PCW\\RID

FOURTH ANNUAL SPECIAL ISSUE

DECEMBER 1991

HARDWARE BUYERS GUIDE

Over 250 Hot Products!

24 BIG-SCREEN MONITORS

29 NEW 486SX SYSTEMS

103 HIGH-SPEED MODEMS

22 POSTSCRIPT PRINTERS

42 100MB HARD DISKS

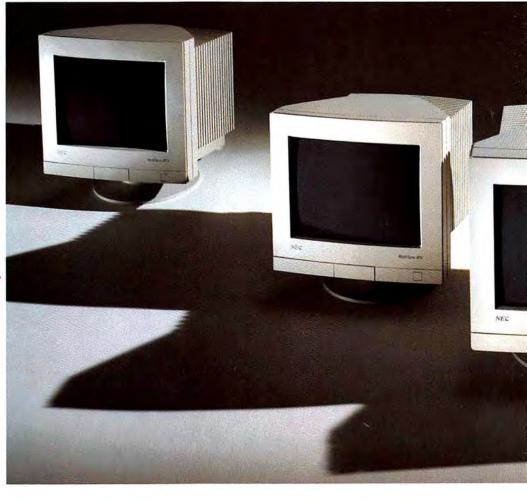
14 TAPE BACKUPS

AND MORE!





How about





Last year we invested over \$3.6 billion in research and development. In fact, our investments exceed the annual revenues of most companies. No wonder we were able to design such an innovative line of monitors.

The new MultiSync® monitors from N

Announcing the new FG[™] series of MultiSync monitors. Completely redesigned from the inside out to give you brighter, sharper, more accurate images. Now the monitor you've always wanted has all the features you ever wanted.

Features like our exclusive AccuColor™ Control System. An amazing advance in computer monitors that provides unprecedented color accuracy. Now you can easily match on-screen colors to printer output, other monitors, process color standards such as Pantone* or even your personal preferences.

Advanced flat square screen technology takes the FG series performance into the future. Larger screens combined with our FullScan capability provide an edge-to-edge display with up to 36% greater active screen area than most conven-

everything?



EC. Not an introduction. A revolution.

tional monitors. Higher refresh rates enable stable, flicker-free images. While the high-contrast screens eliminate blurring, display colors more vibrantly and deliver exceptionally sharp text and crisp graphics.

ErgoDesign™ elements enhance comfort and safety. An antistatic screen coating eliminates dust attraction. And all the controls are in the front where they're easier to use. Plus, our Reduced Magnetic Field™ technology lowers ELF and VLF emissions. In fact, they even meet the strict Swedish MPR II guidelines.

MultiSync monitors support a range of video standards from VGA to 1280 x 1024 non-interlaced, Apple Mac II and many workstation modes.

The all new FG series from NEC. For an image as clear as the one in your mind.

Because \uparrow is the way you want to go.

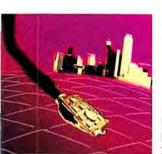


What do you want in a monitor?



PC W\(\beta\)RLD

COVER STORIES



Hard Disks **226**



Windows Monitors 196



Tape Backups 220

REVIEWS

Windows Monitors Why bother running multiple applications if you can't see all of them at once? These 12 jumbo super-VGA monitors will help you remember why you liked *Windows* in the first place. IJ Byers..... 196

FEATURES

Hard Disks These days, every application seems to want a big chunk of your hard disk. Stave off that 'disk full' message with one of 42 speedy 100MB to 125MB hard disks.



Budget to Win

Cover photograph by Robert Cardin Digital photo composition by Varitel Select



PostScript Lasers 174





4865Xs 148

INSIDE

NEWS	PREVIEWS	FEATURES	Ergonomics
TOP OF THE NEWS Mike Hogan	50-MHz 486s Push to the Limit—and Beyond PCs built on the latest.	Road Test: Gateway vs. Compaq PC World readers compare	A well-designed work space isn't a luxury, it's a necessary investment in
INDUSTRY OUTLOOK Compaq plays catch-up with the clone makers	greatest chip leave others in the dust. Now if Intel can just take care of a few	their experiences with systems from Compaq and upstart Gateway.	your health and productivity. Kristin Kueter 275
Despite barriers, client- server computing shows	technical problems. Michael Goodwin 83	Alice LaPlante 246	ноw то
promise 70	0.0000000000000000000000000000000000000	Forecast 1992	The Help Screen
Wireless networks gain ground	Word for Windows 2.0: Getting Better All the Time With a slew of new features,	A renowned PC industry analyst gazes into her crystal ball and makes some	Running Windows with 2MB of RAM, and more. Karl Koessel and Robert Lauriston 41
PC WORLD MARKETPLACE	Word for Windows has just about all you'll ever need in	heartening predictions about what's coming down the	Star-Dot-Star
Prices for 30 popular PCs in eight markets, and more	a graphical word processor. George Campbell	pike. Amy Wohl 251	Batch files that find their home directories, and other
PRODUCT OUTLOOK		Budgetopoly	tips. Edited by Brett Glass 277
Momenta Computer	Harvard Does Windows	Lucky you. It's your job to	
• Freelance Graphics for	The top player in the presentation software stable	recommend hardware purchases for the	Instant Reference Card Harvard Graphics, from
Windows • Plus Impulse	takes to Windows with a	department. Play the	charts to presentations 281
DriveKit122	stunning blend of power and	Budgetopoly game and learn	
• By Design 2.0, By Design for Windows • PSX 124	simplicity. Richard Jantz 107	the ins and outs of the budgeting process. Bronwyn	DEPARTMENTS
• LANSpool 3.0, LANSpool	WordStar Soars Into	Fryer and Steve Fox 253	In This Issue 13
Fax, Net SatisFaxtion 1.0	Windows An old friend goes	Rate Your Satisfaction:	Letters
Dr. Halo IV Paint and Imaging Pack, Halo Desktop	graphical, offering	Clones Top Kingpins	Consumer Watch 55
Imager, Halo F/X 128	WordStar stalwarts a	We asked PC buyers how	Manager's File 61
• ObjectVision 2.0 • IBM PS/1 386SX130	Windows look and familiar keyboard commands. Rex Forrance	they felt about mail-order houses Dell and Gateway and industry bigwigs	The Home Office 332
• Power Launcher • LapLink Pro 4.0	Bill Paying Quickens	Compaq and IBM. Here's what we found out.	INFORMATION
• Paradox SE, Quattro	Introducing Quicken 5.0, a	Christine Whyte 260	PC World Catalog 284
Pro SE	smarter, kinder, gentler	not as we	Advertiser Index 301
• Lexmark PPS II 2380, PPS II 2390 137	upgrade, and Quicken for Windows, a modest alternative for Windows	Budget to Win You know your company needs to plunk down some	Products Featured in
• Harvard Draw for Windows 1.0	users. Mike Hogan117	serious money for new hardware. So how do you	PC World Mail-Order Shopping Guide 308

convince the CEO?



THERE'S A SIMPLE REASON WHY NO SINGLE COMPUTER CAN BE CONSIDERED THE BEST VALUE IN THE INDUSTRY.

386/SX-20 NOTEBOOK

• 20MHz 80386SX CPU • 2MB RAM (expandable to 16MB) • 40MB hard drive • 9" non-glare VGA screen with 32 grey shades • 1.44MB internal floppy drive • Power management system for extended battery life • 3 hour battery pack • AC adapter • External keyboard connector • Leather Carrying Case • 8.6"D x 11"Lx 2.1"H, 7.2 lbs. • Upgrade from 40MB to 60MB hard drive for \$200 • 386/SX-16 Notebook with 20MB also available for \$1,699.**

Lease for \$88/month*

"Ouantities limited. Sold out when gone



386/SX-20 CACHE SYSTEM

20MHz 80386SX CPU • 4MB RAM (expandable to 32MB) • 32KB static RAM cache • 110MB hard drive • 14" Super VGA color monitor with 1024 x 768 resolution • 16-bit high performance integrated Super VGA with 512KB RAM • 1.2MB and 1.44MB floppy drive • 1 parallel and 2 serial ports • Enhanced 101-key keyboard • DOS 5 • Windows 3.0 • Mouse • Slimline case • Customer Upgradable to 486SX, 486/33, 486/50, and beyond.

Lease for \$69/month* 386/SX-20 \$1,595.



386/33 CACHE SYSTEM

· 33MHz 80386DX CPU operating at zero wait * 35MH2 8038013X CPU operating at zero wait states * Cache processor with 648 static RAM * 4MB RAM (expandable to 16MB) * 200MB hard drive * 14" Super VGA color monitor with 1024 x 768 resolution * 16-bit high performance Super VGA card with 1MB video RAM * 1.2MB and 1.44MB floppy drive * 1 parallel and 2 serial ports • Enhanced 101-key keyboard • DOS 5 • Windows 3.0 • Mouse • Customer Upgradable to 486SX, 486/33, 486/50, and beyond

Lease for \$99/month*



486/33 SYSTEM

• 33MHz 80486DX CPU • Built-in cache • 8MB RAM (expandable to 32MB) • 200MB hard drive • 14" Super VGA color monitor with 1024 x 768 14" Super VGA color monitor with 1024 x 768 resolution • 16-bit high performance Super VGA with 1MB RAM • 1.2MB and 1.44MB floppy drives • 1 parallel and 2 serial ports • 6 available expansion slots • Enhanced 101-key keyboard • DOS 5 • Windows 3.0 • Mouse • Slimline

case • Customer Upgradable to 486/50 and beyond.

Lease for \$122/month*



486/33 EISA CACHE SYSTEM

• 33MHz 80486DX CPU operating at zero wait states • 64KB static RAM cache fully supporting 486 burst mode • 4MB RAM (expandable to 64MB) • 200MB 18ms Hard Disk • 14" Super VGA color monitor with 1024 x 768 resolution • 16-bit high performance Super VGA card with 1MB RAM • 1.2MB and 1.44MB floppy drives • 1 parallel and 2 serial ports • Tower Case with 250 watt power supply • Enhanced 101-key keyboard • DOS 5 • Windows 3.0 • Windows 3.0

Lease for \$191/month*



ABOVE SYSTEMS CAN BE CUSTOM CONFIGURED WITH A VARIETY OF HARD DRIVE, VIDEO AND CASE OPTIONS



CALL 1-800-PC BRAND

1-800-722-7263 FAX: 1-800-772-7392

*Monthly payments based on 36 month lease, 24 or 36 month leasing options available for qualified businesses. Prices and specifications subject to change without notice.

TRW Customer Service Division. Free 90 day on-site service for 386/SX, 386/DX, 486/SX, 486/DX, and 486 EISA systems. On-site service for 286 systems available at extra cost. Free on-site is available to most locations in the contiguous United States

Windows is a registered trademark of Microsoft Corporation. Pro Designer IIs is a registered trademark of Orchid Technologies. PC Brand reserves the right to amend specifica-tions and prices without notice. Intel is a registered trademark of the Intel Corporation. The Intel Inside Logo is a trademark of the Intel Corporation. All other products or services are identified by the trademarks or service marks of their respective companies.

© 1991 PC Brand, Bensenville, Illinois.

MasterCard, Visa, American Express, Discover, PC Brand Direct Advantage MasterCard, checks, money orders, direct wire and approved purchase orders accepted.

PC Brand, Inc., 877 Supreme Drive, Bensenville, IL. 60106.

In an extremely competitive field, it takes more than just guts to say you're the best around. It takes proof. And that's something we have no shortage of.

Take the quality of our machines, for example. Our components come from the industry's leading manufacturers. We double check all parts for workmanship and compatibility in our own engineering department. We also "burn in" all our systems for at least 24 hours to insure everything is working perfectly.

Our prices are extremely low. Just take a look for yourself. Compare them to Dell and Northgate. You'll find that our PCs are consistently hundreds of dollars less. And perhaps even more important, they usually come with better features, too.

Our customer support team is outstanding. They were rated #1 for service and support in a magazine evaluation of the "10 Best Mail Order Companies." You see, as long as you own a PC Brand computer, we'll always be there to assist you anyway we can. Take it from *PC Magazine*, "...PC Brand's service policy does outclass the competition."

Our 5 year limited warranty is simply the best. Not only is it the most extensive in the industry, it's also the most reassuring. And perhaps the best thing about it is that you'll probably never have to use it.

Of course, there are a few more things that make our PCs a great buy. Like a 30-day,

THERE'S A FIVE-WAY TIE FOR FIRST.

no-questions asked, money back guarantee, unlimited toll-free technical support by phone or fax, and on-site service in your home or office.

Hopefully now you have all the proof you need to see why PC Brand computers are the most valuable around. So if you'd like to order, or have any questions at all, give us a call at 1-800-PC BRAND. And don't settle for anything less than the industry's best. Or at least one of the top five.



World's Smallest **Portable Mass Storage**

New! Parallel Port Connection No Cards Needed!

Liberty Systems, after shipping quality small portable hard drives for 5 years, completes its product line with the addition of its 50, 70, 115, and 225 Series portable mass storage devices.

50cu.in. Series

20Mb Per Cartridge



- Hard Drives in 52, 105, 120Mb Floptical/20Mb Battery Option
 - Floptical®

70cu.in. Series



· Hard Drives in

Mac or IBM

- 40Mb-425Mb
- **DAT Drive** 1.3 - 2.0 Gia
- · Tape Drive 160 - 600Mb

425MB

Hard Drives

115cu.in. Series

90Mb Per Cartridge

- Eraseable Optical 3.5* 128Mb Per Cartridge
- Sony CD-ROM
- Syquest 44Mb/88Mb
- Bernoulli 90MB
- Solid State Drive 40Mb



225cu.in Series

90Mb Per Cartridge

- Sony Erasable Optical 5.25* 650Mb Per Cartridge
- Bernoulli/Syquest Dual
- . Hard Drives: WREN 8, 1.6Gigs
- Solid State Drive 20Mb



Dual Bernoulli®

All Liberty drives include internal power supplies, and come with the necessary cables and software to connect directly to your PC or Mac. Parallel port controller optional on all Liberty drives. Works great on laptops, notebooks, and desktops. Fully IBM and Macintosh compatible



(408) 983-1127 fax (408) 243-2885

160 Saratoga Ave., Ste 38, Santa Clara, CA 95051

Circle 128 on reader service card

PC W\(\beta\)RLD

Philip Lemmons Editor in Chief

Eric Knorr Editor Russell Glitman Executive Editor Steve Fox Managing Editor

Senior Editors

Reviews Eric Brown News Mike Hogan

East Coast Editor

Eric Bender

Editorial

Assistant Managing Editor Cynthia Brown Technical Editor Karl Koessel Assistant Technical Editor Susan J. Silvius Associate Editors Bronwyn Fryer, Roberta Furger, Michael Goodwin, Daniel Tynan Assistant Editors Rex Farrance, Susan Lusty, Melissa R. Riofrio, Lincoln Spector Editorial Assistant Anita Hamilton

Copy Chief Jane Paulsen

Sr. Copy Editors Barbara Lewis, Peggy Nauts Copy Editors Bonnie Jacobson, Marla Miyashiro Asst. to the Editor in Chief Cynthia Grossman Administrative Assistant John Goddard

Typesetting Manager Mark L. Duran Typesetter Henry Pham

Business Manager Scott Danish

Art & Design

Art Director Mitch Shostak Associate Art Directors Robert Kanes, Greg Silva Senior Designer Emily Wollenweber Senior Design Associates Barbara Adamson, Laura Pannbacker Designer/Infographics Jeff Berlin Asst. Designer/Infographics Hope Winslow Production Artist Marlene Tobias

Contributing Editors

Anita Amirrezvani, Steve Bass, Jesse Berst, TJ Byers, George Campbell, Steve Cummings, Brett Glass, Judy Heim, Mark Henricks, Richard Jantz, Alan Kaplan, Robert Lauriston, Robert Luhn, Carole Matthews, Martin Matthews, Richard Scoville, Ralph Soucie, Scott Spanbauer, John Walkenbach

David Bunnell Founder Andrew Fluegelman Founding Editor

User Group Advisory Board

Tony Barcellos, Sacramento PC Users Group; Steve Bass, Pasadena IBM Users Group; Roger Bender, Microcomputer Managers Association (MMA); Jack Bolton, Atlanta PC User's Group; Brian Camenker, Boston Computer Society; Mary Dolce, Chicago Computer Society; Al Harrison, Houston Area League PC Users; David Hoffman, NYPC; Brian Livingston, MMA; Joseph Rigo, NYPC; Irving Samuels, Capital PC User Group; Jerry Schneider, Association of PC User Groups

Patrick Kenealy President & Publisher Richard J. Marino Associate Publisher

HOW TO CONTACT PC WORLD

Unless otherwise indicated below, please direct all correspondence and inquiries as follows:

PC World Editorial, 501 Second St. #600, San Francisco, CA 94107 CompuServe: 74055,412 MCI Mail: PC World Editorial Phone: 415/243-0500 Fax: 415/442-1891

Subscription Services/Address Changes

Call toll-free 800/234-3498 (303/447-9330 in Colorado), or write Subscriber Services, P.O. Box 55029, Boulder, CO 80322-5029, To place new orders, call 800/825-7595.

Letters to the Editor

PC World welcomes your comments and opinions. Address editorial correspondence to Letters to the Editor. Letters intended for publication should not exceed one double-spaced page. Be sure to include your name, city, and state. We reserve the right to edit all letters.

Help With Your PC Hardware or Software

If you have a problem, PC World may have the answer. Send written questions about PC products and procedures to The Help Screen and network-related questions to Network Q&A. Send consumer-related questions and complaints to Roberta Furger, Consumer Watch.

Reader Submissions

PC World encourages readers to share technical solutions. We pay \$25 for each Power Tip published in the magazine, \$50 for User Group Tips, \$25 to \$200 for Star-Dot-Star items, and \$50 for any questions used in the How To section, Keep submissions brief (Power Tips and User Group Tips to 100 words or less). We cannot acknowledge unpublished submissions; accepted submissions will be acknowledged by payment.

New Product Information

Send hardware press releases to Melissa Riofrio, Assistant Editor, or call her at 415/978-3179. Send software product announcements to Susan Lusty, Assistant Editor, or call her at 415/978-3321.

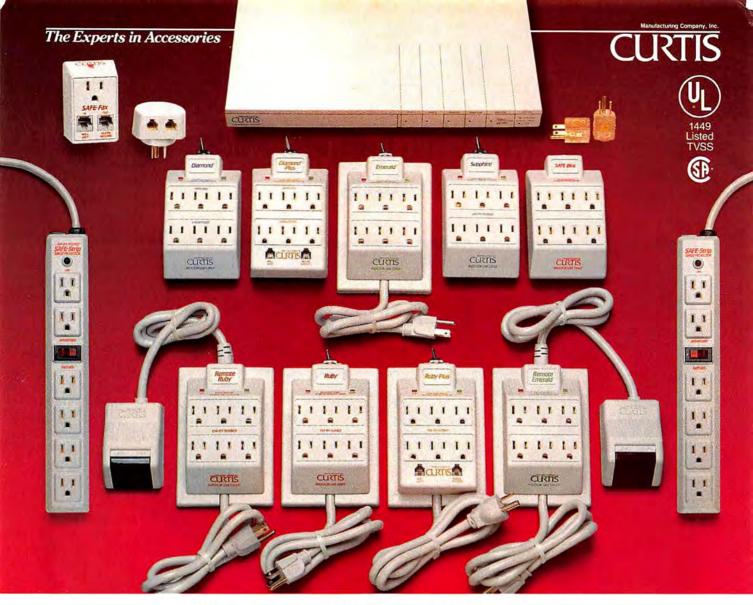
Reprints and Permissions

You must have permission before reproducing any material from PC World. If you want to quote from or reprint any portion of any article or use artwork or photographs from the magazine, send a written request to PC World, Reprints and Permissions, 501 Second St. #600, San Francisco, CA 94107; include a phone number to ensure a fast response. To order reprints of PC World, call 415/978-3162.

Editorial Calendars

To receive a copy of PC World's Editorial Calendar, call your nearest regional PC World advertising sales office. See the Advertiser Index for phone numbers.

PC World (ISSN 0737-8939) is published monthly at \$29.90 for one year (12 issues), \$59.90 for two years (24 issues), \$89.70 for three years (36 is PC World ** (ISSN 0157-8899) is published monthly at \$29.90 for one year (12 issues), \$50.90 for two years (24 issues), \$89.70 for three years (36 issues) by PC World Communications, Inc., 50.1 Second St. 9600, San Francisco, CA 94107. Foreign orders must be prepaid in U.S. funds with additional postage. Add \$18 per year for Canada and Mexico; add \$46 per year for airmail for all other countries. Canadian GST Registration #R12469880. Second-class postage paid at San Francisco and additional mailing offices. POSTMASTER: Send address changes to PC World, Subscription Dept., PO. Box 5022, Boulder, CO 8022-5029. Editorial and basiness offices: 501 Second 8t. #600, San Francisco, CA 94107, 415/243-4600, CompuServe 74055,442; MCI Mail PC World Editorial. PC World ** is an independent journal, not affiliated in any way with International Business Machines Corp. (RBM is a registered trademarks of International Business Machines Corp. (Copyright = 1994), PC World Communications, Inc.: Consumer Watch, PC World Vice. ***, PC World.



