows 95 (Sybex, 1996, 800/227-2346). Application Tips welcomes your questions and tips and pays \$50 for published items. See page 12 for contact information.

#### STEP BY STEP

### Perform Multiword Searches by Creating an Access Query



- Occupant Control of the Control o
- 2 Create the Product List display form and attach the Find Products guery.
- 3 Create the Find Products search form and attach the Find Products query.
- 4 To search for records, type the words you want to search for and click Find Products. The matching records are displayed in the Product List form designed in Step 2.

FIGURE 4: SEARCH AN ACCESS DATABASE FOR OCCURRENCES OF TWO WORDS by creating a query and then attaching it to a search form and a display form.

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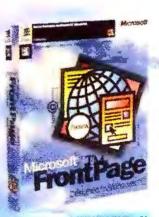




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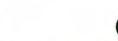
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YOU'D LIKE TO POST LOGOS for NFL teams or NASA missions on your Web pages. Or you'd like to add digitized photos from a newspaper's sports pages or plays captured from TV with your video card. Your friends, however, tell you that you can't. Are they right?

I hate to say it, but people like you are becoming a nuisance to corporate America-although not to the lawyers who are doing brisk business stamping out unauthorized trademarked and copyrighted material popping up on the Web.

The National Football League Properties has been cracking down on overzealous football fans who put NFL intellectual property on their Web pages. Such items include trademarks and logos of the NFL and its teams, plus copyrighted photos, videos, and even pictures of uniforms and helmets.

"We're excited that our fans are putting the NFL on the Internet, but the NFL must still protect its trademarks," says spokesperson Brian McCarthy.

Why can't the NFL let sports fans post its shield and other folderol on their pages? For one thing, the NFL doesn't want football fans to think these pages are officially sanctioned. Also, if the NFL doesn't actively protect its trademarks and copyrights, they fall into the public domain. Then anyone is free to print NFL logos on anything—T-shirts, footballs, toilet paper—and the NFL won't be able to collect those lucrative licensing fees.

The NFL Properties' law firm has been sending letters to Web page owners asking them to remove NFL trademarks and copyrighted material from their pages. So far, they say, most people have complied. You can find the NFL's cyberhome at Team NFL (http://www.nflhome.com/).

What can you put on your Web page without invoking a legal firestorm? First, if you want to post something on your page that you think may be copyrighted or trademarked, always ask permission (see the chart below). If you're not sure, ask anyway. Some companies and organizations have put images on their Web sites that the public is free to download. But there are often rules for posting them.

For instance, NASA has an enormous library of photos online (http://www.hq .nasa.gov/office/pao/Library/photo.html). While anyone can download images of a shuttle and post them on a Web page, NASA asks that page owners refrain from posting photos of astronauts, for that might constitute a violation of the astronauts' privacy. NASA also asks that Web page owners refrain from posting any NASA emblem or logo on their pages.

Of course, you can always post those pictures you draw in your paint program.

#### **DECODE CRYPTIC INTERNET ERROR MESSAGES**

FED UP WITH UNINTELLIGIBLE error messages like 'DNS Lookup Failure'? Head to one of the major Web search engines like Excite (http://www.excite .com/). Type the error message in the 'What are you looking for?' box, and select the Web and by concept in the Search boxes. Chances are good that your search will turn up a Web site that offers an explanation of the error.

#### **DISARM HACKERS**

ALWAYS RUN THE LATEST version of any Internet software, be it a browser, e-mail, or FTP server. Alert vendors are always updating their products to patch security holes. And hackers rely on users who don't update their software.

#### **PREVENT JAVA SPILLS**

I'VE HEARD THAT since Java works by downloading programs to your Web browser, it's intrinsically

insecure because a computer virus could be hidden in a downloaded program. Should I disable Java in my browser?

Connie Kerry, Rockford, Illinois JAVA IS ONE of the hottest things to happen to the Internet. It's a programming

language used by Web developers to add animation and other special effects to their pages. You can even use Java to create fullblown applications such as spreadsheets. But in order to see these effects or access Java-built programs, you have to employ a Java applet that runs on your computer.

And yes, that applet could be harboring a virus.

That possibility is a very big concern to the programming language's developer, Java Soft, a business unit of Sun

#### Webmaster, Beware! Putting Copyrighted Material on Your Page Is Illegal

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Logos of companies, sports teams, products, and charities; comic strip characters; faces or images of celebrities, which can include items like the starship Enterprise and the Batmobile.

Art and photos from books, magazines, company brochures, greeting cards, newspapers, comic strips, CD-ROMs, and other Web pages, even if you alter them.

Single frames, animation sequences, and sound bites from movies, TV, radio, audio CDs, and rented or purchased videos, even if you edit or alter them.

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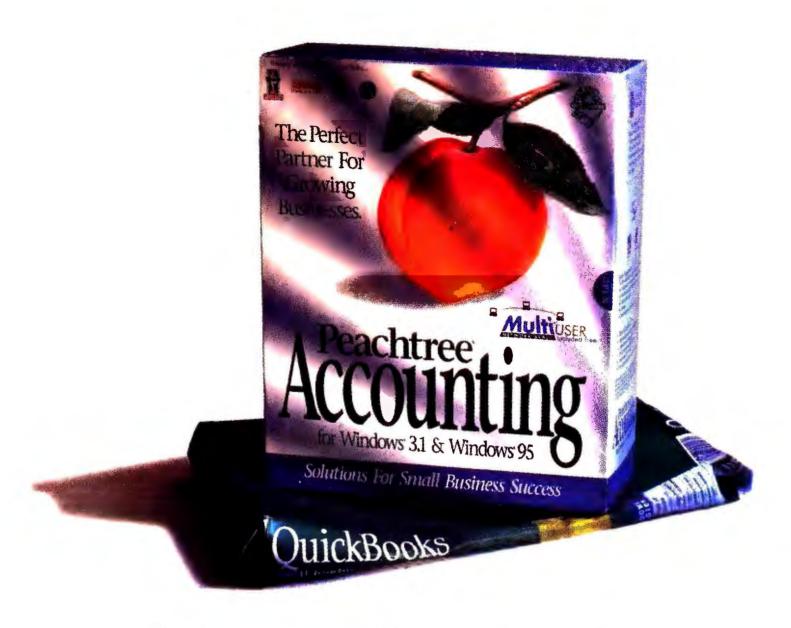
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They're copyrighted. Even if, as one sports fan argued, "the pictures fly through the air, so they have to be free," they're still copyrighted.

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Microsystems. "We worry a lot about security," acknowledges Benjamin Renaud, a staff engineer for Java Soft. "But Java is probably more secure than most things on the Internet."

Built into Java is a "security manager" that prevents Java applets from performing any of a number of illegal acts, such as writing to your computer's hard disk or accessing a network server through a fire wall. That's the same sort of protection that a high-quality antivirus utility would provide on your system. And according to Renaud, the security manager makes Java safer than other browser plugins that also work by downloading programs off the Web.

He's probably right. But as one representative of Java Soft said, "There are never any guarantees." Many computer security experts are therefore recommending that Web surfers disable Java in their browsers.

There's another reason to consider disabling Java: Web developers are head over heels in love with it, but often use it only as eye candy rather than delivering what you really want to get from their sites. That can bring your Web access to its knees if you're dialing in.

If you have this problem, you can selectively disable Java support in your browser, depending on how you're getting to the Net, what sites you want to see, and how much time you have to spare.

#### Get Your Web Page Noticed

Publicize your Web page by heading to Submit It (http://www.submit-it.com/). Fill out a form with details about your page, and Submit It links you directly to each Web searcher,

one by one. They prompt you for additional information if any is required. And some give you immediate verification that your URL has been added to their database or has been added to their database of URLs to check.

Similar Web sites include the URL Register (http://www.mps .org/~mcampbel/html/register .url.html) and KeyComm (http: //www.nidlink.com/~keycomm/ urlsub.html).

#### **READ MAC FILES THAT FRIENDS SEND YOU**



A FRIEND WHO works on a Macintosh has been trying to send me word processing, graphics,

and sound files in standard formats. Theoretically, I should be able to read them on my PC. But after I download them, all I see is junk on my screen.

Angie Lueders,

Framingham, Massachusetts MAC FILES COME with headers of special file information that must be stripped before the file can be digested by a PC. Here's a tip: If you download a .gif file from the Web that you suspect may be a Mac .gif file, try opening it in your word processor. If the characters 'giffqgif' or 'bozo' appear near the start of the file, it's a Mac .gif.

Lots of free utilities are available online to strip Mac files of their headers. One is mb\_strip.exe, available on PC World Online. If you're a member of America Online, download from that service wmac2pc.zip for the Windows version of AOL (select Goto Search Software Libraries), or aomac2pc.zip for the DOS version. These programs strip headers from Mac files transmitted via AOL.