You Can't Buy A Better Surge Protector Than Curtis Guaranteed Protection—Proven Performance

When it comes to protecting their valuable data and electronic equipment, more computer users rely on Curtis surge suppressors than any other brand. Here's why:

UL 1449 TVSS Lowest Voltage Ratings—Every Curtis surge protector has achieved a rating of 400 volts peak or less—the lowest ratings available—in tests by Underwriters Laboratories for maximum let-through voltage.

Greater Selection-Single or multiple outlets, switched or unswitched. remote control, EMI-RFI filtering, phone line

surge protection—choose the surge protector with the combination that best suits your needs.

Guaranteed Protection* Every Curtis surge protector is guaranteed to provide you with the protection you need. And most are backed by the industry's best warranty coverage—the Curtis Lifetime Warranty.

With all this going for them, no wonder Curtis surge pro-

tectors are owned by more computer users than any other brand.

Curtis. You can't buy a better surge protector.

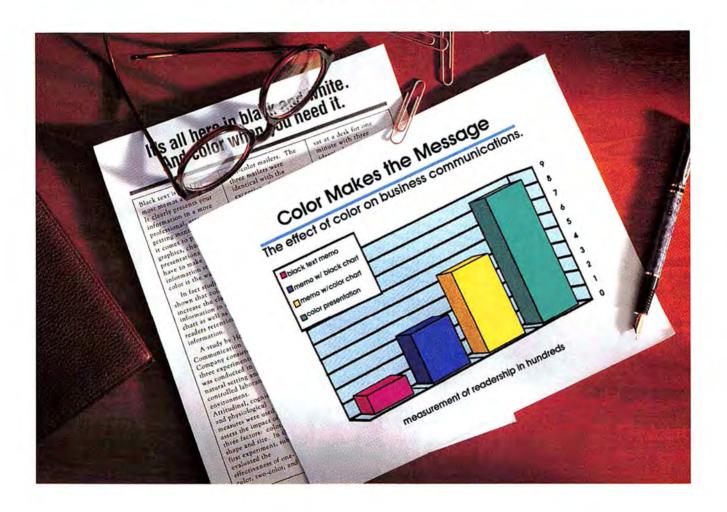
UL Standard 1449 TVSS tests the maximum voltage that can pass through a surge supressor after clamping has occurred. LOWEST 330 400 500 600 800 1000 1200 1500 2000 2500 3000 4000 5000 6000 HIGHEST VOLTAGE

> All Curtis Surge Protectors are rated at 330 or 400 Volts Peak the lowest ratings available.

Curtis products are available worldwide. For your FREE "Surge and the new UL 1449 Standard" brochure, call (800) 548-4900 Ext. 40.



What's the business world coming to?



Now all users, Macintosh and PC, can get their hands on some color without giving up great black and white. Hewlett-Packard makes it all possible with the DeskWriter C printer for Macintosh and now the HP DeskJet 500C for DOS and Windows applications. Impressive black and white. And thousands of colors. For only \$1,095.*

The best features of HP's DeskJet 500

black and white printer haven't changed. You'll still get the crisp, clean, laser-sharp output. The 300 dot-per-inch resolution. And you'll still have all the built-in, scalable fonts and graphic capabilities that can make such a difference in your documents and presentations.

Take all that, add a nearly endless choice of attention-getting colors, and your users have one very valuable partner. One that's a pleasure to work with. You just plug, play, and print. On plain paper or transparency.

With the DeskJet 500C and DeskWriter C, Hewlett-Packard introduces a colorful new generation to its family of inkjet printers. A family that stands for affordable quality. Quality that's backed by a three-year warranty.

Affordable color. The HP DeskWriter C printer for the Mac.



And the HP DeskJet 500C for PCs.



Only \$1,095 each.

So when others ask you what's new, tell them to get ready for a splash of color. For more interesting graphs and charts. For impressive cover pages and for compelling overhead presentations. All for \$1,095.

If you'd like to see some sample output from the DeskJet 500C or DeskWriter C, call **1-800-752-0900**, **Ext. 2757.**† Or visit your nearest authorized HP dealer and sign up for a chance to win a Caribbean cruise for two.** Color has finally arrived.

HP Peripherals When it's important to you.



Some People Are Born Accountants. For The Rest Of Us, There's New ACCPAC Simply Accounting For Windows.

Easy To Learn, Easy To Use And Only \$199.



Simply Accounting accounting pro-Now there's an gram anybody can use-new ACCPAC® Simply Accounting™ For Windows.™

the quickest and easiest way to take care of your books.

You'll have it up and running in minutes. And with the Windows interface, you can do anything with just a few clicks of the mouse. Write a check. Print out an invoice. Do your payroll. Manage your receivables.



What used to take hours now takes just minutes. So you can spend less time

counting your money-and more time making it.

And since it costs only \$199, you can take care of your books without breaking the bank.

Call us today at 1-800-645-3003 for the location



of your nearest dealer. It's the accounting program anybody can use.

And we mean anybody.



For Only \$199You'll Get: · General Ledger · Accounts Payable · Accounts Receivable · Payroll · Inventory Control · Job Costing · Prints Checks, Statements, Invoices and Mailing Labels · Produces Standard Accounting Reports · Quick Set-Up

©1991 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787. All trade names referenced are the trademarks or registered trademarks of their respective companies.

Circle 29 on reader service card



The review crew (from left); Silvius, Tynan, Spector, Farrance, Goodwin, Riofrio, Brown, and Hamilton get into the act as the set is prepared.

want to use my first opportunity to write this column to introduce some staff members and outline some of the ways they are enhancing *PC World*'s product coverage. This special hardware issue provides the perfect occasion to announce that we're opening our arms to far more products than ever. Many staff members have contributed to this process, including Mike Goodwin, Daniel Tynan, Lincoln Spector, Rex Farrance, Melissa Riofrio, and Anita Hamilton. They received major assistance from Technical Editor Karl Koessel and Assistant Technical Editor Susan Silvius.

Our goal for the 486SX roundup in this issue was 25 systems. Our appetite proved larger than the number of available shipping 486SX systems, but we did get and test 11, show features and contact information on 18 more, and throw in coverage of nine leading 33-MHz 386DX systems, one 25-MHz 486DX, and one 40-MHz 386. The result is a battle of performance and value. (We'll shoot for 25 systems in the review of 386SXs coming in our January issue.)

But we're doing much more than broadening our coverage. Senior Editor Eric Brown has spearheaded an approach to reviews that combines new rigor in performance and value analysis with unprecedented clarity and conciseness in presenting conclusions for the busy management reader. We've added to *our* work load in order to lighten *yours*.

The review process builds a mountain of information, then compresses it into a compact but accessible format. System reviews take into account performance, price,

Teaming Up for Better Coverage

expandability, service and support, fast-RAM capacity, and design and construction. Performance measurements come from an exhaustive suite of application-based benchmarks. Prices used in calculations come from a large telephone survey of street prices. Further telephone calls put vendor service and support to the test. Then each of the six major factors are weighted to reflect the concerns of the majority of our readers, and the systems are ranked accordingly.

For your convenience, editors pack this hard-won information into a capsule format. An "Executive Summary" highlights major conclusions. "Buying Smart" concisely explains the major issues in making a purchase. A "Best of the Rest" sidebar gives information on similar products that didn't arrive in time to be tested. If your priorities differ from those used in the review, you can change our weightings and use a spreadsheet to recalculate and rank the systems anew.

These improvements are but a first step. Look for further expansion of our product coverage in future issues. Those of you who buy through the direct channel can look forward to expanded coverage of direct-marketed machines. New-product coverage in *Product Outlook* will expand starting in the January issue. Blockbuster products will get full feature treatment starting in February. Our reviews will visit many major product categories twice in 1992 rather than once.

In short, PC World is rededicating itself to both parts of its mission: To provide the most useful and accessible information to the busy management reader, and to provide a level playing field for products that can benefit this reader, whether they come from industry giants or ambitious newcomers.

■

Phil Lemmons
Editor in Chief





How to spot the

















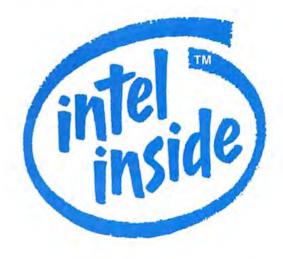
very best PCs.











It's really quite easy. Just look for PCs that have a genuine Intel microprocessor inside. Either the Intel386,™ Intel386 SX, Intel386 SL, Intel486™ or Intel486 SX microprocessor.

Intel is the world's leader in microprocessor design and development. In fact, Intel introduced the very first microprocessor. So with Intel inside, you know you've got unquestioned compatibility and unparalleled quality. And you'll know you're getting the very best PC technology. So look for the Intel Inside symbol on ads for leading PCs. Or call 800-548-4725 for more information. It'll show you've got an eye for spotting the best.



Intel386, Intel486 and the Intel Inside logo are trademarks of Intel Corporation. All rights reserved. © 1991 Intel Corporation.

The perfect performance.



The encore.



Introducing the Jumbo 250.

The Jumbo 120 tape backup system scored a perfect 10 in a PC Week poll. Our new Jumbo, the 250, has the capability to store twice as much of your valuable data at twice the speed. Typically 250 megabytes, with data compression. Which begs the question - is there such a thing as more than perfect?

Check out the new Jumbo 250, and the Jumbo 120. Both feature unprecedented reliability, easy installation, unattended backup, data compression, Novell*certification, UNIX*/Xenix* support and QIC compatibility.

For more information, call 1-800-346-9881, fax (303) 667-0921, or write 800 S. Taft, Loveland, CO 80537.

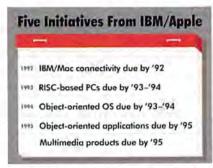


Edited by RUSSELL GLITMAN

IBM, Apple Close Ranks

Microsoft Is Target, OS/2 May Be Victim

BM and Apple have united in a bid to wrest control of the computer industry from Microsoft, but users say the alliance will have little impact on buying plans and may hamper IBM's efforts to present OS/2 as a Windows alternative.



Apple and IBM plan an array of system software and multimedia introductions over the next four years.

The two giant manufacturers banded together in October with the promise of an object-oriented operating system running on RISC-based PCs. More immediately, the partners plan to expand Macintosh connectivity into Big Blue corporate shops. Most of the initiatives, including multimedia and object-oriented applications, are unlikely to see shrink-wrap until 1995.

That distant horizon has most users eyeing developments but buying Windows. "I don't see the alliance having much impact for years to come," says Sanford Rosen, program director for the Columbus (Ohio) Computer Society. "The PC environment has splintered from IBM. [IBM doesn't] control the market."

Regaining control is the goal. First, IBM and Apple hope to counter Microsoft's growing power over application development and the direction of operating system software. Second, by developing with Motorola a new RISC-based platform, they hope to differentiate their hardware from the growing ranks of clones.

The first victim of the pact may be OS/2, and IBM says version 2.0 won't ship until early 1992. "I would interpret this as a signal that one should not go to OS/2 because it will be very transitional," says Jordan Rosenberg, president of PC Window, a San Francisco consulting firm.

In fact, even while Jim Manzi, chairman of Microsoft archrival Lotus Development, publicly endorsed the alliance, he offered this advice for today's application software shoppers: "Buy Windows."

IBM Abandons Application Push

Just as IBM Desktop Software prepared to launch its most likely hit product, its parent pulled the plug on the PC application group.

The move leaves Signature (a DOS successor to Display-Write that's completed but has not shipped), the Hollywood presentation graphics package, the Platinum accounting line, and other packages looking for new homes at press time. Some may go back to the developer, others to different IBM groups.

Rather than developing and marketing applications, IDS will concentrate on forging alliances with major software vendors and on creating platforms such as Office Vision, an office software suite whose PC LAN version has been delayed for years.

IDS was formed late in 1988 to acquire applications. "What we bring to the table [with vendors] is a focused and dedicated sales forces, dollars, and access to channels and large accounts," said General Manager Fernand Sarrat at that time. However, established software firms were put off by IBM's insistence on exclusive marketing rights "given its remarkable track record of failure," notes Infocorp analyst Bill Higgs.

While most of its titles sold reasonably well, and it was marginally profitable, IDS never enjoyed a major hit. Its greatest opportunity lay in word processing, because DisplayWrite is still among the top five packages in installed base. IBM teamed with Xy-Quest to produce Signature, which offers editable WY-SIWYG fonts without Windows-a unique capability. But development delays made Signature late to market. By that time, says Higgs, IDS had been caught up in chairman John Akers's general unhappiness with IBM's performance and became "an object lesson in what happens when you don't meet the goals."

386SL Notebooks Pick Up Steam

Intel made good its promise to extend the reach of the 386SL by introducing a 25-MHz version of the power-saving notebook chip just prior to COMDEX Fall. Meanwhile, the COMDEX floor showed the popularity of the 20-MHz version of the CPU: More than three dozen 20-MHz SL notebooks debuted, one of the more striking a color notebook by Sharp Electronics.

Although Sharp is a prime supplier of active-matrix color LCDs, the PC-6881 is its first truly remarkable notebook. It has the traditional 8½-by-11inch notebook footprint andthanks to Sharp's second-generation active-matrix LCD technology—a height of only 1.9 inches. The unit is smaller and slimmer than the AST Research and Epson America color notebooks.

The new technology in the 8.4-inch diagonal VGA display is one-third the width of Sharp's first-generation active-matrix display and takes one-third less power. Battery tests to determine how well the low power display helps the machine meet the power requirements of color were not available at press time, but the PC-6881 appears

promising in that regard.

For one thing, it's the first 386SL notebook that turns the power down between keystrokes, thanks to the new Phoenix Technologies Power-Miser BIOS. The machine uses nickel-cadmium batteries, but an optional battery pack attaches to the back and doubles available power.

The PC-6881 also has the characteristic ability of 386SL notebooks to suspend operation for days and return to the exact point of departure, even in Windows applications.

Finally, there's the 386SL chip itself. The 25-MHz version draws only 2 percent more power than the 20-MHz version.

BM and Chips and Technologies have joined Advanced Micro Devices in challenging Intel with 386-compatible chips that offer PC purchasers more bang for the buck.

IBM claims that its 20-MHz 386 SLC, which incorporates an

8K on-chip cache and optimized instructions, offers twice the performance of Intel's equivalent 20-MHz 386SX. The SLC will appear by year-end in a \$780 board upgrade for the PS/2 Model 57, reportedly boosting application speed as much as 88



C&T and IBM have developed powerful alternatives to Intel's 386DX and 386SX microprocessors.

percent. Next year the technology will be incorporated in as-yet unannounced IBM desktops and portables. Unlike other chip makers, IBM has a licensing agreement with Intel that gives it indisputable rights to market the chip. IBM has no plans to sell

the chip to other PC suppliers.

Chips and Technologies's new Super386 line comes in two flavors: pin-compatible SX and DX chips that provide a 10 percent speed boost over their Intel counterparts, and SX and DX compatibles that require special sockets and yield a 40 percent improvement. Arriving early next year, the Super386s offer PC suppliers new ways to conserve power, solve software-incompatibility problems, and differentiate their systems. Most PC suppliers had hesitated to move away from Intel until recently. "but the cracks are appearing in the wall," declares C&T president Gordon Campbell.

Intel lacks anything like C&T's new PC/Chip, which combines an extremely fast 8086 compatible with system logic, graphics adapter, serial port, and power-management features on a single piece of silicon. By early next year, PC/Chip will appear in a wave of very powerful DOS palmtops that can run for many hours on standard batteries and are also very cheap—priced at \$500 or less.

Meanwhile AMD, which began shipping its 386 CPUs last spring, says it should deliver a million of them by year-end. Nexgen, Cyrix, and other suppliers are expected to enter the arena in 1992.

Giving More Life to Batteries

Notebooks capable of 6 or more hours of uninterrupted battery-powered computing could be available by secondquarter 1992, with 9 to 11 hours possible by year-end.

Advanced Micro Devices has become the first to introduce 386 SX and DX CPUs capable of 25-MHz and 33-MHz clock speeds using low-power 3.3-volt circuitry. AMD's new AM386SXLV and AM386DXLV conserve 56 percent more power than their 5-volt predecessors, which AMD claims already get 5½ and 4½ hours of uninterrupted operation, respectively.

But those are lab results, not field results, notes AST Research marketing director Marcy Puhnaty. AST's Premium Exec 386SX/25 bests comparable Intel 386SX and 386SL notebooks thanks to AMD's 25-MHz AM386-SXL-25 chip but falls about an hour short of AMD's 5½-hour claim, says Puhnaty.

Still, she agrees that 6 to 6½ hours of battery life can be achieved at least by second quarter. By then, enough complementary 3.3-volt components will have been introduced to produce mixed-voltage systems.

The "all-day" notebooks capable of 9 to 11 hours of battery operation will be here by yearend 1992 when every component is operating at 3.3 volts, maintains AMD marketing manager Rajeesh Tanna.

These developments are not unique to AMD processors. Intel will release 3.3-volt chips of its own, says Dave Ryan, the company's 386SL marketing manager, who agrees that 6-hour notebooks will be here by midyear. But not all vendors will use the extra power for longer operation, adds Dean McCarron of Instat. Some will trade the extended hours for color screens, lightweight penbased systems, or even the use of alkaline batteries.

Computer Associates Prefers Windows

The world's second-largest software company, Computer Associates, has thrown its weight behind *Windows*. Again.

Although CA has tried unsuccessfully in the past to crack the Windows market, this time Chairman Charles Wang is managing the assault directly and promises to integrate CA's mainframe and midrange software with its upcoming Windows products. This approach will give users not only more Windows applications to pick from but applications geared for distributed processing and client-server computing.

"You tend to get better when you fail the first time," Wang says. As proof of lessons learned, he points to several products introduced in October. These include an xBASE development language and data base product, dBFast; an image processing system, CA-PHIPS; and a Windows version of CA's SuperProject project management application. A word processor, a personal information manager, and a Windows version of Su-

perCalc were expected to be unveiled at COMDEX.

While not all the products are available yet, the array of Windows offerings will be formidable. To get the products out the door, CA is retraining mainframe and midrange programmers to develop for Windows. To exercise tighter control, it has moved the head-quarters of its PC business unit to the corporate office.

Although CA's PC software revenue was only \$150 million to \$200 million on \$1.35 billion total revenues in the fiscal year ended March 31, 1991, the renewed commitment to Windows is particularly significant because CA is the largest vendor of mainframe software. Its sales force has direct entrée to corporate accounts where IBM is trying to promote OS/2. With CA banging on the doors with Windows applications, IBM's OS/2 sales mission just got tougher.

According to Wang, CA's primary reason for developing Windows is economic. "Very few of our customers were asking for OS/2 PM applications," he says. ●



GRAN



Presenting the PowerMate Image

In the past, a line of personal computers that was built around your needs was just wishful thinking. Well, not anymore. Because the PowerMate* Image™

Series from NEC is here.

You wished for superior graphics performance. Now you can have it. Thanks to NEC's patented Image

Video™ technology. It lets you handle graphics-intensive applications at lightning speeds—up to 400% faster than other PCs in its class. What's more, our unique ImageSync™ technology gives you flicker-free graphics when you use an Image Series PC with one of NEC's new MultiSync* monitors.

Greater expandability. With room for four



Series Personal Computers.

internal devices, four expansion slots, memory expansion on the motherboard, and upgradable video RAM,

> your system can easily be expanded as your needs grow.

> > Easy upgradability. When you upgrade you get more than a faster CPU. You

also get more memory, cache and video. And since opening the new Image systems is as easy as the turn of a quarter, upgrading has never been easier.

For more information call 1-800-NEC-INFO. The Image Series. With features like these, it should definitely be on your wish list.



Because \uparrow is the way you want to go.





nology, it can handle

even the most complex

applications with ease.

SX/16i and SX/20vi are the entry-level Image systems. They're easily upgradable and feature Image-Sync technology for maximum graphics clarity.

hefty price

tag.

The

All Image Series PCs come packaged with MS-DOS* 5.0, Windows* and PFS: Window Works.™



Because \uparrow is the way you want to go.



NEC invests 3.6 billion dollars

That's more than

most computer companies make

> in a year. And that can

> > make a lot of wishes

> > > come true.

annually in research and development.



LETTERS

Reactions and responses from the PC World community



IBM and Apple: A Stand-Up Team?

I enjoyed your September *Top of the News* item on the IBM/Apple joint operating system venture ["New OS Plan Unfolds"]. I used to think of IBM as dull and humorless, but this collaboration is really good for a laugh. IBM's and Apple's predictions of one operating system running on PCs, Macs, and workstations elicited a chortle. But they had me rolling on the floor with their promise to run DOS, *Windows*, OS/2, and Mac applications under one OS. IBM and Apple have obviously teamed up as the Laurel and Hardy of the personal computer industry.

R. T. Brown Los Angeles, California

Disposable PCs

I find Alan Kaplan's PC purchasing logic bizarre, to say the least. Did I hear him right? Did he really say that it makes more sense to buy two clones than one IBM, "so if one clone burns up, you can throw it out the window and you'll still be ahead" [In This Issue, September]. Would he buy four Yugos, then, instead of one Volvo? If so, I hope he's not in front of me when one of them expires in rush-hour traffic. I want reliability from my vendor and my equipment, not sudden death. What am I supposed to do about files that perish with the computer? I can't risk losing work, so I avoid disposable PCs.

Irwin Schorr Bethesda, Maryland

Whoa! Today's popular clones are hardly Yugos (see Rate Your Satisfaction in this issue), and reliability by redundancy is a simple fact. Also, standardization and modularity permit failed components to be replaced easily (at least in clones), so we're not really talking about throwing out systems. By backing up on the drives of a second complete clone system, you'll certainly increase your uptime, you may increase your mean time to failure, and you may still save money. IBM makes a fine system. So do many clone manufacturers. —Alan Kaplan

Software Helps Laptops Steal the Show

Your September issue included a fascinating article by Bronwyn Fryer on how insurance agents use laptops to increase sales ["On Site: Laptops Steal the Show"]. The story mentioned a few software packages: Impact Technologies' Impact, Isis from Isis, and Vernon Publishing's *FNA*. Could you let us know where to find them?

Brendon Woirhaye Chino, California

You bet! Sorry we didn't mention the vendors' cities so you could track them down on your own. Impact 800/438-6017, Isis 702/358-7400, Vernon 203/643-2200. —Bronwyn Fryer

DOS and Windows Programs: A Best Buy for Each?

While I read the September review "Spreadsheets: Beyond Number Crunching," I was struck by the incongruity of rating DOS and Windows software side by side. It seems to me that PC users are polarizing into dedicated DOS and Windows groups. I'm exclusively in the DOS camp, and I'm just not interested in buying Windows packages. So I think that instead of awarding a single Best Buy to a Windows product like Excel 3.0, you should award a character-based Best Buy too.

Harwood Loomis Woodbridge, Connecticut

Better Peripherals Sharing

I enjoyed Rex Farrance's "Share Peripherals Without Networking" in the September issue, but I was sorry that you didn't acknowledge the frequent need for spooling software on local workstations. You install a spooler, like our *PrintQ* (or even a public domain spooler), on individual PCs, and it spools the job to your local hard disk first. So if large graphics files have already filled up the shared buffer, your computer won't hang while it waits to print.

Alex Czajkowski Software Directions Randolph, New Jersey

Modem Communications Problem

I always find your Buyers' Guides informative and helpful, but I think you missed the mark in September ["Buyers' Guide: 2400-Baud Modems"]. That same month, *Product Outlook* covered the \$149 SpeedModem Champ from CompuCom. Why didn't you include it in the Buyers' Guide? The

Champ goes beyond 2400-baud capabilities to allow 9600-baud transmissions (although only with other SpeedModem Champs). I recently bought one, and it's like having a 9600-baud modem for a price that's less than what you have to pay for most 2400s.

Thomas R. Oertel West Allis, Wisconsin Even though all 9600-band modems are capable of 2400-band transfers, we couldn't include them in our Buyers' Guide to 2400-band modems. Most 9600-baud modems are priced much higher than 2400-baud modems and include V.32 compatibility, which allows 9600-band transmission with compatible modems. Although the SpeedModem Champ's price is comparable to that of 2400-band modems, it can perform 9600-baud transfers only with another Champ. But the Champ's low price makes it attractive to many prospective buyers of 2400-band modems. -Ed.

Pen-Based Computing: Coming On Strong

Your September preview of NCR's 3125 Notepad gives an exciting glimpse into the future of pen-based computing



Time/Date Prompt

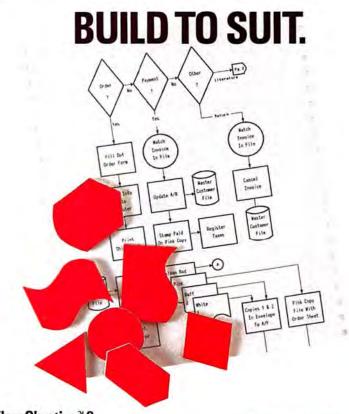
If you haven't invested in a snazzy graphical user interface and you spend a lot of time staring at a DOS prompt, you might find it convenient to have the day, date, and time posted on your screen. To do so, insert the following line in your AUTOEXEC.BAT file:

prompt Se[s Se[01;50H Sd St Se[u SpSg

Be sure to include the line DEVICE=C:\DOS\ANSI.SYS in your system's CONFIG.SYS file.

Also remember that the time shown doesn't change automatically; press <Enter> at the DOS prompt to see the current time.

Jayesh S. Thakrar Computers and Telecoms Systems Ltd. Dar es Salaam, Tanzania



Flow Charting 3

Now, you can <u>create</u>, <u>update</u> and <u>print</u> presentation-perfect flowcharts to <u>your</u> specifications — in no time!

Quick to master <u>and</u> a snap to use, Patton & Patton's flowcharting software is the standard of both large and small businesses around the world — and is available through all major software dealers.

See <u>your</u> dealer today! Or, for a "live," interactive demo disk, call: **800-525-0082**, ext. 2512

International: 408-778-6557, ext. 2512



PATTON & PATTON Software Corporation

Excellence in charting the flow of ideas!

Works on IBM & 100% compatible PC's, supports CGA/EGA/VGA and over 150 dot matrix and laser printers, with multiple print densities and 10 font sizes. Creates multi-page charts, portrait or landscape, on most standard paper sizes. Mouse or keyboard controlled.

IBM is a registered trademark of International Business Machines Corporation.

Circle 233 on reader service card



Your Search Is Over, Our New PRICE-CUTS Will Buy You A Vacation









NOBEL 386SX

\$1295

NOBEL 386-33

\$1995

NOBEL 486SX

NOBEL 486-33 \$2195

\$2895

- INTEL 80386SX-16MHz CPU
- 1.2 MB 5.25" Teac FD 1.44 MB 3.5" Teac FD
- 2 MB System RAM
- 42 MB IDE Hard Drive
- 14" 1024X768 Color VGA Multiscan Monitor
- 16 Bit 512K VGA Adapter
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- OmniKey/101 KB by Northgate

OPTIONS

- 20 MHz CPU, 32K Cache
- 2, 4, 8 MB System RAM
- 90, 131 MB Hard Drive

"ACCEL's new and aggressive price-cuts, without sacrificing any standard features will revolutionize the PC market" - July 1991.

INTEL 80386 - 33MHz CPU

- 64K Static Cache RAM
- 1.2 MB 5.25" Teac FD
- 1.44 MB 3.5" Teac FD
- 4 MB (60 ns) System RAM 131 MB IDE Hard Drive w/ 32K Cache 18ms
- 14" Non-Interlaced 1024X768 VGA Color Monitor
- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- Tower or Desktop Case
- OmniKey/101 KB by Northgate

OPTIONS

- 25 MHz CPU
- 8, 16, 32 MB RAM
- 90, 200 MB Hard Drive
- 15" NI Flat Screen Display

INTEL 80486 - 20MHz CPU

- 1.2 MB 5.25" Teac FD
- 1.44 MB 3.5" Teac FD
- 4 MB (60 ns) System RAM 131 MB IDE Hard Drive w/ 32K Cache 18ms
- 14" Non-Interlaced 1024X768 VGA Color Monitor
- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/Mouse
- Tower or Desktop Case
- OmniKey/101 KB by Northgate

OPTIONS

- 8, 16, 32 MB RAM
- 90, 200 MB Hard Drive
- 15" NI Flat Screen Display

- INTEL 80486 33MHz CPU
- 256K Static Cache RAM
- 1.2 MB 5.25" Teac FD 1.44 MB 3.5" Teac FD

- 4 MB (60 ns) System RAM 200 MB IDE Hard Drive w/ 32K Cache 15ms
- 14" Non-Interlaced 1024X768 VGA Color Monitor
- 16 Bit VGA 1Meg RAM
- Parallel/Game/Serial Ports
- Microsoft DOS 5.0
- Windows 3.0 w/ Mouse
- Tower or Desktop Case
- OmniKey/101 KB by Northgate

OPTIONS

- · 25 Mhz CPU, 128K Cache
- 8, 16, 32, 64 MB RAM
- 131, 330 MB Hard Drive
- 15" NI Flat Screen Display

SALES HOURS:

Weekdays Saturdays

9:30 - 7:30 (EST) 10:00 - 6:00 (EST)







Call for custom configurations.



STANDARD SYSTEM FEATURES

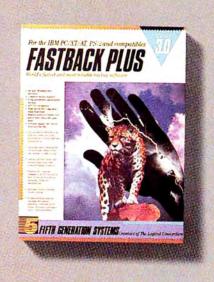
- · 30-Day Money Back Guarantee
- 2 Years Labor / 1 Year Parts Warranty Free Overnight Replacement
- Lifetime Toll Free Technical Support
- Government Purchase Orders
- Custom Configurations
- 48 Hours System Burn-In
 - Corporate Leasing Options

-800-486-6 CEL Computers, 5655-D General Washington Dr. Alexandria, VA 22312



Circle 189 on reader service card

Backup. For people who dont.



Everyone who uses a PC ought to back up regularly. But most people don't back up at all.

In fact, if the people you work with are like those working in most places we know, about the only way their data is going to get backed up is if it happens without them.

Guess what?

Now it can.

Now you can set up fully automatic, unattended backups for every PC in the house.

What's more, you can easily customize the nature and timing of each one to suit *your* specifications.

And transform a simple, effective backup policy from fantasy into fact.

All you need is Fastback Plus 3.0.

The latest version of the world's most popular backup software comes complete with a backup policy of its own — in the form of pre-designed scheduling templates — that you can adapt with our unique Macro Editor.

What makes our Macro Editor unique? It uses plain English commands. Which means you can actually use it.

Using Fastback Plus is even easier than before, thanks to our new Windows*-style interface. While our convenient new Express Menu lets you perform a full backup with a couple of strokes or clicks.

If there are a couple of kinds of computers in your workplace, you'll want to know that using Fastback Plus on PCs is very much like using Fastback Plus for the Macintosh*—same look, same functionality.

Same backups, even. That's right. You can actually restore a Mac file directly onto a PC, and vice versa.

Nobody else can do that.

But then, nobody else can back up more than 3MB per minute on an AT. Or up to 10MB per minute on a '386.

And nobody else comes close to our level of reliability.

You can destroy as much as 11% of the data on a diskette and Fastback Plus will recover every last byte, error-free.

Unbelievable?

That's what the people at *InfoWorld* thought.

So they "scratched both disks with the point of a knife to simulate accidental damage" and found, to their astonishment, that Fastback Plus "was 100% successful at restoring all the [damaged] files."

Still unsatisfied, they "ran the test several more times, increasing the sever-

ity of damage until we began to fear for our disk drives, but we were unable to generate a single byte of unrecoverable data."

We wouldn't recommend trying this test yourself. But if you insist, you'll be glad to know that Fastback Plus is backed up by our vaunted 24-hour toll-free technical support and a one-year money-back guarantee.

There's more. So pick up the phone. Dial 1-800-388-0362.

And tell everyone to stand back.



If automated, unattended backups aren't your style, you can still enjoy unprecedented convenience with our new Express Menu, which InfoWorld considers "only slightly more complicated than an on/off switch."



["NCR Gestures to the Future"]. Tele-Pad, a small company from Reston, Virginia, is making the future even brighter. Its TelePad SL, which should be available early next year, is a modular 386SL. It will be made according to customer specifications and will feature up to 8 MB of RAM and a hard disk as large as 120MB. You'll be able to order a "smartcard"-capable version, and the TelePad should be less expensive than comparable 386SLs.

Stephen P. Marks Dobbs Ferry, New York

A BASIC Complaint

Brett Glass has done the professional programming community a disservice by stating that developers wouldn't want to create a major application using Microsoft's Visual Basic [Developer's Toolbox, September]. As a professional programmer, I agree that Visual Basic is easy to learn and use. Since when is that a liability? Further, it's absurd to say that Visual Basic borrows its online keyword help from Turbo Pascal: Microsoft introduced that feature with QuickBASIC 4.0 in 1987. In fact, it was Borland that borrowed from Microsoft.

Ethan Winer

Crescent Software

West Redding, Connecticut
[Mr. Winer's company, Crescent Software, sells tools and libraries for BA-SIC programmers. —Ed.]

Ease of use is not a liability—I've used Visual Basic to create and publish many simple Windows utilities. None-

Who's doing what, and what's it costing you?



A t last—an easy, effective software tool for tracking and analyzing the time spent on projects, clients, and activities: New TimeSheet Professional 2.0.

It lets users and workgroups enter tasks, notes and expenses into convenient week-at-a-glance timesheets. Then consolidate time and expense information into custom reports. See who's doing what, and what every minute is costing you. Then print your reports in high-quality output.

An optional D/X™ Data Exchange Utility* integrates time data with project management software like Time Line,* SuperProject,*

Microsoft* Project for Windows, Project Workbench* and others.

Single user version is only \$199.95, the 8-user Network Edition just \$699.95. See your dealer today, or call TIMESLIPS

Corporation for a FREE working model.



Both Windows and DOS versions feature week-at-a-glance timesbeets for convenient

Time Sheet

Make every minute count.

Call 800-338-5314 (508-768-6100 in MA) or Fax 508-768-7660 In Canada call 800-359-3343.

TIMESLIPS

© 1991 TIMESLIPS Corporation, 239 Western Avenue, Essex, MA 01929.

SYSTEM REQUIREMENTS: IBM PC, XT, PS/2, or compatible. Hard disk required. 420K RAM. DOS 2.1 or higher (Network Edition requires DOS 3.1 or higher) or Windows 3.0. TimeSheet Professional is a registered trademark of TIMESLIPS Corporation. Tand Professional and Proposed Professional is a registered trademark of TIMESLIPS.

Circle 28 on reader service card

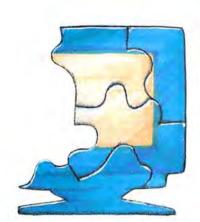
POWER TIP NO. 227

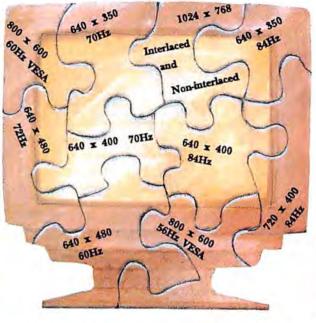
Using Windows 3.0's System Configuration Editor

You can set up an icon that will give you guick access to Windows 3.0's system configuration files, SYSTEM.INI, WIN.INI, CONFIG.SYS, and AUTOEXEC.BAT. Load Program Manager and select a window for your icon. Then select File New Program item OK. Choose Browse and navigate through your subdirectories to find and select the \WINDOWS3\SYSTEM subdirectory. Select sysedit.exe, type a description for your icon, and select OK. You can now select the icon whenever you need access to any of these files.

> Robert Kanes Associate Art Director

CTX Offers Total Compatibility.







We put all the pieces together.

Chances are, you chose a monitor that suffers from a compatibility problem. Selecting a monitor that suits both present and future needs can be tough. Consider CTX, and you will be puzzle-free! With its 28-38 KHz plus 48 KHz horizontal scanning frequencies, CTX Multimode Super VGA has Total Compatibility — no pieces will be missing from your display.



The CTX Multimode Super VGA offers the ultimate display solution. Features include: super fine CRT (0.28mm dot pitch) providing resolutions up to 1024 x 768 (Non-Interlaced), 90-260 VAC auto-sensing power supply, handy up-front controls and detachable tilt-swivel base. All these plus its affordability make CTX Multimode Super VGA your natural choice of monitors.

EXcellent CTX servicing programs come standard for all users. For more information on the best monitor deals, contact a CTX dealer today.

CTX International, Inc.

20530 Earlgate Street, Walnut, CA 91789 Phone (714) 595-6146 Fax (714) 595-6293 CTX (NY)

146 Division Place, Hackensack, NJ 07601 (201) 646-0707 Fax (201) 646-1998

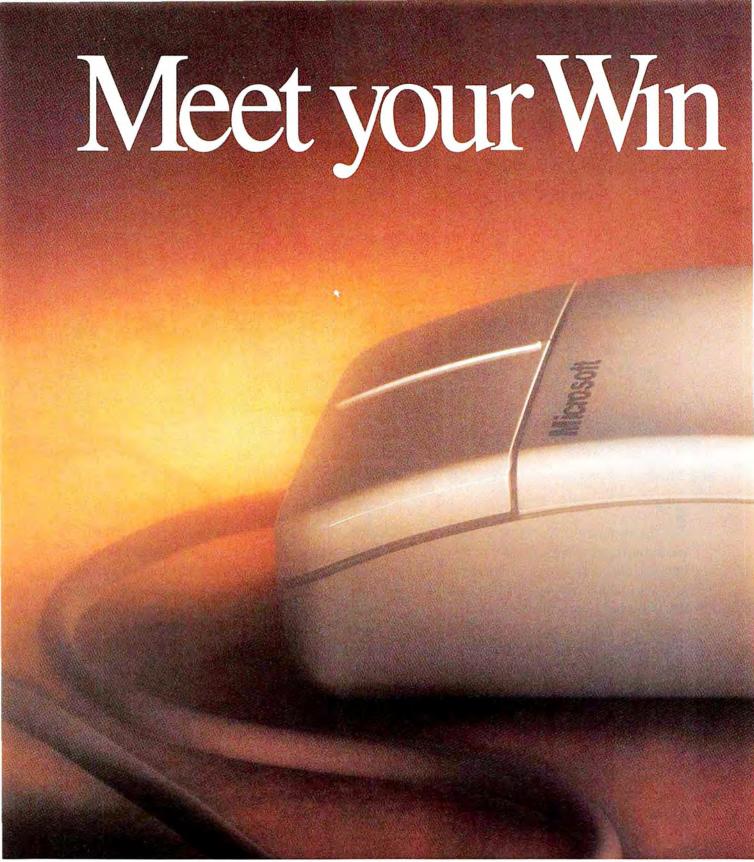
CTX South, Inc.

6090-F Northbelt Parkway, Norcross, Georgia 30071 Phone (404) 729-8909 Fax (404) 729-8805

Chuntex Electronic Co., Ltd. (Factory)

6F, No. 2, Alley 6, Lane 235, Pao Chiao Rd. Hsintien, Taipei Hsien, Taiwan Phone 886-2-9175055 Fax 886-2-9172736

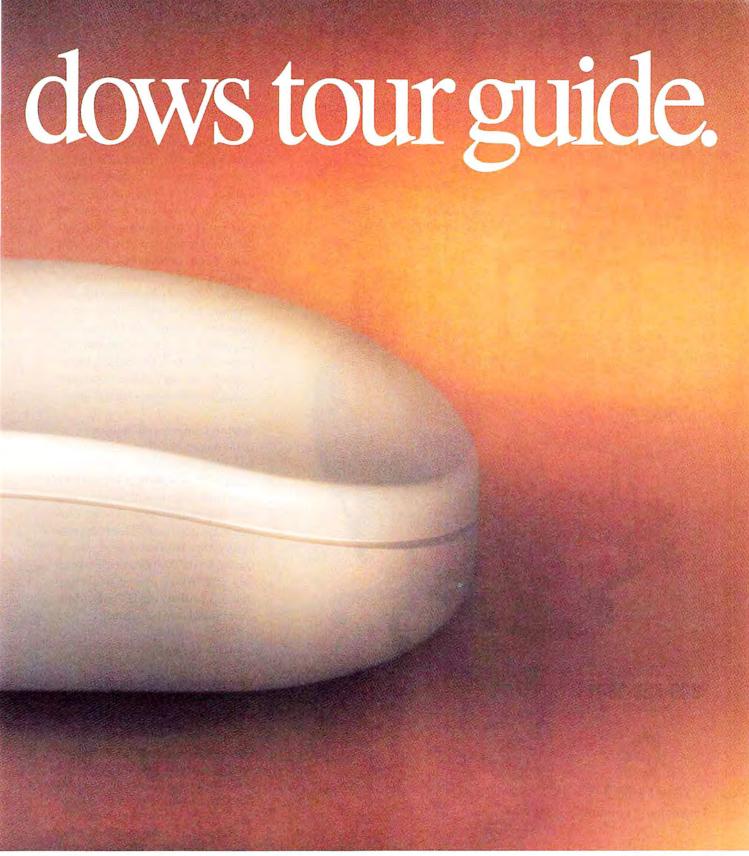
Circle 53 on reader service card



As you've probably heard by now, there are quite a lot of things to see and do in the Windows environment. And the Microsoft Mouse is the perfect way for you to take in all the sights.