In addition to stripping headers from Mac files, you might also need to decompress the files. The Mac version of AOL uses a utility called StuffIt, the Mac equivalent of PKZip, to compress files. For instance, if you've tried to exchange a file with a Mac user via AOL, you've probably noticed that AOL's software com-



#### Online White Pages Track **Phone Numbers Nationwide**

In response to the item "Tracking Down Lost Friends and Family" in April's Online column, several readers recommended Switchboard (http://www.switchboard.com/). This handy site lets you look up phone numbers plus street and e-mail addresses for people and businesses around the country.



presses the file in such a way that your Windows or DOS AOL software can't read it. If a Mac file name ends with .sit. then you know it's been "stuffed." To remedy this, download the free StuffIt Expander by Aladdin Systems, the makers of StuffIt. Look for the file sitex10.exe on PC World Online.

Also, if you've received sound files from a Mac user, you'll need to run them through a third utility to convert them to popular PC sound formats. To convert those Mac .snd files to Windows .wav files, download snd2wav.zip. To convert .snd files to Sound Blaster .voc format, download snd2voc.zip. Again, these files are available on PC World Online.

Finally, don't forget to shorten the name of the Mac file. Unless they're running Windows 95, PCs don't tolerate long file names as Macs do.

Find files from this article and additional tips at http://www.pcworld .com/hereshow.html. Internet Tips welcomes your questions and tips and pays \$50 for published items. Judy Heim is a contributing editor for PC World and author of Internet for Cats (No Starch Press, 1995, 800/420-7240). See page 12 for contact information.







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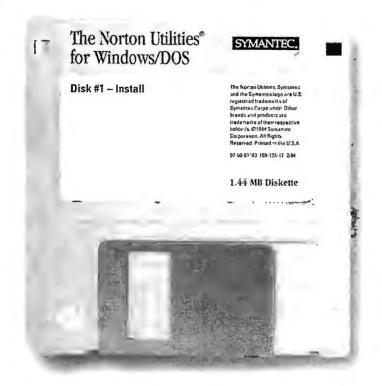
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# Fixing What IRQs You

YOU MIGHT THINK that installing an expansion card is easy, especially after hearing all the hype about Windows 95's Plug and Play. Unfortunately, Plug and Play isn't necessarily playing in your neighborhood-mostly because PnPcompatible systems and peripherals are still in the minority, and Plug and Play needs both in order to work.

When you install an expansion card, the most likely problem you'll encounter is a hardware interrupt conflict. Every PC has 16 interrupt request lines, or IRQs—special channels to the CPU used by various devices in your system to get the CPU's attention. Normally when any two devices try to use the same IRQ, either your com-

IRQ	Device
0	System timer
0	Keyboard
2	Programmable interrupt controller
3	Second serial port (COM2)
4	First serial port (COM1)
5	Second printer port (LPT2) or sound card
6	Floppy disk controller
0	First printer port (LPT1)
8	System CMOS/real-time clock
9	Free
10	Free
0	PCI bus (typical)
12	Free (or PS/2-compatible mouse)
13	Math coprocessor
14	Primary IDE hard disk
B	Secondary IDE hard disk (or CD-ROM drive

FIGURE 1: AVOID INSTALLATION HASSLES by minding your IRQs. When you install an expansion card, it probably can't use the IRQs in red, since they're almost always used by the motherboard. A typical system with a printer, sound card, and CD-ROM drive also uses the IRQs in blue, although these devices can generally be disabled in the CMOS setup or shifted to another IRQ.

puter won't boot or the device won't work properly. (There are exceptions: The PCI bus lets more than one device use a single IRQ, and a chain of SCSI devices can use more than one, too.)

So how do you avoid IRQ conflicts? It should take just two steps. First, find out which IRQ is taken by each device in your system. Second, when you install a new device, set it to an IRQ not currently used (by flipping a switch, moving a jumper on the card, or running a utility that comes with the card).

But finding out how your system currently allocates IRQs is not necessarily simple. Microsoft's MSD (which comes with DOS and Windows 3.x) and a number of other diagnostic programs claim to give you accurate IRQ information. And many expansion cards come with a diskbased routine that you run before you install the card to determine the available IRQs. Unfortunately, neither method is particularly reliable.

If you're running DOS or Windows 3.x, the easiest way to determine which IRQs are being used is to check the common IRQ assignments, shown in FIGURE 1. For other devices in your system, you'll have to consult the manual that came with the device. (Some expansion cards help out with a tiny list of jumper settings printed on the front or back).

Windows 95 users have it easier. Even without Plug and Play devices, you can get a reasonably accurate readout of the IRQs in use. Right-click My Computer, choose Properties, click the Device Manager tab, and double-click the Computer icon for a complete list, as shown in FIGURE 2.

Once you know what's allocated where, how should you assign your new device? Keep in mind the following points:

- 1. IRQ2 and IRQ9 are actually one IRQ. If you install a device on IRQ2, you can't use IRQ9, and vice versa.
- 2. Almost all systems allow you to turn off one or more of the COM1, COM2, LPT1,

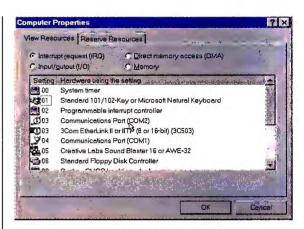


FIGURE 2: WINDOWS 95'S DEVICE MANAGER shows all IRQs in use on your PC.

and LPT2 ports using the system setup utility, which frees up the IRQ assigned to that port. By default, all the ports are generally turned on except for LPT2—not many people have a second printer.

- 3. IRQ5 is the most popular assignment for expansion cards. Sound Blaster cards, for example, grab it by default, although you can change the assignment.
- 4. This leaves IRQs 9 through 12 as the most likely free IRQs, although some systems use IRQ12 for a PS/2-compatible mouse (which takes the place of a serial mouse, freeing up a COM port).
- 5. SCSI cards generally give you a choice of IRQs 5, 10, 11, and usually a couple of other assignments.

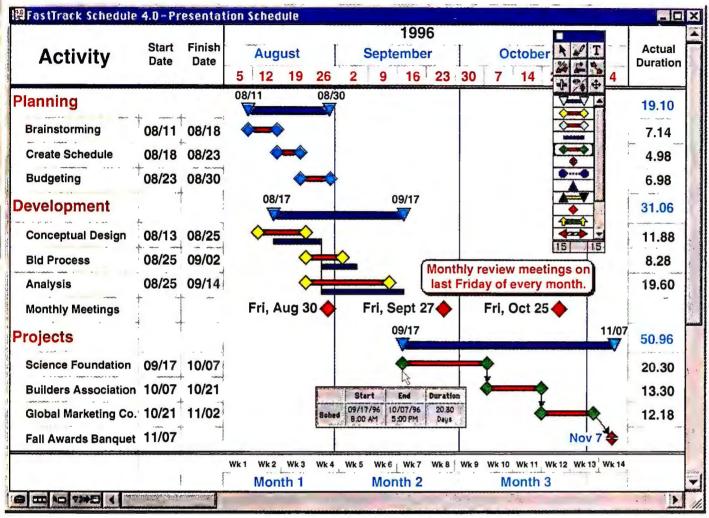
Is it possible to run out of IRQs? Yes, although it's rare.

You might try to get around this in PCI systems (virtually all Pentium PCs). Every PCI card shares the single IRQ that the system assigns to the PCI bus, typically IRQ11, so you might think that you could free up a couple of IRQs by installing more PCI cards and fewer ISA cards. But the graphics card and the hard disk interface typically are already on the PCI bus. And aside from high-priced PCI SCSI cards, few cards come in PCI flavors.

Not many people run up against the IRQ limit, but avoiding conflicts can be a hassle. Do yourself a favor and keep a written record of every IRQ taken by every expansion device in your system.

Eric Knorr is editor of The PC Bible (Peachpit Press, 1995, 800/283-9444). Hardware Tips welcomes your questions and tips and pays \$50 for published items. See page 12 for contact information.

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# Launch CD-ROMs Quickly, Swap Your Soundtracks

WINDOWS 95 INTRODUCED important enhancements for multimedia, not the least of which is the ability to play CD-ROMs and audio CDs automatically when you pop them in the CD-ROM drive. This AutoPlay is a godsend if you have kids who like CD-ROM-based games.

If AutoPlay doesn't work, first see if 'Auto insert notification' in the CD-ROM Settings sheet in Win 95's Device Manager is unchecked. But not every CD-ROM plays automatically. It won't if the program lacks a file called autorun.inf, which tells Windows which program to run.

Fortunately, one of Microsoft's nifty-butunsupported PowerToys utilities brings AutoPlay-like behavior to CD-ROMs that otherwise won't start up automatically. Autoplay Extender, shown in FIGURE 1, is a memory-resident program that watches your CD-ROM drive for new discs. When it encounters one that lacks autorun.inf in the root directory, it pops up a window that lists Shortcuts to the CD's programs.

Annoyingly, though, you must create these links, and the utility won't launch a default application automatically.

You can find CD AutoPlay Extender on Microsoft's PowerToys page (http:// www.microsoft.com/windows/software/powertoy.htm). Create a folder called

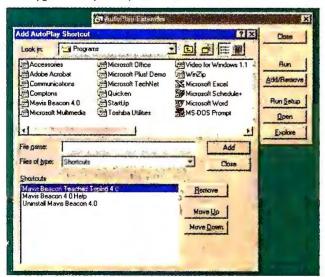


FIGURE 1: LAUNCH YOUR CD-ROM APPLICATIONS semiautomatically with AutoPlay Extender.