Its sleek, award-winning shape was designed to fit your hand perfectly. So you'll find it's easy to maneuver and incredibly comfortable to use.

Maybe that's why over 3 million



people have chosen the Microsoft Mouse as their personal Windows computing guide. So if you'd like more information on the industry-leading Microsoft Mouse, just call (800) 541-1261, Department X02.

Or head on over to your nearest dealer. They'd be more than happy to arrange a tour just for you.

Microsoft

AnthroCart®

The best furniture you can buy for your equipment. Incredibly strong. Mobile. Flexible. Space saving. Lifetime warranty.

Choose different sizes and colors. Add the accessories you want. Discover Anthro's exceptional service.



Free Catalog: **800-325-3841** 6:30 AM to 5:00 PM PST



Technology Furniture*

3221 N.W. Yeon St. Portland, OR 97210 (503)241-7113 Fax: (503)241-1619

GSA contract No. GS-00F-5040A Available for OEM applications Made in USA Prices start from \$159 We ship in 48 hours



Anthro, AnthroCart and Technology Furniture are registered trademarks of Anthro.

theless, I maintain that Visual Basic doesn't have what you need for creating major applications. It can't create Dynamic Link Libraries (DLL) or integrate easily with other languages. It lacks true object orientation, requires a large run-time library, and does not work with professional programming tools such as profilers and debuggers. My wording was unfortunate on the issue of who introduced keyword help, although Turbo Pascal for Windows was the first to bring keyword help to Windows 3.0. Actually, DOS products from both Borland and Microsoft incorporated this feature during 1987. Borland's Turbo C 1.0 was first, but it's debatable whether either company borrowed from the other: -Brett Glass

Storing Compressed Images

In the August Help Screen, you suggest that Betty Chin needs a 600MB hard disk or a removable drive to store 2000 or so 180K image files. What about Picture Packer, profiled in Product Outlook in the same issue? It can compress images 30-to-1 without noticeable loss of quality. So the 2000 files would take up only 12MB on her present 40MB hard disk. I hope Betty reads Product Outlook; it could save her a bundle!

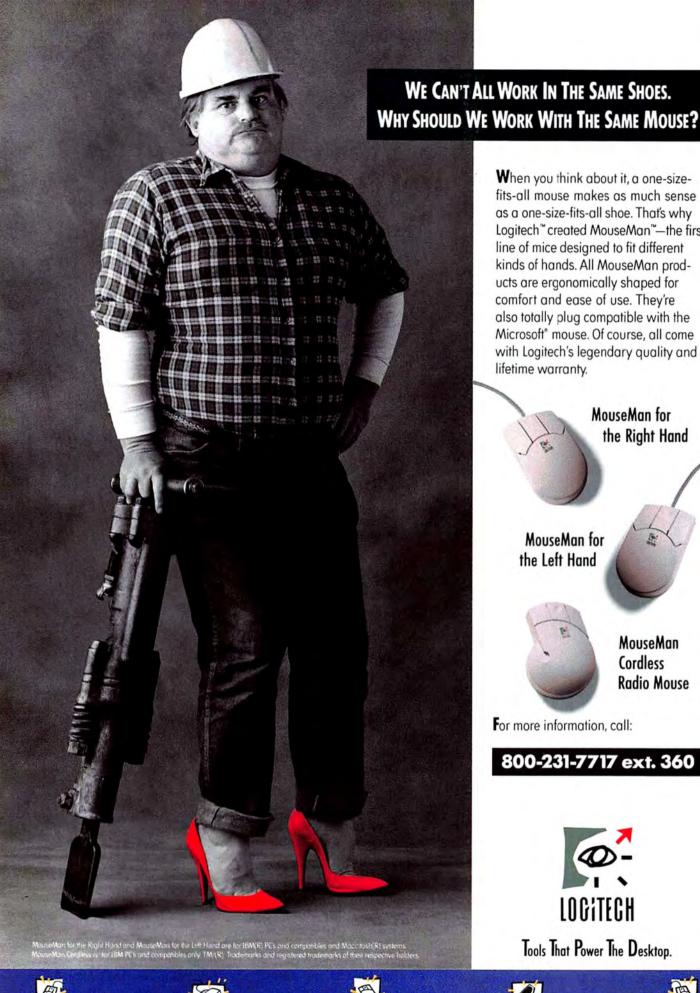
Martin J. Adams Limassol, Cyprus

Corrections and Clarifications

In our October article "The Readers' Choice: 1991 World Class Awards," we transposed the names of two tax-planning packages. The correct names are Andrew Tobias' Tax Cut by MECA Software (16 percent) and Personal Tax Edge by Parsons Technology (11 percent). PC World regrets the errors.

The product name for World Class award winner ATI Technologies VGA Wonder+512K was also incorrect in our October "World Class Awards."

We listed incorrect information on the Toshiba T1200XE in the September PC World Marketplace. The T1200XE is a 12-MHz computer with a 20MB hard disk.



When you think about it, a one-sizefits-all mouse makes as much sense as a one-size-fits-all shoe. That's why Logitech™ created MouseMan™—the first line of mice designed to fit different kinds of hands. All MouseMan products are ergonomically shaped for comfort and ease of use. They're also totally plug compatible with the Microsoft* mouse. Of course, all come with Logitech's legendary quality and lifetime warranty.



MouseMan for the Right Hand

MouseMan for the Left Hand





MouseMan Cordless Radio Mouse

For more information, call:

800-231-7717 ext. 360



Tools That Power The Desktop.













000000

PLUS GRAPHICS

Everyone agrees that the *Typist*[™] is the best thing that ever happened to hand scanners. The ability to read words and numbers easily and accurately really makes a difference when you're pressed for time. Or like most people you simply hate to type.

With the *Typist* you can scan almost any document just like you were typing it yourself; into just about any PC compatible or Macintosh® word processor, spreadsheet or database.

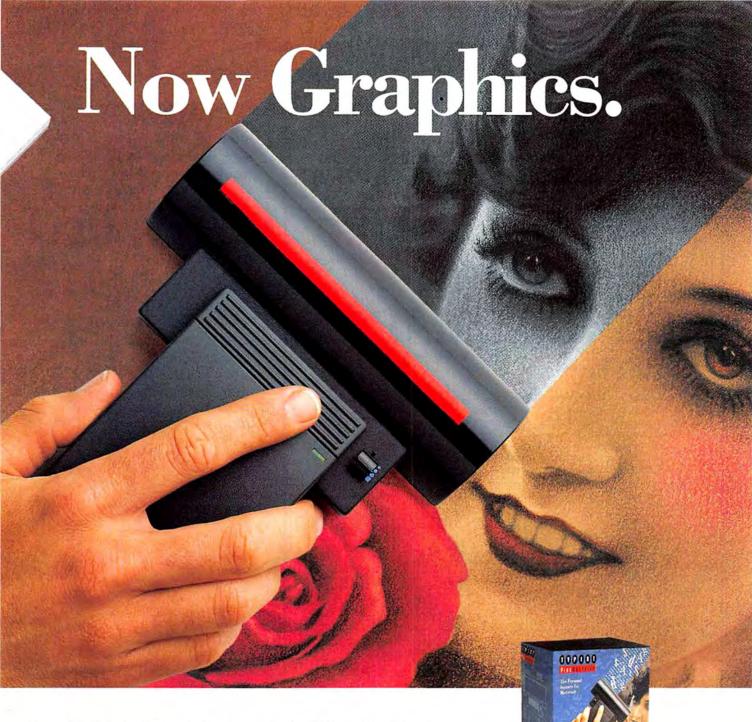
It's not surprising then that the *Typist* has so quickly become the hand scanner of choice when it comes to OCR. The clear standard.

So you might say that the writing was already on the wall, and it was only a matter of time before the *Typist* allowed you to scan and edit graphics as well.

That's why Caere® Corporation created the *Typist Plus Graphics*™, the hand scanner that adds yet another dimension by allowing you to scan and enhance photos, artwork and illustrations with incredible ease and accuracy.

The Typist Plus Graphics lets you put your best image forward because of a major innovation called the Graphic Editor™, which creates full tone images – 256 shades of gray – in software. You can display grayscale images up to the full capacity of your screen; modify and edit in either grayscale mode for photographs, or black and white mode for line drawings; and later output in picture perfect form.

In fact, when it comes to printed output, the *Typist Plus* includes *LaserGray*™, yet another proprietary technology from Caere. So you can print halftones that look just like grayscale images. The photos that



you modify on-screen have a crisp, sharper look and feel. A professional touch.

Just think of what the addition of picture perfect graphics can mean for your business or profession.

Use the *Typist Plus Graphics* to capture photos that you can incorporate into your most critical business presentations or reports. Scan company logos and place directly onto your stationary, invoices or slide presentations. You can add graphics to all of your Macintosh desktop published documents, including training manuals, newsletters —

even invitations to company events.

The word is out about the *Typist Plus Graphics*. Now you get the full picture – words and graphics – in one intuitive and easy-to-use hand scanner.

To learn more about the *Typist Plus Graphics* and how it can be of assistance to you, contact one of Caere's authorized dealers. Caere, the Complete Recognition Company.

For more information:

Call: 1-800-535-SCAN

Write: Caere Corporation 100 Cooper Court Los Gatos, CA 95030



Caere and the Caere logo are registered trademarks of Caere Corporation. Graphics Editor and LaserGray are trademarks of Caere Corporation. All other ®registermarks and ™trademarks are of their respective companies. ⊚1990 Caere Corporation. All rights reserved.

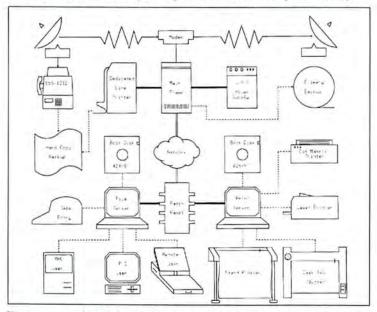
Circle 21 on reader service card

You'll never have to touch another network template again!

Why spend valuable time tracing when you can select from a pre-defined library of symbols!



Nodemap by HavenTree is specifically designed to prepare LAN, WAN, telecommunication and similar diagrams showing the interconnection involving computers and communication devices. Nodemap makes it easy to compose, revise and print network related diagrams. When your network changes, the diagrams can be easily modified and reprinted. Even large changes are effortlessly handled by a sophisticated cut and paste facility.



Diagrams produced by Nodemap can be moved into a wide variety of desktop publishing and graphics packages: Autocad. PageMaker 3.0. Ventura Publisher 2.0. WordPerfect 5.1 and CorelDRAW 2.0.

Order Nodemap today for \$250. It comes with a 30 DAY MONEY BACK GUARANTEE plus UNLIMITED TECHNICAL SUPPORT.

ORDER HOTLINE 1-800-267-0668



HavenTree Software Limited P.O. Box 1093 - M Thousand Island Park, NY 13692 Telelphone (613) 544-6035 Ext.47 Fax (613) 544-9632 Our October Product Outlook profile of Merge Master—Stairway Software's new utility that allows you to easily merge dBASE, Paradox, and Clipper data files with major DOS word processors—erroneously combined the product and company names. You can reach Stairway Software at 800/782-4792 for product information. PC World regrets the error.

Send your reactions, responses, and ideas to Letters, PC World, 501
Second St. #600, San Francisco, CA
94107; CompuServe 74055,412; MCI
Mail PC World Editorial; or
415/442-1891 (fax). Include your
name, city and state, and phone
number. We reserve the right to edit
letters.

■

POWER TIP NO. 228

Quick Navigation With Magellan

Here's a macro that can help you get around quickly in Lotus's Magellan. To create it, press <F7>n, and type a description, such as Directory shortcut. Press < Cursor Down > to get to the 'Macro Key' field. Enter the keyword for the key combination you want to use to invoke the macro; for instance, type {ShftF9} (don't press <Shift>-<F9>). Then press < Cursor Down> to get to the 'Keystrokes' field, and type {ExPath}*\"\ -".bk! -".bak {Home} {Right} {Right}. Press < Enter> <Enter> <Esc> to save the macro. From then on, pressing <\$hift>-<F9> will bring you to a prompt where you need type only the first few letters of a directory's name to select it. Lincoln Spector

Assistant Editor



It's Built To Last. The ActionLaser II will stand up to year after year of heavy action. Its two-year warranty is the longest of any printer in its class. On top of that, you can call our 800 number any time for free technical support.



Introducing The Perfect Introduction To Laser Printing.

If you're ready for your first laser printer, but don't quite know where to begin, the new Epson* ActionLaser* II is a very comfortable place to start.

It offers all the practical features you'll need to stand out on paper. Like impeccable print quality. A control panel that makes operation a snap. And the security of a generous twoyear warranty. All at a price that makes laser printing more affordable than ever.

Oh, there's one more reason why it makes perfect sense to make the ActionLaser II your first laser. It comes from the first name in printers. Epson.

It's Easy To Use. Even if you've never used a laser printer before, you'll be up and printing in no time. The user manual—written especially for first time users—is clear, concise and helpful. And to make things even easier, this laser works with all leading computers and software.

HOW & Laser Printer Works.

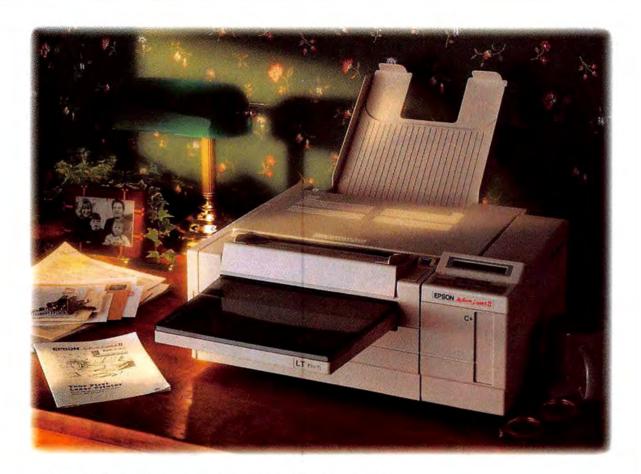
ACTION LASER II

HOW & Laser Printer Works.

And a count of the coun

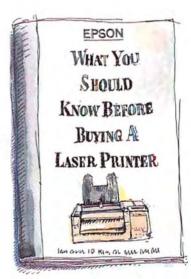
Epson is a registered trademark of Seiko Epson Corporation.

☐ 1991 Epson America, Inc., 20770 Madrona Ave., Torrance, CA 90509. For dealer referral, call 800-BUY-EPSON (800 289-3776). In Canada, call 416-881-9955.



<u>It's Very Affordable</u>. The ActionLaser II is a lot more laser for a lot less. More speed. More paper handling capabilities. More room to grow. More of the things you need to be productive—now and well into the future.

<u>It's Our Free Booklet.</u> Epson wrote the book on computer printing. Now we've written the book on buying your first laser. Read it and you'll be laser sharp in minutes. For a free copy, and the name of the Epson dealer nearest you, call 800-289-3776, ext. 1000.















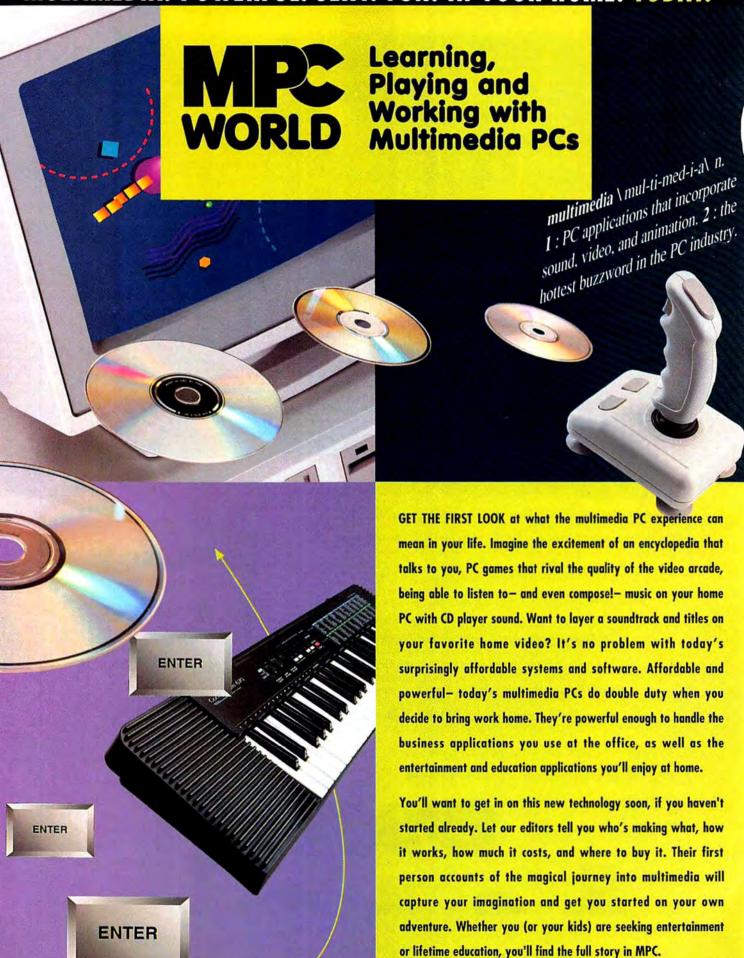
ot Matrix Not

Notebooks

Lasers

Servers

MULTIMEDIA. POWERFUL. SEXY. FUN. IN YOUR HOME. TODAY.



CHARTER

SUBSCRIPTION

SAVINGS!

SIGN UP

HERE FOR

37%

DISCOUNT!





SPECIAL \$14.95 CHARTER RATE

☐ YES! I Want to experience the excitement of Multimedia PCs. Sign me up as a Charter Subscriber. I want one year (6 bi-monthly issues) of MPC at the introductory rate of \$14.95. That's 37% off the annual newsstand price. A great value, and a great new magazine.

N A M E

STREET

CITY, STATE, ZIP

ADDRESS

MPC'S FAX NUMBER 1-415-882-0936



4ABA0



Learning, Playing and Working with Multimedia PCs

SPECIAL \$14.95 CHARTER RATE

YES! I Want to experience the excitement of Multimedia PCs. Sign me up as a Charter Subscriber. I want one year (6 bi-monthly issues) of MPC at the introductory rate of \$14.95. That's 37% off the annual newsstand price. A great value, and a great new magazine.

NAME

ADDRESS

STREET

CITY, STATE, ZIP

MPC'S FAX NUMBER 1-415-882-0936



4ABA0



Learning,
Playing and
Working with
Multimedia PCs

SPECIAL \$14.95 CHARTER RATE

YES! I Want to experience the excitement of Multimedia PCs. Sign me up as a Charter Subscriber. I want one year (6 bi-monthly issues) of MPC at the introductory rate of \$14.95. That's 37% off the annual newsstand price. A great value, and a great new magazine.

NAME

ADDRESS

STREET

CITY, STATE, ZIP

MPC'S FAX NUMBER 1-415-882-0936



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO.1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE



Learning, Playing and Working with Multimedia PCs

Subscription Department P.O. Box 54665 Boulder, Colorado 80323-4665

الماليان الماليا الماليا المالية المالية المالية المالية



NO POSTAGE NECESSARY IF MAILED IN UNITED STATES

NO POSTAGE NECESSARY IF MAILED IN UNITED STATES

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO.1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE



Learning, Playing and Working with Multimedia PCs

Subscription Department P.O. Box 54665 Boulder, Colorado 80323-4665

Haldlandladdallalddadladladdald



BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO.1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE



Learning, Playing and Working with Multimedia PCs

Holdlendleddollalddolladleddollad

Subscription Department P.O. Box 54665 Boulder, Colorado 80323-4665

NECESSARY IF MAILED IN UNITED STATES

NO POSTAGE



MULTIMEDIA.

POWERFUL. SEXY.

FUN.

IN YOUR HOME.

TODAY.