AutoPlay on your Windows desktop and download the self-extracting archive file aplay.exe to that folder. Open the AutoPlay folder, double-click the file aplay.exe, then right-click aplayext.inf and select Install from the menu.

You'll probably get an error message telling you to insert an AutoPlay disc. Just click OK to clear the error box, then in the next box, browse to the AutoPlay folder and click OK twice to complete the installation. After you restart your PC, inserting a non-AutoPlay-enabled CD-ROM will trigger the AutoPlay Extender interface.

Click the *Add/Remove* button to copy one or more Shortcuts to programs on the CD into the AutoPlay Extender dialog box (see Figure 1). Next time you insert the CD, the same box will pop up. To run a program, double-click its Shortcut, or click Run or press (Enter) to launch the program at the top of the list.

#### SWAP SOUNDS IN .AVI FILES

GOT AN .AVI VIDEO CLIP with a nice soundtrack you'd like to use elsewhereas the Windows startup sound, for example? Or found a clip that would be great in a presentation—once you replace the soundtrack with one of your own?

Free- and shareware video editors are

nonexistent as far as I know, with one exception: Microsoft's free VidEdit utility, part of the developers' edition of Video for Windows. You may be able to find this software on the Multimedia Jumpstart CD-ROM (although that product is officially discontinued) or in Sirius Publishing's 10 Pak. You might have better luck checking on Microsoft's FTP site for a developer's version of Video for Windows that includes VidEdit (ftp://ftp .microsoft.com/developr/drg/ multimedia/jumpstart/vfw11e/odk/

winvideo/). Download the directory's contents to a temporary directory, run the setup program, then restart Windows. The program will install and run under Windows 3.1 and Win 95.

To extract the .wav file soundtrack from an .avi clip and save it as a separate file, open the clip in VidEdit, select the beginning and end of the audio section you'd like to copy using the Mark In and Mark Out buttons (see FIGURE 2), choose File Extract, select Microsoft Waveform as the file type, enter a path and file name for the new file, then click OK.

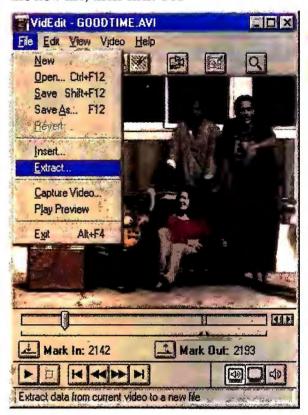


FIGURE 2: SNATCH SNIPPETS OF SOUND from .avi clips using the VidEdit utility.

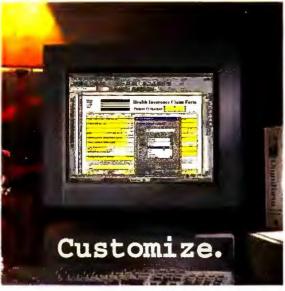
To see the new sound file in Windows 95's Control Panel Sound applet's default list, save it to the \windows\media directory. Select File Insert to add audio to .avi clips, but note that the new material will replace the existing soundtrack in the area selected by Mark In and Mark Out. To mix new and existing audio, first extract the soundtrack, use Windows' Sound Recorder's Edit-Mix with File command to blend new audio with old, then insert the new soundtrack into the .avi clip.

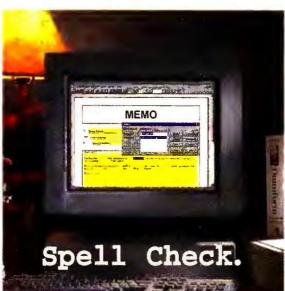
Scott Spanbauer is a PC World contributing editor. Multimedia Tips welcomes your questions and tips and pays \$50 for published items. See page 12 for contact information.



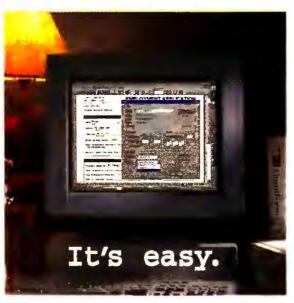


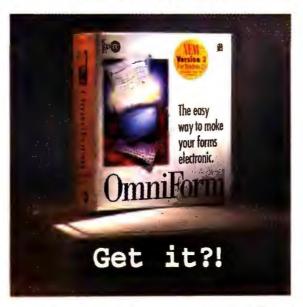












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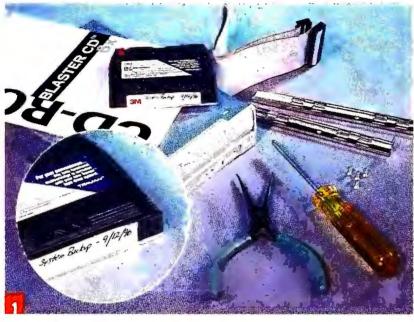
# Installing an Internal CD-ROM Drive

CD-ROM drives are becoming as essential as floppy drives for virtually all PCs. Even if you skip all those eye-popping games, it's getting harder to find applications on floppies. Today you can buy 4X CD-ROM drives for as little as \$70, and 6X. 8X. and even 10X drives are available at better-than-reasonable prices.

You don't need to be a rocket scientist to add one of the current crop of internal CD-ROM drives, whether you choose an Enhanced IDE or a SCSI model. Pictured here are steps for installing a new EIDE CD-ROM drive. Check PC World Online

(http://www.pcworld.com/hereshow.html) for more details plus information about adding a SCSI drive and advice on troubleshooting.

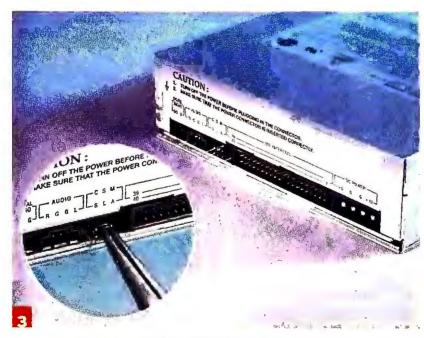
Contributing Editor Stan Miastkowski has been covering computers for 18 years.



Get ready. Check to see if your open 51/4-inch drive bay requires special rails to mount drives-systems from Compag, Dell, and other name-brand vendors might. Back up your hard disk and collect all the tools you'll need-usually a Phillips screwdriver and needle-nose pliers will be sufficient.



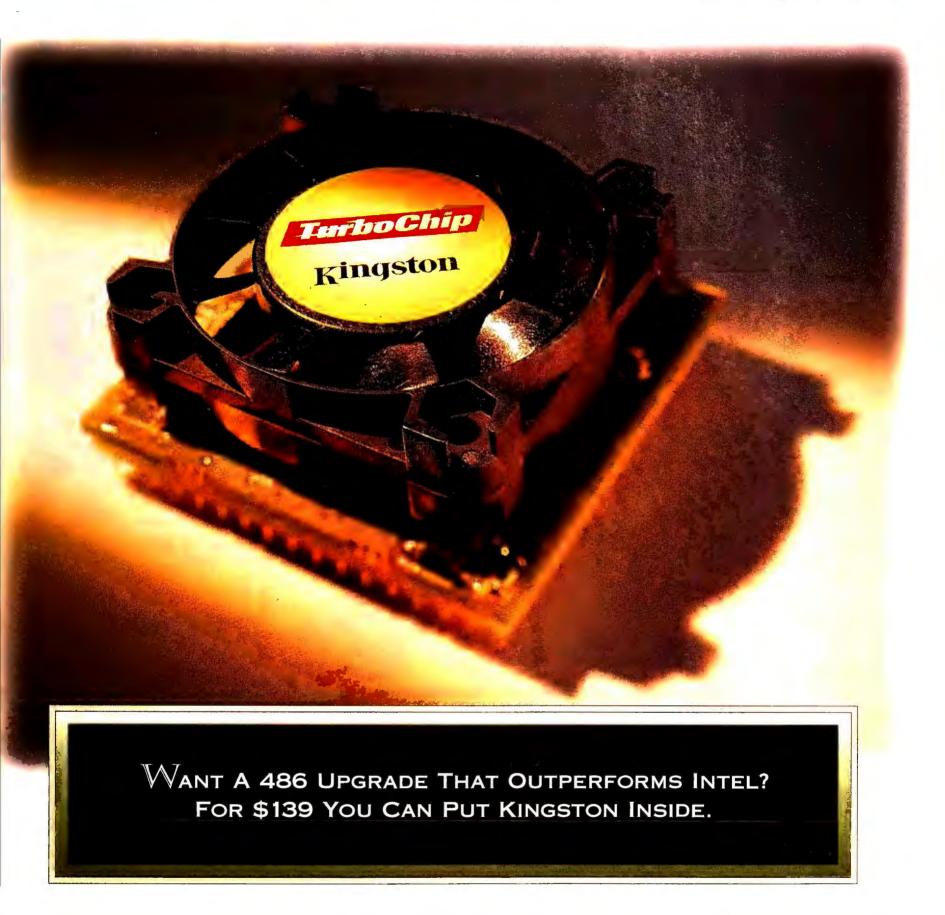
Check your connections. If your PC is less than two years old, the motherboard probably has two 40-pin EIDE connectors, with one plugged into the hard drive's cable. Don't use that cable for the CD-ROM drive. Use the cable that came with your CD-ROM drive (or buy a cable) and the free EIDE connector. PCs without EIDE connectors need an EIDE card (about \$25 if not bundled with the drive).



Show who's master. Check your CD-ROM drive's manual to set the jumpers or switches correctly. It should be master if the CD-ROM drive is the only drive on a cable, as we recommend.



Mount the drive and install the software. Find pin 1 on the EIDE connector. The data cable's red wire (inset) must connect to pin 1. Mount the drive. Connect the data cable, then the 4-wire power cable. If you have a sound card, connect the audio cable to the drive. Install the software that came with the drive, reboot, and put the cover on.



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Pentium 100 Pentium 100	11.3" Active SVGA 11.3" Active SVGA	8/810MB 8/810MB	2999 3149 *
Pentium 120	11.3" Active SVGA	16MB/1GB	4199 t
Pentium 120 Pentium 120	11.3" Active SVGA 11.3" Active SVGA	16MB/1GB 16M8/1GB	4199 * 4349 *
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Pentium 120	11.3" Active SVGA	8MB/1GB	3869*†
Pentium 120	11.3" Active SVGA	8MB/1GB	3999*††
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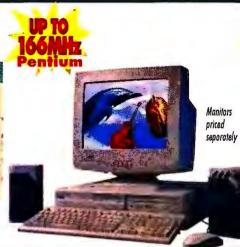
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### Advantage Adventure Multimedia

- 6X CD-ROM drive
- 6X CD-ROM drive with 3 disc CD changer (selected models)
- Advanced Telephony 28.8 data/fax/modem, telephone answering system and speaker phone (differs by model, call for details)
- Integrated 3-D surround sound (selected models)
- 64-Bit PCI Local bus graphics
- AST Works II navigation software featuring "SPOT"
- Enhanced IDE interface-fast disk performance
- AST Lifeline technical support

Processor	RAM/HD	CD-ROM	Price
Pentium 133	8MB/1.2GB	6X	\$1539
Pentium 133	8MB/1.2GB	6 X	1729
Pentium 133	16MB/1.2GB	6X	1699
Pentium 133	16MB/1.6GB	6X	1819
Pentium 150	16MB/1.6GB	6X	1859
Pentium 150	16MB/2.1GB	6Xt	2119
Pentium 166	16MB/2.1GB	6X†	2259
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# IBM Aptiva ■ 8X CD-ROM drive

- 28.8 data/fax/voice modem with telephony
- MPEG support with full motion video
- 16-bit WaveTable 3-D Surround Sound
- Comes with 40 software titles
- Up to 200MHz Pentium processors

Processor	RAM/ND	CD-ROL	Price
Pentium 120	16MB/1.6GB	8X	\$ 2149
Pentium 133	16MB/1.6GB	8X	2399
Pentium 166	16MB/2.0GB	8X	2799
Pentium 200	16MB/2.5GB	8X	3099
Pentium 200	32MB/3.2GB	8X	3499





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- 6X CD-ROM drive\*
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- \*4X CD-ROM on 7610

Processor	RAM/HD	CD-ROM	Price
Pentium 120	8MB/1.2GB	4X	\$1560
Pentium 120	16MB/1.6GB	6X	1850
Pentium 133	8MB/1.2GB	6X	1750
Pentium 133	16MB/1.6GB	6X	2050
Pentium 150	8MB/1.2GB	6X	1950
Pentium 150	16MB/2GB	6X	2340
Pentium 166	16MB/2GB	6X	2630
Manitars priced sepa	rately		.0