CHARTER

SUBSCRIPTION

SAVINGS!

SIGN UP

HERE FOR

37%

DISCOUNT!



THE HELP SCREEN

PC World offers answers and advice at every level

Karl Koessel and Robert Lauriston

Running Windows With 2MB RAM

Q. I have a 386 with 2MB of RAM. I use mostly Windows apps, but I also multitask DOS programs. What CONFIG.SYS entries will make the best use of my extended memory? I'm currently using HIMEM.SYS, SMART-DRV.SYS, and MOUSE.SYS and find I don't always have enough memory for my DOS applications.

Jean Serge Muboyayi Tracadie, New Brunswick, Canada

A. With 2MB total RAM, you've got at most 1408K of extended memory. With that little memory, you're better off not allocating any to a disk cache. So delete the line that starts 'device=c:\windows\smartdrv.sys' from your CON-FIG.SYS. If you don't use a mouse in your DOS apps, you can also delete the line for MOUSE.SYS.

You'll get the most memory for your DOS apps by stripping your CON-FIG.SYS down to the bare minimum. Microsoft recommends the following minimal CONFIG.SYS for a 2MB Windows system:

DEVICE = C:\HIMEM.SYS DOS = HIGH (DOS 5.0 only) FILES=60 BUFFERS=30

When you install more memory and start using more device drivers and memory-resident programs, you'll also want to invest in a memory manager, such as Quarterdeck's *QEMM-386* or Qualitas's *386MAX*. It will help you use your system's memory efficiently and give your DOS apps the most memory possible.

WHERE TO BUY

386MAX version 5.12

Qualitas, Inc.
7101 Wisconsin Ave. #1386
Bethesda, MD 20814-4805
800/659-0386, 301/907-0905 (fax)
LIST PRICE: \$130

Reader service no. 739

QEMM-386 version 6.0

Quarterdeck Office Systems, Inc. 150 Pico Blvd. Santa Monica, CA 90405 213/392-9851 LIST PRICE: \$100 Reader service no. 740

25-MHz 286 vs. 20-MHz 3865X

Q. I'm thinking of upgrading my old XT and have seen ads for 25-MHz 286 systems. Are these misprints, or is there actually such a chip? Do I really need a 386, or would one of these fast 286s do as well?

Nick Morano Webster, Texas

A. That's no misprint—AMD and Harris both make 25-MHz 286 chips. While these CPUs are used mostly in laptops, a few vendors are building desktop systems around them. However, the prices we've seen for these systems are the same as identically configured 20-MHz 386SXs'. When a program isn't specifi-

cally written to take advantage of a 386, the 286 could be up to 25 percent faster; but if you run a variety of applications, or *Windows*, the 386SX will provide better overall performance. Furthermore, a few programs—notably *Desqview 386* and *OmniPage*—already require a 386 or 486, and you'll also need a 386 or 486 to run future 32-bit versions of *Windows* and OS/2. All in all, we think a 386SX is a better choice than a 286, even at 25MHz.

Use Your Modem Anywhere

Q. I spend most of my time on the road and use my laptop to keep in touch with the home office. Many of the hotels I stay in don't have regular telephone jacks, and my modem won't work. Is there some way to use my modem on these lines?

Cheryl Blake via CompuServe

A. We can't tell from your question if you're simply having trouble plugging the hotel phone line into your laptop's modem or if your modem is plugged in but doesn't work with the hotel phone system. If it's the latter problem, it could be that the hotel has a digital phone system. One way to connect your modem to a digital line is to plug in Consumer Products Plus's CP+ Connection II adapter between the phone and its handset and plug your modem into the adapter. This little 2-ounce gadget is the easiest way to go, but it works only when the phone in question has a modular handset. For a link that will work with any phone-digital or analog, modular handset or not (pay phones, for example)-get a miniature acoustic coupler, like Consumer Products Plus's 9-ounce Telecoupler or Information Machines'

Iff this is thekind of information you're inputing onnn your new ocmputer, you need Mavis beaconn, fast%



Mavis Beacon Teaches Typing!*, the world's best-selling typing program, uses Artificial Intelligence to 'learn' your weaknesses and determine the 'hot spots' or keys that need extra work. It then builds personalized lessons to improve your accuracy and speed in these problem areas.

So if you want to get the best out of your computer but your fingers keep getting in the way, visit your nearest dealer or call 1-800-234-3088 to order.

©1991 The Software Toolworks, Inc. Mavis Beacon Teaches Typing' is a registered trademark of the Software Toolworks, Inc.

What goOd is acomputer, that processes millionsof words a miute> if youcan only type 10/?



To monitor and increase your speed and accuracy, Mavis Beacon Teaches Typing!* uses a metronome, 3 meters, 4 learning centers and 20 progress graphs.

It also uses a hair-raising road race and a pretty good collection of jokes, riddles and fascinating facts. And to date, over 1,500,000 people have had a ball as they turned from goof typists into good ones.

To join them, visit your nearest dealer or call 1-800-234-3088 to order.

©1991 The Software Toolworks, Inc. Mays Beacon Teaches Typing' is a registered trademark of the Software Toolworks, Inc.

6-ounce MA100. You plug your modem into the coupler and strap the coupler onto the telephone handset. A small speaker sends outgoing modem tones into the handset's mouthpiece, and a tiny microphone forwards the sounds from the earpiece into the modem.

WHERE TO BUY

CP+ Connection II, CP+ Telecoupler

Consumer Products Plus, Inc. 16351 Gothard St. Huntington Beach, CA 92647 800/274-4277, 714/848-6850 (fax) LIST PRICE: CP+ Connection II \$100, CP+ Telecoupler \$150

Reader service no. 741

Modem Adapter MA100

Information Machines 20219 Chapter Dr. Woodland Hills, CA 91364 818/884-5779 LIST PRICE: \$179

Reader service no. 742

Recover Damaged WordPerfect Documents

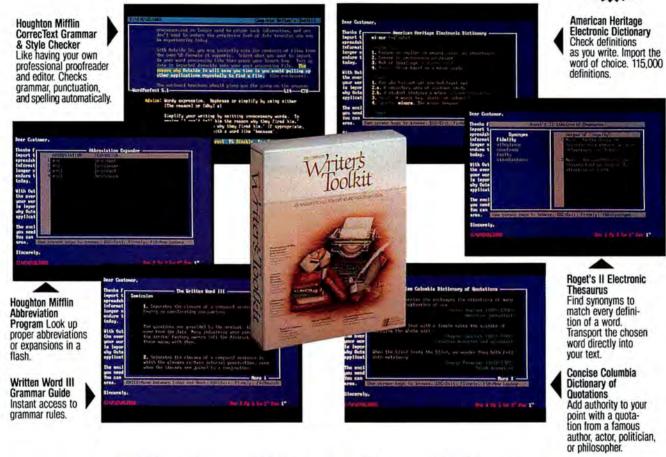
Q. Once in a while one of our WordPerfect 5.0 documents loses information—everything is okay for the first 20 or 30 pages, but when you cursor past a certain point, the computer freezes up and you have to reboot. We have to retrieve a copy of the document from the previous day's backup, losing whatever work we've done in the meantime—sometimes 100 pages or more of typing or editing. What causes this? Is there some way to repair the file so WordPerfect can read it again?

Jolle Yzquierdo San Francisco, California

A. Power dips and surges, static electricity, or passing cosmic rays can occasionally change one character in your computer's memory. In a text file, the damage is confined to that single character, perhaps changing "car" to "ôar." In a complex file structure like *Word-Perfect*'s, if the damaged character is a formatting code, the file may be unreadable. For instance, if the "end footnote 8"

Now You Don't Have To Remember Grammar Rules, Irregular Spellings, Word Choice, Or Famous Quotes To Be A Good Writer.

Just put this complete English reference into memory forever!



Works with over 40 different word processing formats.

The Writer's Toolkit

Before you sit down to write again, put The Writer's Toolkit to work for you. Add polish and perfection with these essential tools at your fingertips:

Automatic Grammar Checking: This advanced grammar checker reviews your text automatically. It proofreads and corrects grammar, punctuation, spelling, and style. Accept or ignore suggestions. Then your document is grammatically correct!

5 Pop Up Reference Tools—While You Write: When composing, you can instantly pop up any of the five reference tools without leaving your word processor. Once you have chosen the word, quotation or abbreviation, a single keystroke inserts your selection directly into your document.

The Writer's Toolkit brings the most prestigious English references together in one easy-to-use program. You'd pay several hundred dollars if you bought these tools separately. But now, for the first time, they're combined into a single integrated "Toolkit" for only \$129. Your satisfaction is guaranteed, or your money back.

See your local dealer or call 1-800-333-1395 if you have questions or if you would like to place an order.

A Great Holiday Gift Idea!

ORDER NOW! See your I or call toll-free: 1-800-333-1395.	
Or fill out and return this coupe	
☐ Yes. Please send me The Writer's Toolkit I understand that the cost is \$129 plus \$6 fo and handling (Ill. residents add 8% sales ta	or shipping
Name	
Company	
Address	
Disk Size: □5 1/4" □3 1/2" Version: □ Method of Payment: □ Check or money or □ Charge It: □ VISA □ Mastercard □ A	der enclosed
Credit Card No.	Exp. Date
Cardholder Signature	
Mail to: **STEMS 401 N. Wabash, Suite 600), Chicago, IL 6061

Why bugh a computer tham moves at the peed of light if you ttype at the spseed of a snail\$



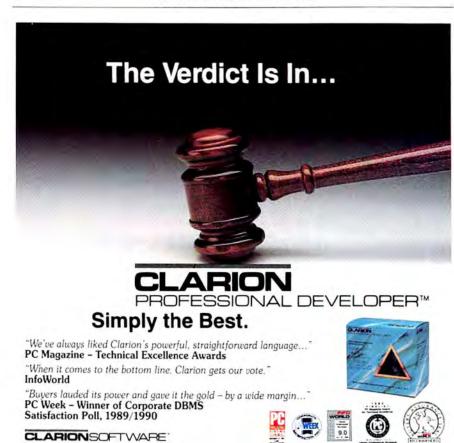
Mavis Beacon Teaches Typing!*, the world's best-selling typing program, puts the power of any computer at your fingertips. Then teaches you where to place those fingertips to instinctively maximize speed. And minimize errors. Without ever peeking at the keyboard.

All thanks to a unique tutorial feature not found in any other program.

So move quickly, or as quickly as your fingertips will presently allow, and punch 1-800-234-3088 to order.

©1991 The Software Joolworks, Inc. Mayor Feacon Teacher Typing' is a registered trademark of the Software Leolworks, Inc.

Circle 269 on reader service card



code gets scrambled, WordPerfect will search the rest of the document looking for it and hang when it doesn't find it more or less the problem you describe.

WordPerfect File Doctor, a shareware utility, can often repair such files or at least recover almost all the text. You can find the program as WPMD2-.ZIP on many BBS's or order it directly from the author.

But you have a bigger problem as well. There's no excuse for losing 100 pages of input. Save your file every few minutes; for example, at the end of every paragraph or page.

WHERE TO BUY

Seidman's WPMD The WordPerfect File Doctor

Software by Seidman 2737 Devonshire Pl. NW Washington, DC 20008 202/462-7381 LIST PRICE: \$37

Reader service no. 743

DOS 5.0 Meets Windows 3.0

Q. Since I upgraded to DOS 5.0, whenever I try to start a DOS program under Windows, I get a message that the application has 'violated system integrity' and that I should close all applications and reboot. I found I can avoid this by disabling the Microsoft mouse driver (MOUSE.COM) before starting Windows, but I would like to be able to use the mouse in my DOS apps again. Is there a fix?

Paule E. Bible Metairie, Louisiana

A. Yes—get rid of your outdated mouse driver. You need to use the version of MOUSE.COM that comes with *Windows*, not the one that came with your system or mouse.

First, delete any old copies of MOUSE.COM from your hard disk. Then copy the EXPAND.EXE utility from *Windows'* Disk 2 to your \WINDOWS directory, and use it to copy the new MOUSE.COM (on 3½-inch Disk 5 or 5¼-inch Disk 4) to your hard disk by

Get a hold of the best value in LAN power protection for just \$169

Back-UPS

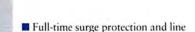
American Power Conversion

Blackouts, brownouts, sags...
Your data and hardware are
vulnerable to problems that
surge suppressors and power
directors are just not equipped
to handle.

Now there's a complete Uninterruptible Power Supply solution to suit any budget. The Back-UPSTM 250 is reliable protection for LAN nodes, 386SX machines, 286, small PS/2 systems, and internetworking hardware such as routers, bridges, gateways and hubs.

From the largest server to the smallest router, the Back-UPS Series will increase your productivity by providing a cost-effective solution to power problems. Call for your free power protection handbook.

The **NEW Back-UPS 250** offers even more cost-effective protection for LAN nodes (typical runtime for a 386SX system is 10 minutes).



filtering

Models from 250 to 1200 Volt-Amps, many with LAN interface for automatic-shutdown of Novell, LAN Manager, LAN Server, LANtastic, Banyan, SCO Unix, SunOS, AIX etc.

UL, CSA and Novell approved with a 2 year warranty

■ 230V models available

Ask about PowerChute® UPS monitoring software and Novell-compatible UPS monitoring boards





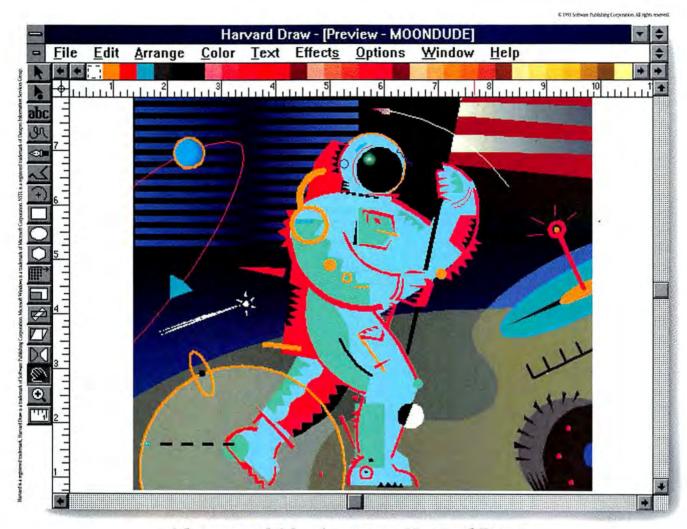
	Model	Application	List
	Back-UPS 250	386SX, 286, XT, AT, internet hardware, POS	\$169
	Back-UPS 400	Desktop 386, 486 systems, 286 servers	\$249
	Back-UPS 450	Tower 386, 486 systems, servers	\$329
	Back-UPS 600	Heavily configured systems, CAD/CAM workstations	\$449
	Back-UPS 800RT	Multiple systems, longer runtime applications	\$899
	Back-UPS 1200VX	Multiple systems, LAN hubs, small minis, telecom	\$1199

The Back-UPS™

800-541-8896, Dpt. P3

33-1-60078500 in Europe

Circle 45 on reader service card



2 hours and 28 minutes on Harvard Draw.

We urge you to draw

What can you do with Harvard*Draw for Windows™that you can't do with CorelDRAW?

Save a great deal of time, that's what.*
You see, Harvard Draw for Windows

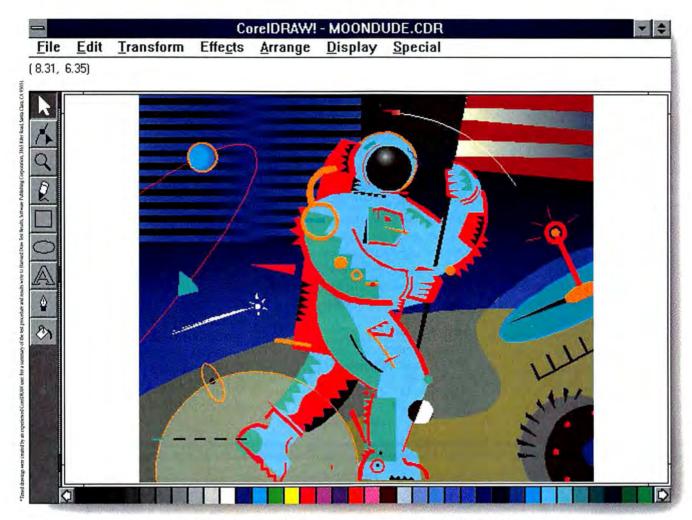
from Software Publishing Corporation lets you work a great deal faster than CorelDRAW.



For instance, you can do your entire drawing in preview mode, complete with color fills and line widths. Which lets you see what you're drawing as you draw it. Without jumping back and forth to wire

frame. Our WYSIWYG text entry lets you save steps by typing text right into your drawing. Instead

We also urge you to call 1-800-336-8360, Operator 652, for a free Harvard Draw for Win



3 hours and 13 minutes on CorelDRAW.

your own conclusion.

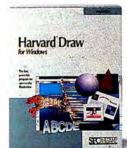
of a dialog box. There's a multiple undo option so you can erase up to 16 actions in a row. And our integrated autotrace is right in the toolbox. So you don't have to leave the

program to use it.

Moreover, in recent NSTL* benchmark tests, Harvard Draw proved several times faster than CorelDRAW in screen re-draws and file saves. And faster in other ways as well.

The obvious conclusion? Harvard Draw for Windows is a winner. And you ought to try it.





dows demo disk and a NSTL benchmark summary.

entering EXPAND A:\MOUSE.COM C:\WINDOWS\MOUSE.COM at the C> prompt. Finally, add the line MOUSE/Y to your AUTOEXEC.BAT file (be sure to put it after the PATH command). Omit the /Y switch if you have a Headlands (Video 7) video adapter.

In Search of Interrupts Revisited

In September, we offered a few tips on the sticky problem of finding a hardware interrupt (IRQ) for each of your expansion boards. In brief, the AT uses 7 of its 16 interrupts itself. If you have COM1, COM2, LPT1, and LPT2 ports, they use IRQs 3, 4, 5, and 7, leaving only IRQs 2, 10, 11, 12, and 15 for expansion boards (the others have reserved uses). Since most boards can't use IRQs 10 and above, it's sometimes necessary to disable a port or two to free up IRQs for those boards, then use an external switchbox to hook up more than one peripheral to a port you haven't disabled-not an elegant solution.

We recently learned of several products that can help ease the interrupt request line crunch. Dual serial-port boards from Sealevel Systems and B&B Electronics let you assign their ports to any available IRQ levels, so you can free up IRQs 3 and 4 for use by less flexible boards. Though most communications software can access a COM port only by using IRQ 3 or 4, recent releases of some major programs can handle the other interrupts, and reportedly Windows 3.1 will as well. Sealevel's Dual Printer Interface is basically an internal switchbox that lets two printers share a single LPT and thus a single IRQ. A memory-resident utility lets you switch between them by pressing a special <Ctrl>-key combination.

WHERE TO BUY

Model 232CICC2

B&B Electronics Manufacturing Co. P.O. Box 1040 4000 Baker Rd. Ottawa, IL 61350 815/434-0846, 815/434-7094 (fox) LIST PRICE: \$130

Reader service no. 744

Comm+232/EX, Dual Printer Interface

Sealevel Systems, Inc. 102 W. Main St. Liberty, SC 29657 803/843-4343, 803/843-3067 (fax) LIST PRICE: \$179 each Reader service no. 745

Send your questions to Robert
Lauriston, CompuServe 73707,1731;
MCI Mail 381-7106; Internet
duck@well.sf.ca.us; or 415/442-1891
(fax); or mail them to The Help
Screen, PC World, 501 Second St.
#600, San Francisco, CA 94107. PC
World pays \$50 for published questions. Sorry, we cannot acknowledge
submitted materials.

■

Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.



PKZIP compresses your files to free up disk space and reduce modem transfer time. You can compress single files or entire directory structures into one archive file for easy storage or transfer. Compression typically results in saving 50% of the space taken up by the original file, effectively doubling the amount of information that will fit on a disk. Many database and spreadsheet files compress by as much as 90%.

Software developers can significantly reduce their product duplication costs by decreasing the number of disks required to distribute their application. Call for Distribution License information.



9025 N. Deerwood Drive Brown Deer, WI 53223 (414) 354-8699 Fax (414) 354-8559 PKLITE increases your valuable disk space by compressing executable (.EXE and .COM) files by an average of 45%. The operation of PKLITE is transparent to you and to other programs such as menu systems and batch files, all you will notice is alot more available disk space!

PKLITE can actually reduce the start up time of many programs due to reduced drive access time. PKLITE can be used on hard and floppy disks!