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Processor	RAM/HD	CD-ROM	Price
Pentium 133	16MB/1.6GB	6X	\$1899
Pentium 166	16MB/2.5GB	6X	2369
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36501 36503	Aptiva C33 P133 16MB/1.6GB 8X CD MT		24596	0
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36507	Aptiva C77 P200 32MB/3.2GB 8X CD MT			
	Packard Bell Platinum	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	25857	D)
34184	PLATINUM 40 P133 16MB/1,2GB 8X CD MT.	\$1,799.00	25858	D)
34185	PLATINUM 60 P166 16MB/1.6GB 8X CD MT.	\$2,199.00	25859	0)
34186	PLATINUM 70 P200 24MB/2.0GB 8X CD MT.		21396	M
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33565	Advantage 823 P133 8/1.6GBHD 6CD MT	\$1,849.00	2 <b>99</b> 29	M
33566	Advantage 824 P133 16/1.6GBHD 6CD MT			
33567	Advantage 826 P150 16/2.1GBHD 6CD MT		27642	N
33568	Advantage 828 P166 16/2,1GBHD 6CD MT , .	\$2,449.00	19722	NE
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33177	P120 8M8/810HD 12.1* SVGA TFT Win95		86793	NE
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32184	TM5300 P133 8/1.2GBHD 11.3" SVGA TFT		06676	Sc
32193	TM5200 P120 8/1.2GBHD 11.3" SVGA TFT		06677	Sc
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34812	C120T P120 8/1GBHD 11.8" SVGA TFT Win95		87296 23483	Vi
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23488 87295 29933 30812 30813 32078 32085 32086 32087 33328 33329	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **MODEMS** Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$235.98 \$269.98 \$165.98 \$165.98 \$1139.98 \$168.98 \$1139.98 \$168.98 \$1139.98 \$1139.98 \$1139.98 \$1139.98 \$1139.98 \$1139.98
23488 87295 29933 30812 30813 32078 32085 32086 32087 33328 33329 33331	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **Cardinal**  Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int. Total Internet Sol v/ACCURA 28.8 Ext. Total Gamling Sol w/ACCURA 28.8 Int OSVD. Total Gamling Sol w/ACCURA 28.8 Ext DSVD  **Motorola**	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$165.98 \$1151.98 \$188.98 \$151.98 \$244.98 \$244.98
23488 87295 29933 30812 30813 32078 32085 32086 32087 33328 33329 33331 33332	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  Cardinal Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Hayes Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Solution Accura 288 Int. Solut	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$235.98 \$269.98 \$168.98 \$168.98 \$188.98 \$188.98 \$151.98 \$244.98 \$268.98 \$375.98 \$59.98
23488 87295 29933 30812 30813 32078 32085 32086 32087 33328 33329 33331 33332 26725	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **MODEMS** Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext.  **Motorola** BitSURFR PRO.  **Motorola** BitSURFR PSO. **Mot	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$235.98 \$269.98 \$165.98 \$139.98 \$168.98 \$118.98 \$188.98 \$244.98 \$268.98 \$259.98 \$59.98 \$59.98
23488 87295 29933 30812 30813 32078 32085 32086 33328 33329 33331 33332 26725 33341 33342 33343	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Intermet Solution Accura 288 Int. Total Intermet Sol v/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. DSVD  **Motorola** BitSURFR PRO. VoiceSurfr V.32bis 14.4 Int Fax/Modem. **ModemSurfr V.34 28.8 Fax Modem Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$168.98 \$188.98 \$168.98 \$244.98 \$244.98 \$375.98 \$375.98 \$109.98 \$109.98
23488 87295 29933 30812 30813 32078 32085 32086 32087 33328 33329 33331 33332 26725 33341 33343 33343 33343	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **Cardinal**  Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes**  Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext.  **Motorola**  BitSURFR PRO  VoiceSurfr V32bis 14.4 Int Fax/Modem. VoiceSurfr V32bis 14.4 Ext Fax/Modem. ModemSurfr V.34 28.8 Fax Modem Int. ModemSurfr V.34 28.8 Fax Modem Ext.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$168.98 \$168.98 \$168.98 \$244.98 \$244.98 \$244.98 \$249.98 \$199.98 \$199.98
23488 87295 29933 30812 30813 32078 32085 32086 33328 33328 33322 33331 33332 26725 33341 33342 33343 33343	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  Cardinal Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Hayes Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext DSVD. Motorola BitSURFR PRO. VoiceSurfr V32bis 14.4 Int Fax/Modem. VoiceSurfr V32bis 14.4 Ext Fax/Modem. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr V34 28.8 Fax Modem Ext. OnlineSurfr Total Internet Pkg V34 Int.	\$1,270,00 \$1,579,00 \$1,698,00 \$1,898,00 \$1,898,00 \$1,898,00 \$1,898,\$165,98 \$165,98 \$168,98 \$168,98 \$168,98 \$244,98 \$268,98 \$109,96 \$149,96 \$159,98 \$159,98 \$159,98
23488 87295 29933 30812 30813 32078 32085 32086 32087 33328 33329 33331 33332 26725 33341 33343 33343 33343	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  Cardinal Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Hayes Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext DSVD  Motorola  BitSURFR PRO. VoiceSurfr V32bis 14.4 Int Fax/Modem. VoiceSurfr V32bis 14.4 Ext Fax/Modem. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr Total Internet Pkg V34 Int. DnlineSurfr Total Internet Pkg V34 Int.	\$1,270,00 \$1,579,00 \$1,698,00 \$1,898,00 \$1,898,00 \$1,898,00 \$1,898,\$165,98 \$165,98 \$168,98 \$168,98 \$168,98 \$244,98 \$268,98 \$109,96 \$149,96 \$159,98 \$159,98 \$159,98
23488 87295 29933 30812 30813 32078 32085 32086 332087 33328 33322 26725 33341 33342 33343 33344 33345	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors ViewSonic PT810 21* Color Monitors ViewSonic PT810 21* Color Monitor.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Hayes Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext DSVD  **Motorola** BitSURFR PRO VoiceSurfr V32bis 14.4 Int Fax/Modem VoiceSurfr V32bis 14.4 Ext Fax/Modem ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr V34 28.8 Fax Modem Ext. OnlineSurfr Total Internet Pkg V34 Int DnlineSurfr Total Internet Pkg V34 Ext  **US Robotics**	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$168.98 \$168.98 \$168.98 \$168.98 \$168.98 \$168.98 \$175.98 \$244.98 \$249.98 \$199.98 \$199.98 \$199.98 \$179.98
23488 87295 29933 30812 30813 32078 32085 32086 33297 33328 33321 33331 33342 33342 33343 33344 33345 33346	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem Int PnP. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int Total Internet Sol V/ACCURA 28.8 Ext Total Gamling Sol w/ACCURA 28.8 Ext DSVD  **Motorola** BitSURFR PRO. VoiceSurfr V32bis 14.4 Int Fax/Modem. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr Total Internet Pkg V34 Int DnlineSurfr Total Internet Pkg V34 Ext  **US Robotics** Sportster 14.4 Fax Modems Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$165.98 \$188.98 \$188.98 \$244.98 \$244.98 \$259.98 \$109.98 \$109.98 \$159.98 \$159.98 \$159.98 \$179.98
23488 87295 29933 30812 30813 32085 32086 332087 33328 33329 33331 33342 33343 33344 33345 33346 16221 24355	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitors.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modern. Speakerphone & Ext 28.8 Kbps Fax Modern. Speakerphone & Ext 28.8 Kbps Fax Modern. Cardinal 28.8 v.34 Fax/Modern Ext PnP. Cardinal 28.8 v.34 Fax/Modern Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int. Total Internet Sol v/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. DSVD.  **Motorola** BitSURFR PRO. VoiceSurfr V32bis 14.4 Int Fax/Modern. VoiceSurfr V32bis 14.4 Ext Fax/Modern. VoiceSurfr V32bis 14.4 Ext Fax/Modern. ModernSurfr V34 28.8 Fax Modern Int. ModernSurfr V34 28.8 Fax Modern Int. ModernSurfr Total Internet Pkg V34 Int. DnlineSurfr Total Internet Pkg V34 Ext.  **US Robotics** Sportster 14.4 Fax Moderns Int. Sportster V1 14.4 Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$165.98 \$168.98 \$168.98 \$244.98 \$244.98 \$268.98 \$109.98 \$159.98 \$159.98 \$179.98 \$179.98 \$179.98 \$179.98
23488 87295 29933 30812 30813 32078 32085 32086 33329 33331 33332 26725 33341 33342 33343 33343 16221 24355 18478	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Hayes Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext.  **Motorola** BitSURFR PRO VoiceSurfr V32bis 14.4 Int Fax/Modem. VoiceSurfr V32bis 14.4 Int Fax/Modem. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr Total Internet Pkg V.34 Int. DnlineSurfr Total Internet Pkg V.34 Ext.  **US Robotics** Sportster 14.4 Fax Modems Int. Sportster VI 14.4 Int. Sportster VI 14.4 Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,698.00 \$1,898.00 \$1,898.00 \$235.98 \$269.98 \$165.98 \$168.98 \$168.98 \$151.98 \$244.98 \$268.98 \$109.96 \$119.98 \$159.98
23488 87295 29933 30812 30813 32078 32085 32086 332087 33328 33322 26725 33341 33342 33343 33343 33345 33346 6221 24355	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitor.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 28.8 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext DSVD  **Motorola** BitSURFR PRO VoiceSurfr V32bis 14.4 Int Fax/Modem. VoiceSurfr V32bis 14.4 Ext Fax/Modem Int. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr V34 28.8 Fax Modem Ext. OnlineSurfr Total Internet Pkg V34 Int DnlineSurfr Total Internet Pkg V34 Ext  **US Robotics** Sportster 14.4 Fax Modems Int. Sportster 14.4 Ext Fax Modems for Win. Sportster Vi 14.4 Ext Fax Modems for Win.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$165.98 \$168.98 \$168.98 \$168.98 \$168.98 \$168.98 \$169.98 \$199.98 \$199.98 \$159.98
23488 87295 29933 30812 30813 32085 32086 33298 33329 33331 33331 33341 33342 33343 33344 33345 3346 16221 24355 18478 32088	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitors.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Sol ui/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext DSVD  **Motorola** BitSURFR PRO VoiceSurfr V32bis 14.4 Int Fax/Modem. ModemSurfr V32bis 14.4 Ext Fax/Modem Int. ModemSurfr V34 28.8 Fax Modem Int. ModemSurfr Total Internet Pkg V34 Int. DnlineSurfr Total Internet Pkg V34 Ext.  **US Robotics** Sportster 14.4 Fax Modems Int. Sportster 14.4 Ext Fax Modems Int. Sportster 14.4 Ext Fax Modems Int. Sportster V1 14.4 Ext Fax Modems For Win. Sportster V1 14.4 Ext Fax Modems For Win. Sportster V1 14.4 Ext Fax Modems R8.8 Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$165.98 \$165.98 \$188.98 \$168.98 \$168.98 \$168.98 \$169.98 \$199.98 \$199.98 \$159.98
23488 87295 29933 30812 30813 32085 32086 33208 33328 33329 33331 33342 33343 33344 33345 33346 16221 24355 18478 24356 18478 24356	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitors.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modern. Speakerphone & Ext 28.8 Kbps Fax Modern. Speakerphone & Ext 28.8 Kbps Fax Modern. Cardinal 28.8 v.34 Fax/Modern Ext PnP. Cardinal 28.8 v.34 Fax/Modern Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int. Total Internet Sol V/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. DSVD.  **Motorola** BitSURFR PRO. VoiceSurfr V:32bis 14.4 Int Fax/Modern. VoiceSurfr V:32bis 14.4 Ext Fax/Modern. ModemSurfr V:34 28.8 Fax Modern Int. ModemSurfr V:34 28.8 Fax Modern Int. ModemSurfr Total Internet Pkg V:34 Int. DnlineSurfr Total Internet Pkg V:34 Ext.  **US Robotics** Sportster 14.4 Fax Moderns Int. Sportster V:14.4 Int. Sportster V:14.4 External Sportster V:14.4 External Sportster Winmodern 28.8 Int. Sportster Winmodern 28.8 Int. Sportster Winmodern 28.8 Int. Sportster Winmodern 28.8 Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$1,898.00 \$165.98 \$165.98 \$165.98 \$168.98 \$188.98 \$151.98 \$244.98 \$244.98 \$275.98 \$159.98
23488 87295 29933 30812 30813 32085 32086 33298 33329 33331 33331 33341 33342 33343 33344 33345 3346 16221 24355 18478 32088	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitors.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Speakerphone & Ext 28.8 Kbps Fax Modem. Cardinal 28.8 v.34 Fax/Modem Ext PnP. Cardinal 28.8 v.34 Fax/Modem Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP. Hayes  Total Internet Solution Accura 288 Int. Total Internet Sol w/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. Wota Gaming Sol w/ACCURA 28.8 Ext. US Robotics Sportster T4.4 Fax Modem Ext. OnlineSurfr Total Internet Pkg V.34 Int. DnlineSurfr Total Internet Pkg V.34 Int. DnlineSurfr Total Internet Pkg V.34 Ext.  **US Robotics** Sportster 14.4 Fax Modems Int. Sportster VI 14.4 Ext Fax Modems for Win. Sportster VI 14.4 Ext Fax Modems for Win. Sportster V.34 28.8 Int Fax/Mod for Win. Sportster V.32 8.8 Int Fax/Mod for Win. Sportster V.32 8.8 Int Fax/Mod for Win.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,698.00 \$1,898.00 \$1,898.00 \$299.98 \$269.98 \$168.98 \$168.98 \$188.98 \$151.98 \$244.98 \$268.98 \$159.98 \$1
23488 87295 29933 30812 30083 32085 32086 332087 33328 33322 26725 33341 33342 43334 16221 24355 18478 24356 32088 33344 33343 3344 33343 3344 33343 3334 3334 3334 3334 3343 3343 3343 3343 3343 3443 3	ViewSonic 21PS 21* Monitor. ViewSonic GT800 20* Color Monitors. ViewSonic PT810 21* Color Monitors. ViewSonic PT810 21* Color Monitors.  **Cardinal** Speakerphone & Int 28.8 Kbps Fax Modern. Speakerphone & Ext 28.8 Kbps Fax Modern. Speakerphone & Ext 28.8 Kbps Fax Modern. Cardinal 28.8 v.34 Fax/Modern Ext PnP. Cardinal 28.8 v.34 Fax/Modern Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Int PnP. Cardinal 28.8 v.34 Voice/Fax/MDM Ext PnP.  **Hayes** Total Internet Solution Accura 288 Int. Total Internet Sol V/ACCURA 28.8 Ext. Total Gaming Sol w/ACCURA 28.8 Ext. DSVD.  **Motorola** BitSURFR PRO. VoiceSurfr V:32bis 14.4 Int Fax/Modern. VoiceSurfr V:32bis 14.4 Ext Fax/Modern. ModemSurfr V:34 28.8 Fax Modern Int. ModemSurfr V:34 28.8 Fax Modern Int. ModemSurfr Total Internet Pkg V:34 Int. DnlineSurfr Total Internet Pkg V:34 Ext.  **US Robotics** Sportster 14.4 Fax Moderns Int. Sportster V:14.4 Int. Sportster V:14.4 External Sportster V:14.4 External Sportster Winmodern 28.8 Int. Sportster Winmodern 28.8 Int. Sportster Winmodern 28.8 Int. Sportster Winmodern 28.8 Int.	\$1,270.00 \$1,579.00 \$1,698.00 \$1,698.00 \$1,898.00 \$1,898.00 \$1,898.00 \$269.98 \$168.98 \$168.98 \$188.98 \$188.98 \$189.98 \$199.98 \$199.98 \$199.98 \$199.98 \$115.98

499.98	26361	Sportster Vi DSVD 28.8 V.34 Int Modem	. \$279.98
399.00	85609	USR ConferenceLink CS1000 Speakerphone	
489,98		VIDEO CARDS	
756.98		ATI	
998.98	31800	Video Xpression 2MB EDO DRAM PCI MPEG.	\$164.00
315.98	19902	Graphics Pro Turbo 2Mb (VL bus)	
443.98	19904	Graphics Pro Turbo 2Mb (PCI)	\$250 QR
	19905	Graphics Pro Turbo 4Mb (PCI)	
	19906	Graphics Pro Turbo 2Mb (ISA)	
669.98	19907	Graphics Pro Turbo 4Mb (ISA)	\$398.98
257.98	19909	Graphics Xpression 1Mb (VLB)	
369.98	19910	Graphics Xpression 2Mb (ISA)	
499.00	19911	Graphics Xpression 2Mb (VLB)	
715.98	19912	Graphics Xpression 2Mb (PCI)	, \$129.98
399.98		Diamond Computer System	ns
	34177	Stealth 3D 2000 PCI 2MB EDD DRAM	. \$169.98
329.98	34181	Stealth 64 Video 2121TV PCI 1MB DRAM	. \$172.98
942.00	34182	Stealth 64 Video 2201TV PCI 2MB EDO DRAW	
663.00	30815	Stealth 64 Video 2121XL PCI 1MB DRAM	
472.98	30816	Stealth 64 Video 2201XL PCI 2MB DRAM	
798.98	26155	Stealth 64 Video 3240XL PCI 2MB VRAM	
568.98	26156	Stealth 64 Video 3400XL PCI 4MB VRAM	. \$489.98
879.98	04040	Hercules	0400 00
	31846	Dynamite128 PCI 2MB MDRAM	, \$189.98
399.98	31847	Terminator 64/3D 2MB PCI EDO DRAM	
489.98	31848	Terminator 64/Video PCI 1MB DRAM	
799.98	31849	Terminator 64/Video PCI 2MB EOO DRAM	. \$139.90
999.98	04504	Number Nine	6470.00
749.00	34531	9FXReality 332 2MB DRAM PCI	\$1/9.98 \$200.00
999.00	24836 24837	9FXMotion 771 4MB VRAM PCI	6420.00 6420.00
000 00	24838	9FXMotion 771 2MB VRAM VL	¢299 09
399.98	24839	9FXMotion 771 4MB VRAM VL	
479.98 669.98	28576	Imagine 128 2M8 VRAM PCI	
749.98	24840	Imagine 128 4M8 VRAM PCI	\$599.98
784.98	24842	Imagine 128 Pro 8MB VRAM PCI	\$1,328.00
	34530	Imagine 128 Series 2 4MB VRAM PCI	, \$629.98
824.98	34530		
824.98 898.98	34530	STORAGE PRODUCTS	5
824.98 898.98 270.00		STORAGE PRODUCTS Colorado Memory System	S S
824.98 898.98 270.00 579.00 698.00	34530 30335 30102	STORAGE PRODUCTS Colorado Memory System Colorado T1000	s \$159.98
824.98 898.98 270.00 579.00 698.00 898.00	30335	STORAGE PRODUCTS Colorado Memory System Colorado T1000 Colorado Trakker T1000E	\$ \$159.98 \$189.98
824.98 898.98 270.00 579.00 698.00	30335 30102	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.	\$ \$159.98 \$189.98
824.98 898.98 270.00 579.00 698.00	30335 30102	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu	\$ . \$159.98 . \$189.98 . \$228.98
824.98 898.98 270.00 579.00 698.00	30335 30102 30328	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.	\$ \$159.98 \$189.98 \$228.98
824.98 898.98 270.00 579.00 698.00 898.00	30335 30102 30328 20298	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400. Fujitsu Fujitsu DynaMo 230MB Ext MO Basic	\$ .\$159.98 .\$189.98 .\$228.98 .\$479.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98	30335 30102 30328 20298 21910	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMO 230MbInt for PC	\$ .\$159.98 .\$189.98 .\$228.98 .\$499.98 .\$479.98 .\$645.98
824.98 898.98 270.00 579.00 698.00 898.00	30335 30102 30328 20298 21910 21911	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMO 230MbInt for PC DynaMO 230 Int Ki Wi Host Adapter Fujitsu DynaMO 230 S.5 M.O. Orv Par Prt	\$ .\$159.98 .\$189.98 .\$228.98 .\$499.98 .\$479.98 .\$645.98 .\$429.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98	30335 30102 30328 20298 21910 21911 28584	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMo 230MbInt for PC DynaMO 230 Int Kft W/ Host Adapter Fujitsu DynaMO 230 3.5 M.O. Orv Par Prt Iomega Ditto Easy 800 Insider	\$ \$159.98 \$189.98 \$228.98 \$499.98 \$479.98 \$645.98 \$429.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98 139.98 168.98	30335 30102 30328 20298 21910 21911 28584 26197 26169	Colorado Memory System Colorado Tinono Colorado Tinono Colorado Tinono Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext Mo Basic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr	\$ .\$159.98 .\$189.98 .\$228.98 .\$499.98 .\$479.98 .\$479.98 .\$429.98 .\$119.98 .\$149.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98 139.98 168.98 188.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339	Colorado Memory System Colorado Trakker T1000E Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMO 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 S M.O. Orv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Jip 100 Parallel Port	\$ .\$159.98 .\$189.98 .\$228.98 .\$499.98 .\$479.98 .\$645.98 .\$429.98 .\$119.98 .\$149.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98 139.98 168.98 188.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825	Colorado Memory System Colorado T1000 Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMO 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 S M.O. Orv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI	\$ .\$159.98 .\$189.98 .\$228.98 .\$499.98 .\$479.98 .\$645.98 .\$429.98 .\$119.98 .\$199.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98 139.98 168.98 188.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665	Colorado Memory System Colorado T1000 Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMO 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 S M.O. Orv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider	\$\\ \tag{5}\\ \tag{5}\\ \tag{9}\\ \tag{5}\\ \tag{9}\\ \tag{5}\\ \tag{9}\\ \tag{5}\\ \tag{9}\\ \tag{6}\\ \tag{7}\\ \tag{9}\\ \tag{6}\\ \tag{5}\\ \tag{9}\\ \tag{6}\\ \tag{9}\\ \tag{6}\\ \tag{9}\\ \tag{6}\\ \tag{9}\\ \tag{6}\\ \tag{9}\\ \t
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98 139.98 168.98 188.98 151.98 168.98 244.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665 32073	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMo 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 3.5 M.O. Ovr Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider Ditto 3200 Insider Ditto 3200 Insider	\$\\ \$\\$\\$159.98\\ \$\\$189.98\\ \$\\$228.98\\ \$\\$479.98\\ \$\\$479.98\\ \$\\$479.98\\ \$\\$479.98\\ \$\\$479.98\\ \$\\$119.98\\ \$\\$149.98\\ \$\\$198.98\\ \$\\$199.98\\ \$\\$299.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 165.98 139.98 168.98 188.98 151.98 168.98 244.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665 32073 25658	Colorado Memory System Colorado Tinono Colorado Tinono Colorado Tinono Colorado Tinono Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230Mb Ext Mo Basic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Drv Par Prt iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Parallel Port Jaz 1GB SCSI Insider Orive	\$ .\$159.98 .\$159.98 .\$189.98 .\$228.98 .\$479.98 .\$479.98 .\$429.98 .\$119.98 .\$149.98 .\$199.98 .\$199.98 .\$249.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 1165.98 1165.98 1168.98 1168.98 1168.98 1168.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665 32073	Colorado Memory System Colorado Tinono Colorado Tinono Colorado Tinono Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230Mb Ext Mo Basic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Orv Par Prt iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Parallel Port Jaz 1GB SCSI Insider Orive Iomega Jaz 1Gb External Drive	\$ .\$159.98 .\$159.98 .\$189.98 .\$228.98 .\$479.98 .\$479.98 .\$429.98 .\$119.98 .\$149.98 .\$199.98 .\$199.98 .\$249.98
824.98 898.98 270.00 579.00 698.00 898.00 235.98 269.98 1165.98 1168.98 1168.98 1168.98 1168.98 1168.98 1168.98 1168.98 1168.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665 32073 25658 25659	Colorado Memory System Colorado Trakker T1000E Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230Mb Ext MO Basic Fujitsu DynaMo 230MbInt for PC DynaMO 230 Int Kit W/ Host Adapter Fujitsu DynaMO 230 3.5 M.O. Orv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider Ditto 3200 Insider Ditto 3200 Parallel Port Jaz 1GB SCSI Insider Orive Iomega Jaz 1Gb External Drive Quantum	\$\\ \tag{5}\) \$\\ \tag{5}\] \$\
824.98 898.98 270.00 698.00 898.00 2235.98 165.98 1151.98 1168.98 1244.98 2244.98 2259.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665 32073 25658 25659	Colorado Memory System Colorado T1000 Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMo 230MbInt for PC DynaMo 230 Int Kit W/ Host Adapter Fujitsu DynaMo 230 3.5 M.O. Orv Par Prt Iomega Ditto Easy 800 MB Ext Par Port Tape Dr Zip 100 Parallel Port Zip 100 SCSI Ditto 3200 Insider Ditto 3200 Parallel Port Jaz 1GB SCSI Insider Orive Iomega Jaz 1Gb External Drive Quantum Ouantum 5.25* 1.2GB HD Int	\$\\ \\$\\$\\$159.98\\ \\$\\$159.98\\ \\$\\$189.98\\ \\$\\$499.98\\ \\$\\$479.98\\ \\$\\$479.98\\ \\$\\$449.98\\ \\$\\$119.98\\ \\$\\$119.98\\ \\$\\$199.98\\ \\$\\$249.98\\ \\$\\$249.98\\ \\$\\$249.98\\ \\$\\$249.98\\ \\$\\$\\$249.98\\ \\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$\\$
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824.98 889.98 270.00 668.00 898.00 235.98 269.98 1165.98 1169.98 1169.98 1169.98 1169.98 1169.98 1169.98	30335 30102 30328 20298 21910 21911 28584 26197 26169 22339 91825 25665 32073 25658 25659 33300 33301 24935 28116	Colorado Memory System Colorado T1000 Colorado T1000 Colorado Trakker T1000E Colorado Trakker T1000E Colorado Jumbo 1400.  Fujitsu Fujitsu DynaMo 230MB Ext MO Basic Fujitsu DynaMO 230MbInt for PC DynaMO 230 Inkt W/ Host Adapter Fujitsu DynaMO 230 3.5 M.O. Orv Par Prt Iomega Ditto Easy 800 Insider Ditto Easy 800 Insider Ditto Easy 800 Insider Ditto 3200 Parallel Port Jip 100 SCSI Ditto 3200 Insider Ditto 3200 Parallel Port Jaz 16B SCSI Insider Orive Iomega Jaz 16b External Drive Quantum Ouantum 5.25* 2.56B HD Int Quantum 5.25* 2.56B HD Int Quantum 5.25* 2.56B HD Int SyQuest EZ135MB Drs Parallel Port SyQuest EZ135MB Drs Parallel Port	\$\\ \\$159.98\\ \\$159.98\\ \\$189.98\\ \\$479.98\\ \\$479.98\\ \\$479.98\\ \\$479.98\\ \\$479.98\\ \\$479.98\\ \\$479.98\\ \\$499.98\\ \\$199.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$249.98\\ \\$449.98\\ \\$449.98\\ \\$449.98\\ \\$449.98\\ \\$449.98\\ \\$449.98\\ \\$449.98\\ \\$4469.
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Model