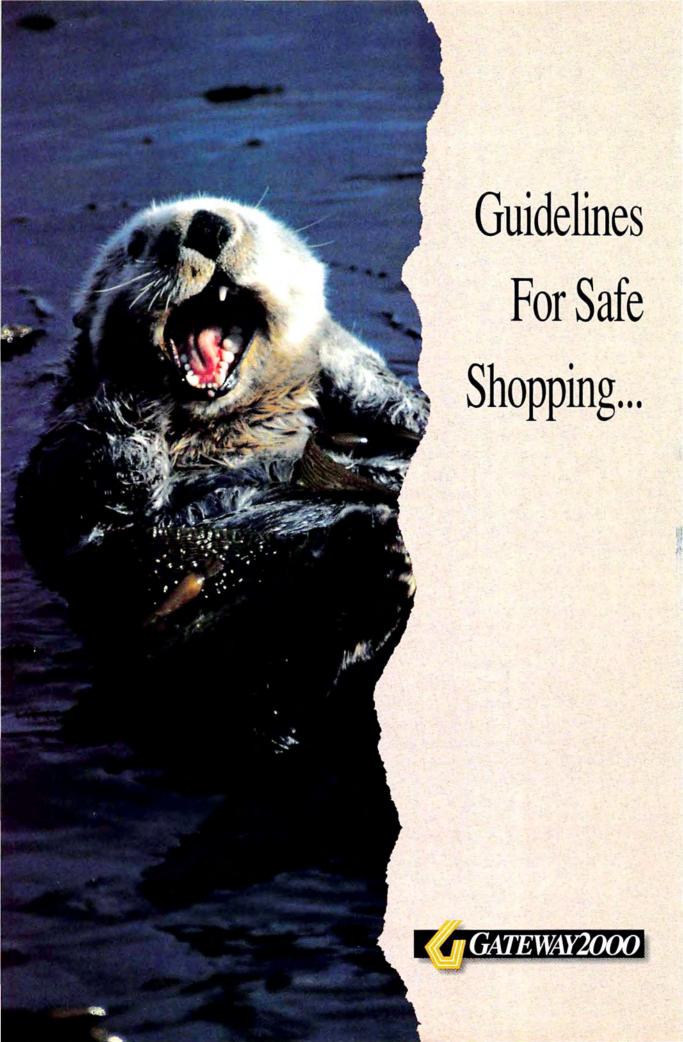
Software Developers, save disk space and media costs with smaller executables. You can distribute your software in a compressed form with PKLITE Professional. PKLITE Professional also gives you the ability to compress files so that they cannot be expanded, hindering reverse engineering of your programs.

PKZIP \$47.00
PKLITE \$46.00
PKLITE Professional \$146.00
Please add \$3.50 shipping and handling per package in the US & Canada, \$5.00 overseas. Wisconsin residents please add 5% state sales tax & applicable county sales tax.





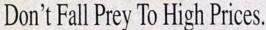
No COD Orders



...In The Wilds Of The C







The computer industry is a treacherous wilderness of sorts. In it you'll find dense thickets of confusing jargon. Swamps of advertising claims laced with quicksand to suck you in. And hungry predators hunting for prey. To prevent you from becoming a delicious lunch for one of them, we've prepared the Gateway 2000 pictorial survival guide for shopping in this wild kingdom.

Guideline #1 — Don't fall prey to high prices. A number of PC manufacturers would have you believe a computer with their brand name is worth hundreds, even thousands of extra dollars. Is there intrinsic value in a name? The wily wilderness shopper knows that real value is a combination of features, performance, quality, service, company stability and price. The system that compares favorably in all of these categories is the best buy.

As you might expect, we think Gateway 2000 offers the best buy on the market. But don't take our word for it. Do the comparisons and see for yourself.

Beware Of Those Who Would Turn Their Backs On You.

Guideline #2 – Beware of those who would turn their backs on you. We've been in this industry for six years and we've seen a lot of PC manufacturers come and go. In the direct market channel, starting a business is easy. Staying in business is not. It's survival of the fittest, and the only companies that grow and prosper are those with an abiding commitment to quality and service and the financial strength to back it.

In the wilds of the computer industry, the savvy shopper studies the company as closely as the product. Is the company strong and successful? What do customers say about the company's commitment to quality and service?

With annual revenues in excess of \$600 million and an enviable balance sheet, Gateway's strength is indisputable. Our success is demonstrated monthly when we ship over 25,000 Gateway systems to individuals and corporations.

Concerning the quality and service questions, we're feeling a little left out. J. D. Power and DataQuest did not include Gateway in their recent, highly touted surveys. In surveys which include Gateway, we consistently rank at or near the top. We're proud of our service record, but not satisfied. That's why we continuously invest in people, training and equipment to serve you better. The quest for improvement is a never-ending journey at Gateway 2000.

Just Relax And Get A Gateway!

Guideline #3 – If you don't want to worry about guidelines #1 and #2, just get a Gateway and you can relax. Gateway 2000 holds a unique position in the wilds of the computer industry. The industry giants with their inflated prices live high on a mountain. At the foot of the mountain is the valley of the clone-makers where prices are great but quality and service are sometimes questionable and business is shaky. The outstanding little companies quickly grow and move up on the mountain where they raise their prices. This is the pattern of nature in the industry.

But Gateway 2000 lives all alone on a ridge at the base of the mountain overlooking the valley. You see, Gateway was one of the outstanding little companies that quickly grew – but refused to move up on the mountain. Our solitary outpost on the ridge allows us to give you the best of both worlds: mountain quality, service and stability at valley prices.

In the wilderness of the computer industry, take refuge in the simple value you get from Gateway 2000.



GATEWAY 2000 SYSTEMS

16MHZ 286

- 80286 Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey[™] Keyboard
- MS DOS® 5.0

\$1345

16MHZ 386SX

- Intel® 80386SX Processor
- 2 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 40 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K
- 14" Crystal Scan 1024 Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft® Mouse
- MS DOS 5.0
- MS WindowsTM 3.0

\$1445

20MHZ 386SX

- Intel 80386SX Processor
- 32K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 512K ■ 14" Crystal Scan 1024
- Color VGA Monitor ■ 1 Parallel/2 Serial Ports
- 1 PS/2 Mouse Port
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

\$1745

25MHZ 386

- Intel 80386 Processor
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 80 MB 17ms IDE Drive with 32K Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

\$1945

33MHZ 386

- Intel 80386 Processor
- 64K Cache RAM
- 4 MB RAM
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

\$2445

BEST BUYS

Get our 33 MHz 386 system, same configuration as listed, with a 120 MB IDE hard drive instead of the 200 MB drive.

\$2195

■ Same features as our 33 MHz 486 system except this machine has 4 MB RAM, instead of 8, and a 120 MB IDE hard drive, instead of the 200 MB drive in our standard configuration.

\$2545

33MHZ 486

- Intel 80486 Processor
- 64K Cache RAM
- 8 MB RAM, Expands to 64 MB
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 200 MB 15ms IDE Drive with 64K Multi-Segmented Cache
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard
- Microsoft Mouse
- MS DOS 5.0
- MS Windows 3.0

\$2995

33MHZ 486 EISA

- Intel 80486 Processor
- 128K Cache RAM
- 8 MB RAM, Expands to 64 MB
- 1.2 MB 5.25" Drive
- 1.44 MB 3.5" Drive
- 340 MB 15ms SCSI Drive with 128K Multi-Segmented Cache
- 32-Bit EISA SCSI Controller
- 16-Bit VGA with 1 MB
- 14" Crystal Scan 1024NI Color VGA Monitor
- 1 Parallel/2 Serial Ports
- 124-Key AnyKey Keyboard

(*)

- Microsoft Mouse
- MS DOS 5.0 ■ MS Windows 3.0

\$3895

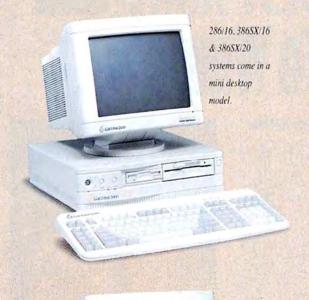


All prices are subject to change. Prices do not include shipping. Printed on recycled paper. Corporate Sponsor of Global Releaf - a program of the American Forestry Association, Box 2000, Washington, DC 20013. Call us for information on how you can support Global Releaf.



3 - 2 0 0610 Gateway Drive • N. Sioux City, SD 57049 • 605-232-2000 • Fax 605-232-2023

GATEWAY 2000'S SANCTUARY OF VALUE







The tower model is an option for 386DX & 486 systems. Mini Desktop Systems

Our 286 and 386SX systems come in a compact, mini desktop model that's just 4.25 inches high, 16.25 inches wide and 16 inches deep. These systems feature a custom-designed, integrated motherboard to create a more reliable system. To give you plenty of room for expansion in a small footprint computer, we integrated the diskette drive controller, the video chip set and the I/O card on the motherboard, leaving five 16-bit slots open in the standard configuration. The mini desktop models also have a standard mouse port (PS/2 compatible), leaving two serial ports open.

Desktop Systems

Standard configurations for Gateway's 386 and 486 systems include all the features you want for optimum performance with the latest software. You don't have to study our configurations to figure out what's missing. All systems have plenty of RAM, two diskette drives, high capacity, fast and reliable hard drives, super fast 16-bit VGA graphics with 1 MB RAM and 1024 x 768 non-interlaced color monitors. It's all there – for an unbelievably good price. 386DX and 486 systems come standard in a desktop model. Our tower model with a 220 watt power supply is available as an option for an additional \$100.

New 33 MHz 486 EISA

If you've been waiting for an affordable EISA system, your wait is over. With a 340 MB SCSI drive and 32-bit EISA SCSI controller, Gateway's 33 MHz 486 EISA system is incredibly priced at only \$3895.

Peripherals

We sell and support a complete line of competitively priced, quality name-brand peripherals, including laser and dot matrix printers, modems, tape backups and coprocessors. Sorry – we sell peripherals and components only with the purchase of a system, or separately only to owners of Gateway 2000 systems.

The Extras - That Don't Cost Extra At Gateway

· One-year warranty on parts and labor

· Replacement parts shipped quickly via overnight shipping at no charge

· 30-day money-back guarantee

- Lifetime toll-free technical support from the service organization that won PC World's Service Excellence Award
- Free on-site service to most locations
- · Free bulletin board technical support
- · C.O.D. terms and major credit cards honored
- · Net 30-day credit terms and leasing options available to qualified commercial customers
- MS DOS 5.0 is standard; versions 4.01 and 3.3 are available at no extra charge
- The programmable AnyKey keyboard is standard; a 101-key keyboard is also available at no extra charge
- · Software diskettes and comprehensive hardware and software manuals provided
- Canadian customers our 800 number is toll-free from Canada and systems (excluding monitors and keyboards) are now duty-free!



Sales Hours: 7am-10pm Weekdays, 9am-4pm Saturdays (Central Time) Service Hours: 6am-Midnight Weekdays, 9am-2pm Saturdays (Central Time)







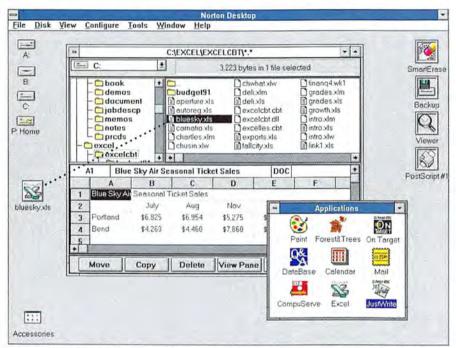








INTRODUCING THE BEST THING THAT EVER HAPPENED TO WINDOWS



The Norton Desktop integrates a file manager and program manager into one seamless desktop.

THE NORTON DESKTOP™ FOR WINDOWS.™

Now you can make Windows perform the way you've always wantedwithout changing the way you use it. Because The Norton Desktop is the perfect companion for Windows.

For starters, you can move your programs and file groups from the confinement of the Windows Program Manager to the freedom of The Norton Desktop. It's like having your file manager and program manager transparently integrated—all for just \$149*!

The Norton Desktop's enhanced file manager allows you to launch. copy, move, view and delete a file or application by clicking and dragging icons on the desktop. You can also print documents by dragging files to any printer icon. In fact, our icon editor makes it easy to select any of

"We took one look at The Norton Desktop for Windows, and it instantly became the way we'll compute in Windows from now on."

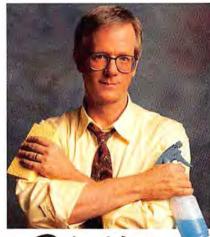
-PC Computing, August '91

the more than 150 icons provided. while The Norton Viewer enables you to instantly view files from over 30 Windows and DOS applications.

Not only does the Norton Desktop make sure your files are well managed, it also ensures

Norton Backup they're well protected.

We've included The Norton Backup[™] for Windows.** one of the fastest, most reliable backups you can buy. You can easily set-up automatic backups for any time of the day or night, whether you're present or not, and backup in the background, even to and from network drives.



Peter Norten

And The Norton Desktop provides the easiest UnErase[™]ever, for stand-alone PCs and network systems, plus the **UnErase** industry's most powerful automatic disk diagnosis.

It also includes a rich assortment of screen savers, along with our SuperFind™text searching, enabling you to quickly search and find files on any disk drive-even on networks.

So if you're ready to improve your Windows, visit your nearest dealer or call 1-800-343-4714, Ext. 722W for more information about the Norton Desktop. It could be the best thing that ever happened to your PC.



*Suggested retail price, USA only. **Also available separately for \$129 (MSRP). C 1991 Symantec Corporation. All rights reserved. The Norton Desktop for Windows is a trademark of Symantec Corporation. All other brand or product names mentioned are trademarks of their respective holders.



CONSUMER WATCH

Advice and information for the computer consumer

Christine Whyte

Taking Stock of Superstores

The shopping phenomenon of the nineties, computer superstores are changing the way America shops. The typical superstore offers thousands of hardware and software products at huge discounts in a warehouse setting.

While superstores boast competitive pricing and broad selection, they earned an early reputation for having uninformed salespeople and lacking aftersale support and service. To see if this was true, a team of reporters posed as computer-savvy customers about to open a small business on a tight budget—a typical superstore customer profile. We visited four superstores that belong to the larger chains, with five or more stores in various cities.

CompuAdd

Alexandria, Virginia (Washington, D.C.) CompuAdd, the Texas-based computer maker, has long sold its equipment through mail-order ads, but it also has a chain of superstores. CompuAdd stores' biggest drawback is that they carry only their own systems. On the plus side, the CompuAdd 20-MHz 386SX we priced was quite competitive: \$2140

with 4MB of RAM, an 80MB hard drive, one high-density floppy drive, and a VGA monitor. This system was in stock with optional next-day delivery.

The printer selection was more diversified, with models from various companies. The HP LaserJet IIIP was a good deal at \$1029 (list price \$1595). The newly opened store I visited will soon carry all major software programs.

I found the staff helpful and knowl-

edgeable. My salesperson suggested I buy only the standard 2MB of RAM until I know my system needs. He also recommended spending an extra \$300 for the 386SC system, which includes a high-performance 32K memory cache—worthwhile advice.

CompuAdd offers a standard oneyear warranty on everything they sell and a year's extended warranty (for 10 percent of the purchase price). You can

Superstores Nationwide

Name	Location	Number of Stores
ACP SuperStore	Santa Ana, California	1
Ballard Computer, Inc.	Seattle	2
CompuAdd	Alexandria, Virginia; Chicago; Dallas; Louisville, Kentucky; Portland, Oregon	5
CompUSA	Atlanta; Chicago; Dallas/Ft. Worth; Denver; Detroit; Houston; Kansas City, Kansas; Los Angeles/Orange County; Miami; Philadelphia; San Diego; San Francisco/Santa Clara; Washington, D.C.	20
Computer City SuperCenter	Austin, Texas; Buffalo; Detroit; Garden Grove, California; Houston, Texas; Minneapolis; Seattle	8
Computer Discount Warehouse	Chicago	2
Computer Expo	Houston	2
The Computer Store of Kentucky, Inc.	Louisville, Kentucky	1
Computer Warehouse	Cherry Hill, New Jersey; King of Prussia and Langhorne, Pennsylvania	3
ComputerLand Express	Atlanta	1
Computers Etc.	Peabody, Massachussetts	1
Elek-Tek	Chicago	3
Fry's	Fremont, Palo Alto, and Sunnyvale, California	3
J&R Computer World	New York	1
LDI	Cleveland	1
Micro Center	Atlanta; Cincinnati; Cleveland; Columbus and Westerville, Ohio	5
Whole Earth Access	Sacramento, California	1

also buy an on-site service agreement, which costs \$90 for the first year. In any event, the manager at the Alexandria store swears "you won't be down more than a day."—Patrick Marshall

CompUSA

Santa Clara, California (San Jose) CompUSA is the largest nationwide superstore chain. When I visited the company's Santa Clara store deep in Silicon Valley, I found an expanse of PCs, software, peripherals, and accessories. The systems included models from Dell and Leading Technology and the house brand, Compudyne. The best deal I found on a 20-MHz 386SX was the Compudyne system with VGA monitor, 80MB hard disk, one floppy drive, and 4MB of RAM for \$1564. Prices for the popular business software on my shopping list ranged from 30 to 52 percent off list. So far so good.

But I was surprised the store didn't carry the HP LaserJet IIIP, an industry standard. A salesperson in the printer department made a convincing pitch for the Epson EPL-7000 (\$820), which he said was comparable: "Go out and price the Hewlett-Packard and see if it has all the features this one has." The other salespeople I spoke to seemed of equally high caliber; the systems department salesperson even explained in plain English the difference between MCA, ISA, and EISA buses.

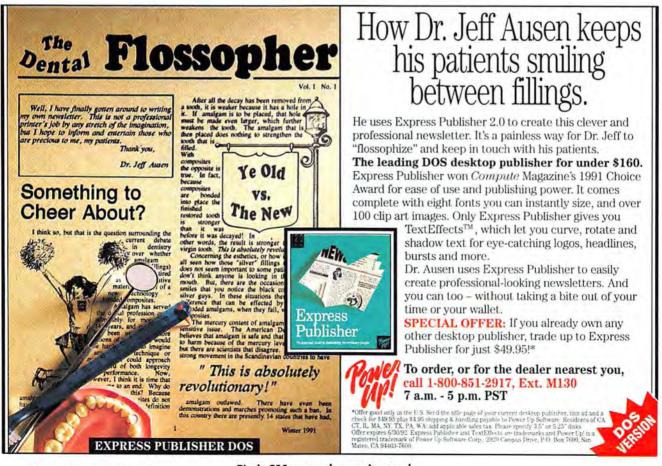
I also found good after-sale service. CompUSA offers a \$49 in-store service contract for one year on all systems it assembles, and one-year on-site service contracts through Texas Instruments for \$129. Warranty extensions are available for systems and printers; their cost depends on the type of hardware.

-Dan Miller

Computer City SuperCenter Garden Grove, California (Los Angeles) If the vastness of Computer City Super-Center doesn't put you in awe, its endless selection of goodies will. The variety of systems ranged from AST to IBM to USIT—the house brand—and prices were low. When I asked for the best buy on a 20-MHz 386SX system with 4MB of RAM and a color VGA display, a friendly salesperson steered me to an NEC system with an 80MB hard drive and a high-density floppy drive for \$2042. Although the store had many such systems in stock, the hard drives were on back order.

The software department proved less lavish and offered mostly popular business applications and a few games, all of which were stocked in depth. Software prices are excellent, averaging about \$10 more than Egghead's.

In addition to free in-house service for a year, you can buy extended warranties and on-site service. The prices weren't yet established since Tandy had just acquired the chain, but they'll run between 6 and 10 percent of the price, depending on the hardware.



The next day I called my salesperson to see if he remembered me and what I had looked at. He had all the right answers. —TJ Buers

Micro Center

Marietta, Georgia (Atlanta)

Micro Center, which began life in 1980 as a small retail store in Columbus, Ohio, has entered into the megastore business. When I visited the Marietta Micro Center, I was pounced on almost immediately by a salesperson, but the pitch was professional in a white-shirt, striped-tie kind of way. When I inquired about bargains on a 386SX 20-MHz machine, I was led to a Video Technology Laser system with a high-density floppy drive. (Micro Center is also an authorized dealer for IBM and Compag.) Adding 4MB of RAM, an 85MB hard drive, and a Laser VGA display brought the price to \$1553; DOS and PC Tools Deluxe were included. The business software that I priced was readily available at 33 to 52 percent discounts.

The salespeople I dealt with were friendly, although the first person I spoke to wasn't knowledgeable about the WordPerfect demo. He tried to show me the program but didn't know to press <F5><Enter> to display the list of files, telling me that the demo machine had no files. Later I talked to another salesperson, who was well-informed about prices and store policies.

This Micro Center offers one year of free service. On-site service isn't available, but the store sells warranty extensions priced according to the hardware. The store also has a large bookstore and classrooms, used for a range of courses.

-Gary Pelphrey

We had such good luck at superstores, we wondered: Will K mart shopping ever replace mail order? Dell and Gateway—the top two mail-order companies—offer comparable prices, and one year of on-site service is part of the deal. But superstores have other advantages: one-stop shopping for a slew of products, a look at products before you buy, and the capability to mix and match components. Best of all, you'll probably carry out your purchases the same day.

SHOP TALK

"Nonregistered" Shareware May Be Bundled With Hardware

I wanted to buy a modem for my laptop computer but had no communications software to run one. I chose the Easy-Talk Internal Laptop Modem from Megahertz Corporation because the box said it contained *Procomm* communications software from Datastorm Technologies. When I later saw ads for a *Procomm* upgrade (*Procomm Plus*), I decided to pay the \$39 upgrade price. When I called Datastorm, they said I couldn't upgrade until I registered the old version for \$50, or I could pay \$99 for the new version. I feel I've been had:



CALENDAR CREATOR PLUS

How pilot Mike O'Neal keeps on schedule between flights.

Before he takes off, Mike uses his PC and Calendar Creator Plus* to merge his busy flight and ground schedules into one great-looking calendar. So he and his friends and associates always know what he's up to.

Time management is a breeze. Schedule personal.

Time management is a breeze. Schedule personal appointments, departmental meetings and the office

conference room in minutes. Plan trade shows and keep track of a traveling sales staff. Merge any combination of individual schedules on your PC or LAN to print one master calendar. All this in nine calendar formats, including pages for Day-Timers® and other organizers. Put your organization on auto pilot. With Calendar Creator Plus 4.0.

SPECIAL OFFER: Order now and get the best of T/Maker* ClickArt* FREE – a \$39.95 value!**

To order, or for the dealer nearest you, call 1-800-851-2917 Ext. M304

7 a.m. - 5 p.m. PST

**Offer good only in the U.S. To receive your free ClickArt, purchase Calendar Creator Flux directly from lower Up or from your favorite software related. Send this aid, along with your dated sales receipt and customer registration card to Power Up Software, Free ClickArt Offer, P.O. Box 7600, San Mateo, CA 94400-1600. Offer expires 161/362. Calendar Creator Flux is a trademark and Power Up it is a registered trademark of water Up Software Corp. ClickArt and TAdaker are registered trademarks of TMaker Company, *Also workblok for Marintosh (features vary).

Why should I pay to register the *Procomm* software I already paid for?

Philip Ventura Randallstown, Maryland

Megahertz Corporation responds:

Megahertz has opted to provide at its own cost a nonregistered version of Procomm software with its modems. According to our company's software bundling agreement with Datastorm Technologies, a Megahertz customer receives full rights to use the Procomm software. Megahertz is required to provide any necessary technical support, and we choose to do so with a toll-free support line. However, Megahertz does not provide upgrades for any of our bundled software packages.

Nancy Warr Press Relations Manager

Datastorm Technologies adds:

Technical support from Datastorm, special offers on upgrades, company newsletters, and other product information are available only to users who registered their software with Datastorm.

Suzanne Mitchell Marketing Manager

That Ol' Busy Signal

Editor's note: We received three letters this month complaining about difficulty getting through to Gateway 2000's technical support line. The writers report that the toll-free number was often busy for hours or days on end. The following is an excerpt from one of the letters:

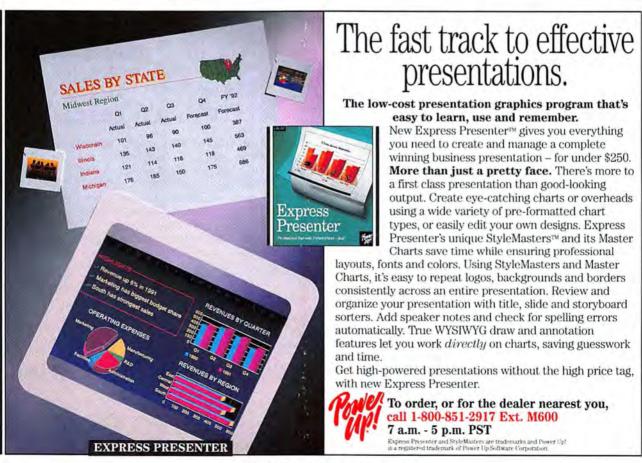
Our company received a 20-MHz 386SX from Gateway and lost the video after half an hour of use. Two days after we phoned Gateway, a tech support person called back and promised a new motherboard would be shipped via next-day air mail. A week later we finally received the board.

After we installed the new motherboard, the computer locked up. Our attempts to reach technical support over the next three days were met with busy signals. At this point we were getting desperate, so I called the company's commercial number. Twice we were shuffled to technical support, where we were put on hold, cut off, and finally told someone would call us back.

We waited three days for a call, and meanwhile got nothing but busy signals when we tried to contact technical support. Finally we returned the machine and bought one from another company. The message is clear: Gateway should spend more money on technical support staff and less on advertising.

Jo Anne Cox Gaylord, Michigan

Gateway 2000 responds: First, I would like to apologize for the frustrations Jo Anne Cox experienced. In August we changed the way we handle technical calls in order to improve our efficiency. We also increased our techni-



cal support staff by 100 percent and added 96 telephone lines. With our new procedures in place, our technicians now handle approximately 3900 calls a day. Situations like Ms. Cox's help remind us that customer satisfaction is a goal we must constantly strive for.

Glen W. Mille and Terri Ford Gateway 2000 Customer Satisfaction

Lotus's New Customer Service

Last February I purchased 1-2-3 3.1. Soon thereafter, I was pleased to find a special offer of Ami Pro 1.2 for anyone acquiring 1-2-3 3.1 before March 31. When I called Lotus, a representative asked for the 1-2-3 3.1 copyright page and \$19.95, which I sent off immediately. In May I called to ask why I hadn't received Ami Pro. I was told the demand had exceeded supplies and I would receive my program in four to six weeks. On July 23 I called again with the same question. I was told my check

had been returned by mail in early June. However, I had received no correspondence from anyone at Lotus. On August 2 my bank informed me that Lotus had cashed my check. I purchased a Lotus product in good faith; can Lotus respond accordingly?

Carl W. Sandage Russellville, Kentucky

Lotus Development Corporation responds: Mr. Sandage's letter was forwarded to the newly formed Lotus Customer Relations Group. We immediately called Mr. Sandage and informed him that a package of *Ami Pro* was on the way to him. A follow-up call to Mr. Sandage confirmed that he was satisfied with both the product and the way his complaint was handled by the Customer Relations Group. The group's mission is to record compliments and complaints from our customers, to satisfy customers who have complaints, and to analyze and report on the cause of customer

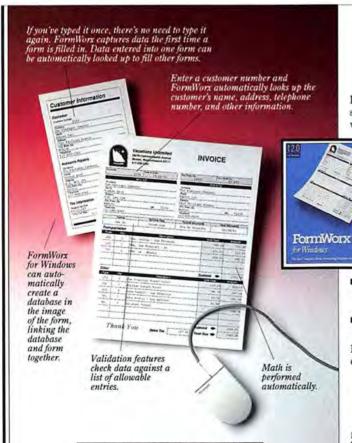
complaints. In Mr. Sandage's case, Customer Relations has achieved the first two goals; we now are analyzing why Mr. Sandage's problems occurred and how we can avoid similar situations.

Jeff Delson Manager, Lotus Customer Relations

Think you've gotten a raw deal—or a great one? Send the details to Consumer Watch, PC World, 501 Second St. #600, San Francisco, CA 94107; MCI Mail PC World Editorial; CompuServe 74055,412; or 415/442-1891 (fax). We'll investigate complaints and publish letters with the broadest interest.

■

Christine Whyte is a freelance editor in San Francisco. Patrick Marshall is a freelance writer. Dan Miller is the Fluegelman Intern and TJ Byers is a contributing editor for PC World. Gary Pelphrey is an attorney.



FORMWORX FOR WINDOWS

Data in the forms you need.

Introducing FormWorx for Windows...the most complete forms system ever offered in a single package. Organize information the way you need it, using these five essential forms-processing elements:

- WYSIWYG Forms Design. Create professionallooking forms that satisfy the most stringent industry and government specifications.
- Effortless Data Entry. Reduce typing, minimize errors, and ensure accurate forms fill-in using lookup, validation, math, branching, sequencing, and a host of other features.
- Industry-standard Data Format. Utilize existing data resources – FormWorx reads and writes dBASE.DBF files directly. Easily view your data, change it, or add to it.
- Convenient Data Management. Organize and maintain your data files using sort, index, import/export, and other database functions.
- Over 500 Ready-to-use-Forms. Use as is or customize. You may never have to design a form from scratch!

FormWorx for Windows. For only \$299.95, it's the most cost effective way to get data into the forms you need.



To order, or for the dealer nearest you, call toll-free 1-800-851-2917, Ext. M700, 7am-5pm PST; outside the US & Canada, call 415-345-5900

Program requires Microsoft Windows 3.0. FormWorx, Fill & File, and Power Up! are registered trademarks of Power Up Software Corp., 2929 Campus Drive, P.O.Box 7600, San Mateo, CA 94403-7600. All other trademarks are the property of their respective holders.



Wouldn't it be nice to have a modem that ran faster yet didn't cost an arm and a leg?

That's precisely what the new V.32 OPTIMA™96 is all about.

It delivers 9600 bps connections and up to 38,400 bps throughput. It features V.42 errorcontrol, V.42bis data compression, and it's compatible with MNP levels 2 through 5.

The OPTIMA 96 has all of the features you

need for easy communications with PCs, mainframes, and all types of on-line services and bulletin boards. It even negotiates the best connection automatically.

To get you up and running right out of the box, every OPTIMA 96 modem comes complete with Hayes Smartcom EZ communications software. Plus special offer coupons good for software upgrades and on-line connections.

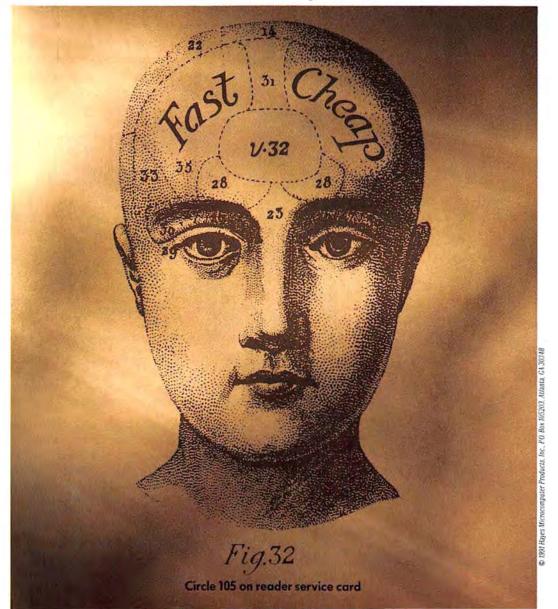
All of this for a remarkably low price.

Anything else on your mind? If so, please call us at 1-800-635-1225 for our fully detailed OPTIMA 96 brochure.

Our technology has the computer world talking. More than ever. Hayes



Introducing the modem that knows where your head is at.



MANAGER'S FILE #8

Software Site Licensing Checklist

Alice LaPlante

After a meeting on software site licenses held by the Corporate Association of Microcomputer Professionals (CAMP), director Julian Horwich reports, "It sounds like a boring topic, but the intensity of interest turned it into one of the most heated discussions we've ever had." The major complaints of the CAMP members were that software licenses are hard to understand, widely inconsistent among vendors, and difficult to enforce.

Actually, in the world of PCs, the term "site license" is a misnomer. Few, if any, off-the-shelf software packages can be licensed for unlimited use at a given site for a one-time fee. Instead, most site licenses are, in effect, volume discounts: A business agrees to buy a certain number of copies of a package at a price that is substantially less than the per-unit retail cost. One slight twist is that some vendors will allow "nonsimultaneous" use of licensed software, meaning employees can make a backup copy for use on their laptop or home computer.

But the real controversy over site licensing is in the local area network (LAN) arena. Most businesses with LANs are putting copies of software on a file server to be accessed by any LAN user. Because not every LAN user needs simultaneous access to the software, many managers prefer software licenses that measure concurrent use of a product. In other words, if there are 100 nodes on a LAN, but only 20 users will access a particular product at one time, managers don't want to pay for a 100-user license.

Then there is the problem of administering a LAN license: How can a manager be sure that the number of users doesn't exceed the terms of the license? Some software vendors provide a meter that counts the number of simultaneous users on a LAN and automatically locks out additional users when the limit has been reached. While this can be a helpful feature from an enforcement perspective, such metering software may be poorly designed and hard to use. A manager may already have a LAN meter in place, whether it's one of the many third-party metering packages available, such as Saber Meter, Site-Lock, or LANScope Resource Manager, or it's built into the LAN operating system software.

The most helpful metering programs track usage statistics such as who is using an application and when, and who is being locked out. For any of these reasons, many managers like to have the option to turn off the software vendor's meter in order to substitute one of their own choice. Some software vendors may agree to this, but others may resist.

Being able to "unbundle" manuals is also an issue in LAN software licenses. Although the percentage of users on a LAN who access an application simultaneously may be low, even infrequent users may need a copy of the manual. Therefore, businesses should be able to buy additional copies of manuals, or copy existing manuals, without the vendor suspecting them of software piracy.

Unfortunately, although software vendors are aware of these issues—with many working with user groups to establish LAN licenses that are easier to understand and administer—the terms and conditions of such licenses still vary widely. As a result, PC managers need to examine each licensing policy to determine if it's right for their business.

■

Alice LaPlante is a freelance writer in Palo Alto, California.

Saber Meter, Saber Software Corp., 214/361-8086 Reader service no. 601

SiteLock, Brightwork Development, Inc., 800/552-9876 Reader service no. 602

LANScope Resource Manager, Connect Computer Company, 612/944-0181 Reader service no. 603

Know What to Ask for in a Software License Agreement

- Make sure the license is cost-effective. You may get a better deal by buying multiple copies at a discount software house; the only advantage you may lose is clout with the vendor.
- ✓ Ask for "nonsimultaneous" use for employees' home or laptop PCs.
- Paying for concurrent use of software on a LAN server is preferable to paying for every node on the LAN.
- To ensure compliance with the license terms, the software should include a metering utility that tracks the number of users simultaneously accessing the software.
- Get permission to order additional copies of the software manuals or copy existing ones without enlarging the scope of the license.

WE CAME OUT WITH UPGRADEABLE PCs. THEY CAME OUT WITH UPGRADEABLE PCs.

WE OFFERED TOLL-FREE PHONE SERVICE. THEY OFFERED TOLL-FREE PHONE SERVICE.

WE MADE OUR PCs LESS EXPENSIVE. THEY MADE THEIR PCs LESS EXPENSIVE.

Before our competitors can beat us, they have to catch us. So you'll have to forgive us if we don't seem too terribly worried.

Take upgradeable PCs for instance. From the headlines, you'd think they're the newest thing in computers. But in fact, Dell has been selling them for quite a while. From basic desktop systems to powerful workgroup servers. All designed to allow easy upgrades to hard disks, memory, video capability, even the CPU. So when your needs change, or technology does, your computer can too.

However, there are some things Dell won't change. Like our commitment to customer service. Dell introduced the first manufacturer-direct customer support in the industry over 7 years ago. Unlike some of our competitors, who only recently began answering the phone. Today, the price of every Dell® computer includes unlimited toll-free phone support, free 24-hour access to our TechFax™ line, and a one year third party on-site service contract. So if necessary, a trained technician can be at your desk, usually by the next business day.[△]

Which has helped make Dell one of the most awarded PC companies in the world. Winning PC Week's Corporate

IS THERE AN ECHO IN THIS MAGAZINE?

Satisfaction Poll an unprecedented eight times. And more product awards than modesty will allow us to list.

Now while we're way ahead of the competition in most places, there is one place we lag far behind. The price. Because we design, test, support and sell our computers ourselves.

Neatly avoiding traditional retail channels with their traditional retail mark-ups.

So for innovative technology with unbeatable service and a bottom line price, buy a Dell.

Everything else is just a copy machine.

TO ORDER, CALL PLEASE REFERENCE #11D53:

800-873-1140
HOURS: 7AM-9PMCTM-F, 8AM-4PMCTSAT, 10AM-3PMSUN
IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

On-site service may not be available in certain remote locations # 1991 Del Computer Corporation. All rights reserved





All prices and specifications are subject to change without notice. **Payment based on 36-month, open-end lease. • Leasing arranged by Leasing Group, Inc. In Canada and Mexico, Based Small to Medium Sized Businesses:**Responses from Business End Users at 1,784 business sites. Small to Medium Sized Businesses were based on office sites with between 1 and Logo are trademarks of Intel Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Dell disclaims proprietary interest in the marks and names of others. *Service





If your notebook computer goes out of service when you're out of town, you're out of luck.

Unless, of course, it's a Dell*320N. Because the 320N is backed by Dell's award-winning service and support.

No matter when you call us, we'll be there for you. With technical hotlines, and the innovative 24-hour TechFax[™] line. If necessary, a trained technician with a replacement system can be at your desk. Usually by the next business day.[△]

And since we design, test and sell the 320N ourselves, we can offer all this without the mark-ups and hassles of traditional retailer channels.

Which has helped make Dell a \$546 million dollar international business in just 7 years. And one of the most awarded PC companies in the world.

So call Dell today. Because when you're on the road, you really need something more than a rabbit's foot. Besides, it obviously didn't do the rabbit much good.

DELL COMPUTER CORPORATION

configurations and prices may vary. Dell is a registered trademark and TechFax is a service mark of Dell Computer Corporation. 1991 J.D. Power and Associates' Computer End User Satisfaction Study: Phase I: Office 499 employees, Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. J.D. Power and Associates is a service mark of J.D. Power and Associates is

THROW IT OUT THE WINDOW AND YOU'LL KNOW WHAT IT'S LIKE TO BUY THAT OTHER HIGH-END COMPUTER.



Introducing the Dell*486D/25. A high flying computer for a down to earth price.

And it's designed to allow easy upgrades to hard disks, memory, even a faster 33 MHz CPU. Which is like getting a new computer without getting a new computer.

Best of all, the 486D/25 is from Dell. The company that's built a \$546 million international business by always going above and beyond the call. By designing and building our computers

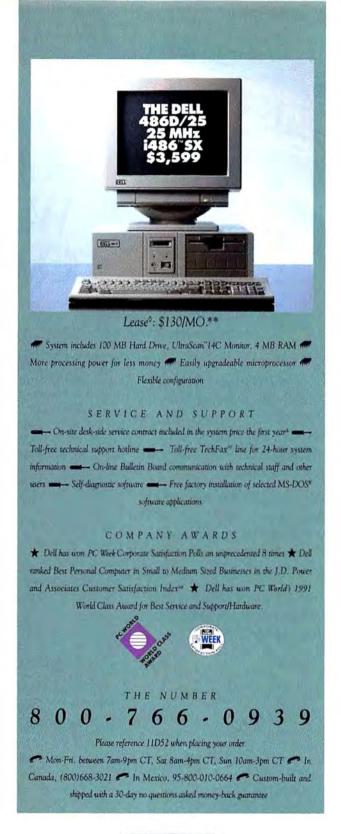
ourselves. By putting them through tests the Marines would be proud of. By backing each one with a service and support package described as "overkill" by the editors of *PC Week*. And by doing it all without the mark-ups and hassles of traditional retailer channels.

So what are you waiting for? Call and buy a Dell 486D/25 today. You can be sure you'll be spending your money economically not aeronautically.



All prices and specifications are subject to change without notice. "Payment based on 36-month, open-end lease;" Leasing arranged by Leasing Group, Inc. In Canada and Mexico, con-Phase I: Office Based Small to Medium Sized Businesses?" Responses from Business End Users at 1,784 business sites. Small to Medium Sized Businesses were based on office sites with Inside Logo are trademarks of Intel Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Dell disclaims proprietary interest in the marks and names of others. "Service







figurations and prices may vary. Dell is a registered trademark, UltraScan is a trademark and TechFax is a service mark of Dell Computer Corporation. 1991 J.D. Power and Associates' Computer End User Satisfaction Study: between 1 and 499 employees. Best Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. J.D. Power and Associates is a service mark of J.D. Power and Associates. i486 and the Intel provided by third party servicer. On-site service may not be available in certain remote locations. Shipping, handling and applicable safes tax not included in the price. (#)1991 Dell Computer Corporation. All rights reserved.



From the Makers of Publish-It!™

Our Tax Preparation Software Is So Easy, We Made It Part of Our Name!