Price

SCSI Speed RPM Brand

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WIDE SCSI           1050MB 8.5ms         7200         Quantum         XP31070W           1050MB 9ms         5400         Seagate         ST31055W           2050MB 8.9ms         7200         Micropolis         MC4221W           2050MB 8.9ms         7200         Micropolis         MC4221WAV           2147MB 8ms         7200         Seagate         ST32550W           2150MB 9ms         5400         Seagate         ST32155W           4294MB 8.9ms         7200         Micropolis         MC3243WAV           4294MB 8ms         7200         Seagate         ST15150W           4300MB 8.6ms         7200         Quantum         XP34300W           9080MB 11ms         5400         Seagate         ST410800W           9091MB 8.5ms         7200         Micropolis         MC3391W           9100MB 12ms         5400         Micropolis         MC1991W	9091MB	12ms	5400	Micropolis	MC1991AV	\$1749
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2050MB 8.9ms         7200         Micropolis         MC4221WAV           2147MB 8ms         7200         Seagate         ST32550W           2150MB 9ms         5400         Seagate         ST32155W           4294MB 8.9ms         7200         Micropolis         MC3243W           4294MB 8ms         7200         Micropolis         MC3243WAV           4294MB 8ms         7200         Seagate         ST15150W           4300MB 8.6ms         7200         Quantum         XP34300W           9080MB 11ms         5400         Seagate         ST410800W           9091MB 8.5ms         7200         Micropolis         MC3391W           9100MB 12ms         5400         Micropolis         MC1991W	1050MB	9ms	5400	Seagate	ST31055W	\$389
2147MB 8ms       7200       Seagate       ST32550W         2150MB 9ms       5400       Seagate       ST32155W         4294MB 8.9ms       7200       Micropolis       MC3243W         4294MB 8ms       7200       Micropolis       MC3243WAV         4294MB 8ms       7200       Seagate       ST15150W         4300MB 8.6ms       7200       Quantum       XP34300W         9080MB 11ms       5400       Seagate       ST410800W         9091MB 8.5ms       7200       Micropolis       MC3391W         9100MB 12ms       5400       Micropolis       MC1991W	2050MB	8.9ms	7200	Micropolis	MC4221W	\$630
2150MB 9ms       5400       Seagate       ST32155W         4294MB 8.9ms       7200       Micropolis       MC3243W         4294MB 8.5ms       7200       Micropolis       MC3243WAV         4294MB 8ms       7200       Seagate       ST15150W         4300MB 8.6ms       7200       Quantum       XP34300W         9080MB 11ms       5400       Seagate       ST410800W         9091MB 8.5ms       7200       Micropolis       MC3391W         9100MB 12ms       5400       Micropolis       MC1991W	2050MB	8.9ms	7200	Micropolis	MC4221WAV	\$689
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4300MB 8.6ms       7200       Quantum       XP34300W         9080MB 11ms       5400       Seagate       ST410800W         9091MB 8.5ms       7200       Micropolis       MC3391W         9100MB 12ms       5400       Micropolis       MC1991W	4294MB	8.5ms	7200	Micropolis	MC3243WAV	\$979
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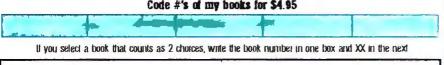
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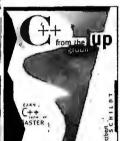
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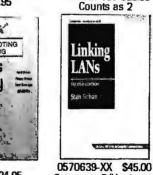
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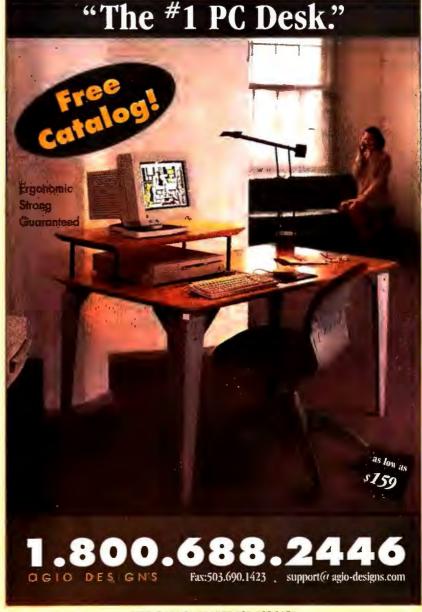






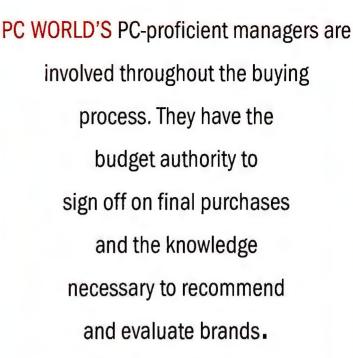
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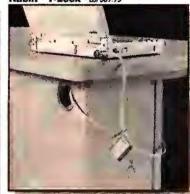
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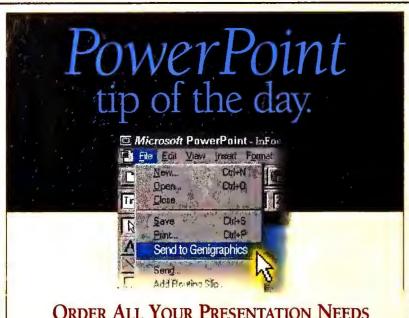








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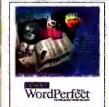
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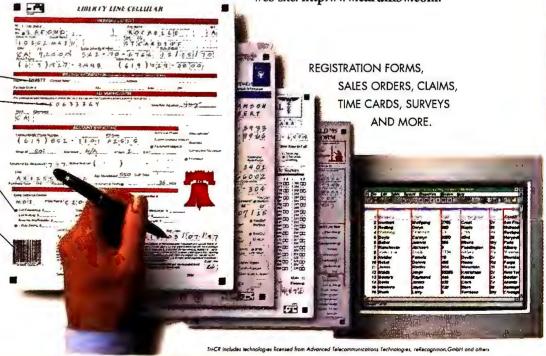
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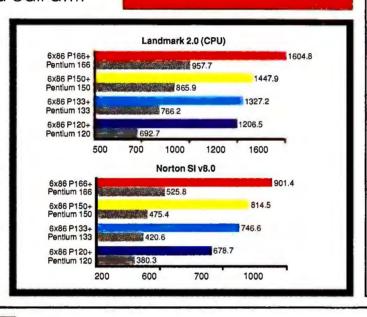
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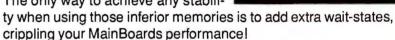
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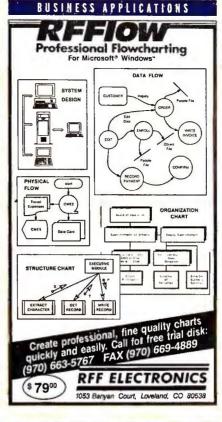
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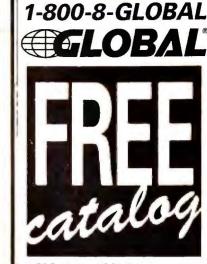
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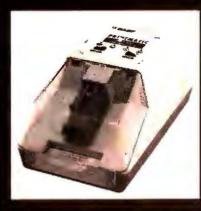
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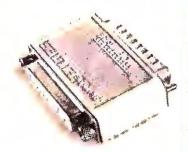
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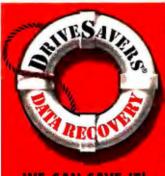
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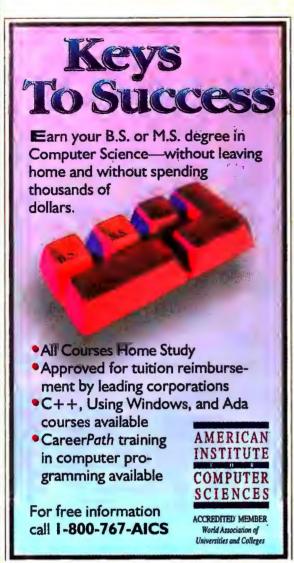
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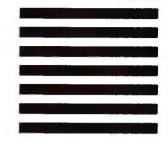
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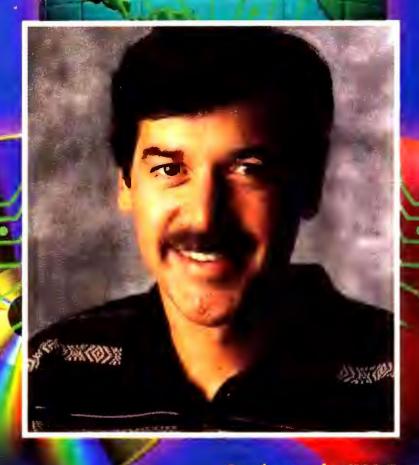
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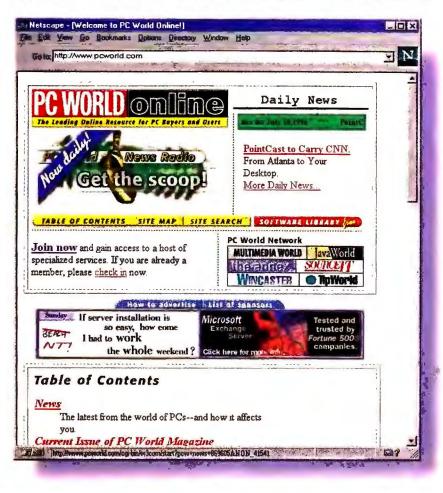
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# Registering Software? I Vote No

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Please note that this column may be accessed only three times before you register it. Thereafter, only a Column Registration dialog box will appear until you obtain your Official Registration Number. The Full Disclosure column thanks you for taking a moment to help us help you.

Think I'm kidding? Caere Corporation's OmniPage Pro for Windows 95 has a policy almost this daffy. The first time you run it, it politely asks you to register. The next 24 times, it nags you about it. That's nothing new: I've run into other programs that keep pestering you until you give in and register. But the 26th time you try to run OmniPage Pro, it won't open until you feed it an official registration number. And once you register, support isn't exactly generous. After your first two calls, you have to pony up \$25 per incident, along with any long-distance charges.

Caere is hardly the only culprit. Getting customers to register their hardware and software has been a cat-and-mouse game



Getting customers to register products has been a cat-andmouse game since the earliest days of the PC.

since the earliest days of the PC. Companies desperately want to know who's buying their products, bribing them with carrots such as sweepstakes or whacking them with sticks like nonsupport. But even when it's as easy as clicking a button on screen, many users forgo the honor of identifying themselves.

And why not? The benefits are almost totally one-sided. The company gets marketing information valuable enough to sell to others; if the registration takes place via modem, the company might be tempted to snoop around the user's machine to find out what else is on it. Users get more electronic junk mail and one more nail in the coffin of their privacy.

If companies really wanted to, they could easily devise better reasons to register products. I routinely send in registration cards for new hardware, on the theory that if the company learns of a potential shock or fire hazard—say, the monitor is likely to burst into flames every time I press <F12>—it might use the information to notify me.

Software's another story. While it might trash your hard drive or infect your system with a nasty virus, it's unlikely to cause you any physical harm. So what would it take to get me to send in the registration card? Well, how about monthly e-mail updates identifying known bugs and the Web locations for the fixes? Useful information would be a more effective way of building a customer relationship.

But it would never end there. The marketers would make sure of that. Just look at the Web. Many sites are downright shameless about asking personal questions before you get access, but at least in that case you haven't already paid for a product. Besides, in these free-market times, using the registration process to help

customers rather than turning them into profit centers would be considered an act of altruism unacceptable to the stockholders.

Wait a minute! You still haven't registered this column. Your reading privileges are hereby cut off! Unless, of course, I can interest you in a swell upgrade at a low, low price. Hey, it's got lots of new features. It even corrects some typografical errors.

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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- Integrated 16-bit Stereo Sound
- Smart Lithium Ion Battery
- Touchpad/IrDA-1 Port
- Under 7 Pounds\*
- Extendable 1 Year Warranty
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#### 100MHz PENTIUM PROCESSOR DELL LATITUDE LM P100SD

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- 8MB RAM/540MB Hard Drive
- 256KB L2 Cache
- Options Bay accepts 4X CD-ROM, 3.5" Floppy Drive (both included) or Optional 2nd Li-Ion Battery
- PCI Bus with 128-bit Graphics Accelerator
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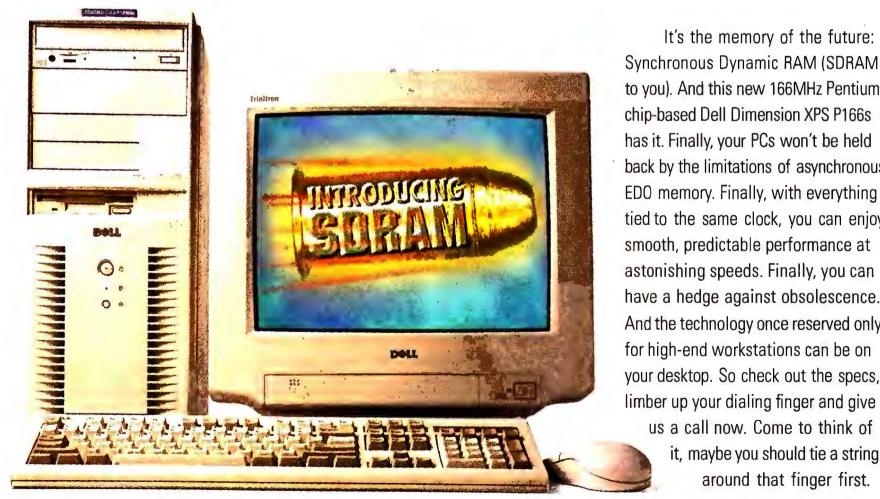
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