Suggested Retail Price \$79.95

Introducing

Timeworks EasyTax—
the complete hassle-free tax
preparation program designed
to make the process of
preparing your tax return a
whole lot easier.

As the name implies, we're easy to use—and learn. We've also included tons of tried and true money-saving tips, written exclusively for EasyTax.

Take a look at a few of the features that will help ease your tax burden.

Here's How Easy It Is:

- Six Different Kinds of Help Working with Easy Tax is like having an accountant at your side, offering line-by-line money saving advice.
- ► Quick-Start Mini-Manual Gets you up and running in less than an hour.
- Tax Preparation Checklist Reminds you of everything needed to prepare your return.
- Automatic Form Linking
 Forms, schedules & worksheets
 are linked and automatically up dated when new data is entered.
- ► Full Mouse Support
- Tax Forms & Category Locator Quickly identifies which tax form relates to a specific tax category.
- Tax Information Flow Chart A display shows you the source of calculations on the form you're working on.
- Depreciation History

Here's How Powerful It Is:

- Full Laser & Dot Matrix Printer Support Graphically replicates all IRSsubmittable forms & schedules on your laser or dot matrix printer. No additional software required.
- ► Tax-Saving Tips & Year-End Strategies More than 60 "Overlooked" Deductions. Plus money-saving advice on protecting your assets at tax time.
- Quick-Entry Worksheet with Guide Your most common tax information is listed on a single worksheet and is automatically transferred to the correct form.
- Shoebox Feature Enter data quickly & easily from your stacks of receipts, cancelled checks & statements.
- "What If" Scenarios Project different tax alternatives.
- Electronic Filing Option
- 24 State Programs Available
- Reads Quicken, Lotus & Managing Your Money Files
- Print Multiple Tax Returns or Many Different Returns at One Time

Visit your favorite dealer or call us at 1(800)323-7744 to order Timeworks EasyTax and make preparing your taxes—a little less taxing.



625 Academy Drive, Northbrook, IL 60062 All Registered Trademarks are the property of their respective companies © 1991 Timeworks, Inc.

Circle 260 on reader service card

clone makers.

is purchased specifically for

s PCs become commodi-

the network," explains programmer analyst Verne Arm-

Defections like these have stopped Compaq sales growth cold and slashed the company's profits. But lost sales have also triggered major initiatives, including more aggressive prices, broader distribution, improved dealer support, and better outreach programs, says CEO Rod Canion.

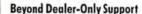
Prices Fall, Outlets Broaden

Compaq cut prices last spring, and Canion says users aren't paying a premium for its products. Although many users dis-

agree, a goodly number of them say that they are still willing to pay extra for Compag systems because of their reputation for high quality and compatibility.

Edited by ERIC BENDER

But they're not paying, as they once did, for a clear technology leader. "Today, Compaq is not able to bring out the first of anything," declares Thomas Yuen, cochair of rival AST Research in Irvine, California. summing up a general view. However, being first "isn't allimportant," according to Dick Schell, information systems director for Turner Corporation, a \$3 billion construction firm in New York, "We're more concerned with maintaining product quality."



Compag has retreated from its strict dealer-only distribution policies, recognizing the radical changes brought on by savvy customers, savs Seymour Merrin, head of Merrin Information Services in Palo Alto, California. Compag has expanded its marketing channel, selling through computer superstores like Tandy's Computer City while also increasing distribution through valueadded resellers and high-end

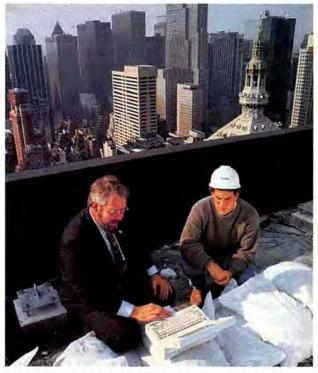
Compaq also offers a direct service option, an innovation applauded by Turner's Schell, who has switched Compag dealers half a dozen times. "We rely exclusively on PCs and networks, so getting responsive, qualified service is critical," says Schell. He contacts

Compaq directly when dealers are stumped. "We don't go to Compaq to fix PC problems, though," he says. "We go to Compaq to fix dealers." Schell thinks that the service option and a new 800 number for users is proof that Compag is trying to make its dealers more responsive.

OUTLOOK

Most users say Compaq is reading their needs correctly. "I wish they were moving more quickly," says Colby Springer, vice president of information systems at Pearle Vision in Dallas. "But they recognize the problems, and in the long term they'll be wherever we need them to be."

-Kathleen A. Gow



INDUSTRY

Price Tags Still Carry Premium Despite Cuts

Compaq Tries to Adjust to Leaner Times

Users: Service and Support Remain Inconsistent

Turner's Dick Schell (left) has switched Compaq dealers half a dozen times but says the supplier is addressing the problems.

strong, "price is the number one driver."

dealers.

What Users Say About Compag

From PC World interviews



Overall satisfaction High-products solidly engineered and com-

tible with other vendors' equipment.



Support Mixed—some users give dealer support rave

reviews, others switch and call Compaq with problems.



Pricing Still high in spite of cuts; turning to other vendors

all but high-end systems.



Leadership Compag is no longer seen as the technology leader,

but most users say the change doesn't bother them.



Contact with vendor Users want more across the board, and better

access to technical information. Small businesses say they're being overlooked.

Client-Server Data Bases: Still Promising

Faster PCs Minimize Advantages, Some Users Say

Software delays, technical difficulties, and high implementation costs have slowed the march toward client-server computing—but those barriers are teetering.

Few argue with the concept behind client-server technology. Built around Structured Query Language (SQL) data bases, the technology promises to improve network performance and reduce LAN traffic by off-loading chores from PCs to high-powered network servers. The technology will enable corporate users to access mainframe and minicomputer data through familiar DOS front-end applications, while powerful back-end software like Microsoft's SQL Server does the heavy lifting in between. Administrators will be able to improve control of information resources by centralizing data base management on the server.

Software Served—But Slowly

Software delays were the first holdup. But server software from Microsoft, Oracle, and other major suppliers has been available for many months, and some client packages have hit the market, ranging from dBASE to fancy Windows front ends with at least minimal SQL support. Nonetheless, the building and optimizing of client-server systems remained a formidable challenge to in-house developers.

Shifting marketing strategies further hurt acceptance of client-server. When Microsoft tied SQL Server to OS/2 and then OS/2 fizzled, it became nearly impossible for SQL Server to establish itself as a server standard. Without a standard, would-be customers were left guessing.

Market-leading NetWare,



SOLON Consulting's Keith Mitchell found it cheaper to buy 486 PCs than to make the big jump to a client-server data base.

meanwhile, proved an inhospitable environment for clientserver computing, notes Patrick Beahan, senior PC systems specialist at Arco Oil and Gas in Dallas. The NetWare enhancements necessary to support SQL Server didn't appear until a year ago.

Simpler Speed Boost: Fast PCs

When the software finally arrived, the economics had changed. A few years ago it seemed important to make high-priced 386 and 486 servers carry their fair share of the processing load, and an investment in SQL software seemed a small price to pay. But yesteryear's \$15,000 486 file server is today's \$5000 workstation, and network administrators aren't nearly as concerned about wringing processing out of a server.

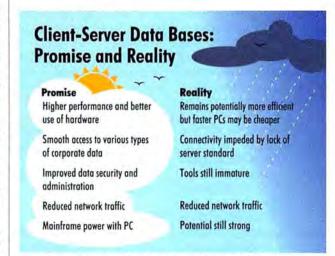
SQL Server costs \$7995 for an unlimited user license. A 20-user license for dBASE IV Server Edition front end runs another \$7995. Together that price is nearly triple what dBASE IV LAN Pack would cost, without adding extra programming expenses.

"You can pretty much replicate the promise of client-server by putting some expensive and powerful machines to work," says Keith Mitchell, vice president of operations for SOLON Consulting Group in Silver Spring, Maryland. Solon considered switching to client-server but didn't because of the up-front cost. Now Mitchell processes data bases of up to 1 million records with 486 machines and traditional data base programs rather than a client-server setup.

Faced with adopting OS/2, switching LAN operating systems, restructuring their data bases, and learning the arcane tricks of SQL, most users opted out. "For small jobs you don't really need client-server with all the extra expense and technology," says Russell Freeland, president of Synergy Corporation in Fort Lauderdale, Florida.

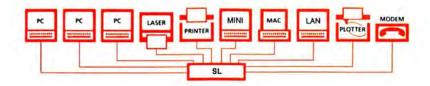
The immediate future lies more in "downsizing" software from mainframes and minicomputers than in moving applications up from PCs. "We're seeing an awful lot of systems come down off mainframes," reports David Litwack, senior vice president for development at Powersoft in Burlington, Massachusetts.

And with the technical barriers falling, corporate customers like Arco, which once dropped the concept, are interested again in client-server. "In the next year or two," says Beahan, "it's going to take off big." —Mark Henricks



Client-server technology has not yet revolutionized PC data bases as expected, but the concept should pay off over time.

Big Business Productivity For Small Workgroups







- Pop-up Menu & Windows Option
- Easy to Install and Use
- * Rapid Data Transfer
- User Upgradable Memory
- Reliable Automatic Switching
- No PC RAM Memory Required
- * Toll-Free Technical Support
- * 45-Day Money-Back Guarantee



Printer Sharing Solutions

Model	Total	PCs/	Memory	Printer	Price
Name	Ports	Printers	Available	Selection	\$ / Buffer
SL	10	Any	256KB -	Pop-up	\$495 / 256KB
	6 Ser., 4 Par.	Combination	4MB	Menu	\$595 / 1MB
SLP	10	Any	256KB -	Pop-up	\$495 / 256KE
	8 Par., 2 Ser.	Combination	4MB	Menu	\$595 / 1MB
нхм	4	Any	256KB -	Pop-up or	\$295 / 256KB
	2 Ser., 2 Par.	Combination	16MB	Buttons	\$395 / 1MB
нхѕ	4	Any	256KB -	Pop-up or	\$295 / 256KE
	Serial	Combination	16MB	Buttons	\$395 / 1MB
HWP	5	3/2	256KB -	Pop-up or	\$295 / 256KE
	Parallel	4/1	16MB	Buttons	\$395 / 1MB
нхр			256KB - 16MB	Pop-up or Buttons	\$245 / 256KE \$345 / 1MB
НСР	2 Parallel	1/1	256KB - 16MB	One Printer	\$225 / 256KE \$325 / 1MB
AS-41	5 Parallel	4/1	None	One Printer	\$195
AS-31	4 Parallel	3/1	None	One Printer	\$175

Save Money by Sharing Office Resources:

Printers and other expensive peripherals are idle the vast majority of the time. Buffalo boxes facilitate efficient utilization of these devices, and reduce the need to purchase more of them.

Buffalo boxes further improve productivity by allowing easy user access to all shared peripherals. With a buffer, all users can simultaneously send print data and quickly release their PCs to continue working.



US and Canada Toll-Free: (800) 345-2356

Fax (503) 585-4505 Buffalo Products, Inc. 2805 19th St. SE, Salem, OR 97302-1520

Wireless Networks Find Their Niche

New Products Allow New Flexibility for Installations

The United States is wired into local area networks, and the number of installations is growing by about 50 percent a year. But advances in wireless networking mean your work group can be connected without being bound.

security and avoid interference from other radio devices. Motorola solves that problem by transmitting WIN's signals at 18 GHz, far above the range other devices use.

Each WIN control module can communicate with up to 32

\$18,000 for UTP and \$25,020 for WaveLAN.

Opening Up New LANs

Moreover, a Peat Marwick study found that 30 to 50 percent of the users on a typical LAN relocate annually. In fact, says Bill Johnson, a senior partner in Chicago, it's not uncommon for an entire LANconnected work group to move once or even twice a year.

That's more true for some work groups than others, says Richard Shankle, telecommunications associate at Dow Chemical in Houston, Texas. Dow is trying out small wireless LAN installations for R&D and other work groups whose members come together for a short period of time.

Moving a wired net costs an average of \$300 per node, says Peat Marwick's Johnson, and that does not reflect productivity lost to downtime. Both kinds of expense are big issues with Boeing's Scott, whose company has 45,000 wired ethernet nodes and constant movement of workers and equipment. "Often, the biggest problem is having wire pulled

in. It takes 60 to 90 days," says Scott. Boeing spends millions every year on wiring and encounters many problems with wire, including security and electrical interference.

Wireless nets have not brought new operational problems, says Scott. "One of the things that impressed me most is that I didn't have to load software, or go in and flip switches, or get out the Elmer's glue," he says. "It's completely plug and play."

NCR WaveLAN product manager Darvl Maddox looks forward to industrywide sales of 100,000 units next year. That figure pales in comparison with the 10 million LAN nodes expected to be installed worldwide, but NCR considers wireless connections a strategic direction for all types of communications. Whether the devices are cellular phones and data modems or pen-based PCs and notebooks that plug in to more robust network servers via radio, says Maddox, wireless systems will connect you without tying you down.

—Mike Hogan ⊜

Kathleen A. Gow is a freelance writer in Medford, Massachusetts; Mark Henricks is a PC World contributing editor in New York.

Work-grou	IP LANS	The Moving	g Story
Estimated hardware	installation co	osts for 10 nodes	
Wireless In-buildin	g Network	WaveLAN	10Base-T
1 control module	\$3995	10 connections	10 connections
2 user modules	\$1990	@ \$1390 each	@ \$750 each
Total	\$5985	\$13,900	\$7500

Total cost after moving each node once Wireless In-building Network

 Wireless In-building Network
 WaveLAN
 10Base-T

 Total
 \$5985
 \$13,900
 \$10,500

Sources: Motorala, NCR, Peat Marwick

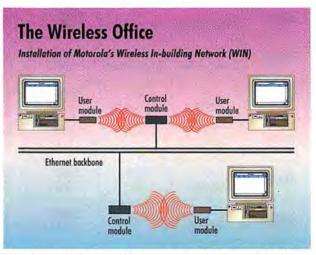
Wireless LANs make sense for work groups that move often. Moving a wired LAN such as 10Base-T costs about \$300 per node.

Still in its infancy, wireless media is being adopted mostly by users whose network layout changes frequently or whose workplace is difficult to wire. But technical enhancements and significant price drops make a network without wires cost-competitive with nets using the popular unshielded twisted-pair (UTP) cables—and they're often much easier to install or modify.

Radio wave—based systems like Motorola's Wireless Inbuilding Network (WIN) and NCR's WaveLAN generally match the effective 1.5-Mbps to 3.3-Mbps data transfer rates of wired ethernet nets. These systems can transmit data around corners and through office walls and partitions, but not through ceilings and floors.

NCR's WaveLAN emits lowfrequency (925-MHz) radio waves that spread out over a wider spectrum to ensure data ethernet workstations by relaying the signal through strategically placed user modules (connected via a thin wire to an ethernet card in each PC). Jim Scott, systems analyst at Boeing Computer Services in Bellevue, Washington, supports one WIN user who sits 55 feet and five office walls away from the control module. WaveLAN's station-to-station design provides even broader coverage. Either system is adequate for most work-group situations, and WIN enjoys a definite price edge.

A 10-station WIN network might cost as little as \$5985, compared with \$7500 for a typical wired ethernet network (including \$250 for each PC adapter) and \$13,900 for 10 of the antenna/adapter combinations that NCR sells. Expand that LAN to 18 stations and the cost differential favors the WIN system even more—\$11,490, compared with



In wireless networks each PC's network adapter connects to a user module that communicates via radio waves with a control module.

Power Packed & Built To Last.





\$69

\$129

Economical This UL approved, fully tested unit is one of the best generic 200s available. Costs no more than our Standard 150 it replaces.

SILENCER 200

Ultra-Quiet Stop that irritating noise with the Silencer 200. Its large, low speed, German

fan keeps your system 5° to 15° cooler and 84% quieter. Virtually inaudible! Great in the executive suite or home office.

TURBO-COOL 200

\$169

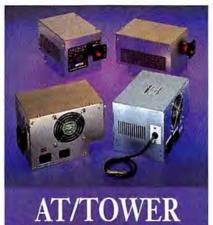
High Performance Put AT power and 200% more cooling under the hood of your PC/XT with our UL approved Turbo-Cool 200. Its patented twin fan, sloped-cover design keeps your system 30° to 45° cooler, preventing data errors and other heat-related problems. Perfect for hot rod PCs and Mini ATs!

TURBO-COOL 300S

\$169

Slim and Powerful Give your Slimline or Mini-Tower computer up to 100% more power and cooling with our low profile, direct replacement Turbo-Cool 300S. With a peak capacity of over 350 watts, it will easily start even the largest hard drives and peripherals!

Silencer, Turbo-Cool, and InnerSource are trademarks of PC Power & Cooling, Inc. Compaq and Deskpru are registered trademarks of Compaq Computer Corporation.



STANDARD 220

399

Economical This UL approved, fully tested unit is one of the best generic 220s available. Ideal for basic systems.

SILENCER 220

\$139

Ultra-Quiet Unrattle your nerves with the Silencer 220. Its custom, thermostatically-controlled fan maintains the correct system temperature while reducing noise by up to 95%. Great in the executive suite or home office.

TURBO-COOL 300

\$189

High Performance Upgrade your AT/386 with our powerful Turbo-Cool 300. This popular OEM unit features built-in line conditioning, UL/CSA/TUV approval, 2-year warranty, and a high-capacity, thermostatically-controlled fan that automatically keeps your system up to 35° cooler. Great value!

TURBO-COOL 450

\$349

Maximum Performance The choice of PC professionals, our Turbo-Cool 450 features built-in line conditioning, autoselect input, independent regulation, external DC voltage adjustment, triple-stage output filter, 50cfm cooling fan, UL/CSA/TUV approval, 100,000 Hr. MTBF and 2-year warranty! Ideal for high-end workstations and network file servers.

Most orders shipped same day. We accept Visa, MC, COD or PO on approved credit.



CP160

\$169

Original Portable Upgrade Double your power with our direct replacement CP160. Allows 286, 386, and hard disk upgrades.

CD270

\$249

Deskpro Upgrade The power user's power supply! Our direct replacement CD270 gives your 8086/286/386 Deskpro up to 70% more power and the reliability it deserves. Prevents nuisance rebooting. Advanced design includes autoselect 110V/220V. 2-year warranty.

INTERNAL UPS!



"An excellent product" - PC Magazine, Nov. 27, 1990

Our UL approved InnerSource is the first AT/386 power supply with a built-in UPS. Its auto-recharge battery provides up to 15 minutes of reliable backup power for both your PC and monitor. This integrated protection costs less than a bulky 550VA external UPS, and it saves space, too. A Novell NetWare interface is available. \$395

PC POWER & COOLING, INC.

5995 Avenida Encinas, Carlsbad, CA 92008 • (619) 931-5700 • (800) 722-6555 • FAX (619) 931-6988

PC WORLD MARKETPLACE PRICE INFORMATION





The Gateway 2000 33-MHz 386VGA and Dell System 320LT were the most aggressively priced desktop and portable PCs in the latest survey by International Data Corporation.

BARGAINS OF THE MONTH

Best-Sellers

Leading PCs sold through traditional computer channels

Ī	0	IBM PS/2 Model 55 SX	0	Compaq Deskpro 386s	
	0	IBM PS/2 Model 70 (20 MHz)	0	NEC PowerMate SX, SX/20	
Ī	0	Compaq LTE 386s/20	0	Compaq Deskpro 386s/20	
	0	Compaq Deskpro 386/20e	0	Compaq Deskpro 386n	
	6	IBM PS/2 Model 30-286	0	Compaq LTE/286	

IBM's Model 55 SX and Model 70 continue to lead sales through the dealer channel, but Compaq holds six of the top positions, according to Storeboard/Computer Intelligence's survey.

Over the Counter	Configuration								
What you pay at retail stores for popular PCs 803865X-based desktop PCs	Speed (MHz)	RAM (MB)	Hard disk (MB)	Video adapter	E	Awerage	Boston	Chicago	P. Worth
AST Brovo 386SX/20	20	2	40	VGA	\$1695	\$1418	\$1568	\$1293	\$1281
Compaq Deskpro 386s	16	2	40	VGA	\$2299	\$1837	\$1889	\$1931	\$1686
Compaq Deskpro 386s/20	20	2	60	VGA	\$2599	\$2073	\$2138	\$2190	\$1906
Dell System 320 SX	20	2	40	VGA	\$1400	\$1400	\$1400	\$1400	\$1400
IBM PS/2 35 SX-043	20	2	40	VGA	\$2525	\$1918	\$1937	\$1916	\$1936
IBM PS/2 55-041	16	4	40	VGA	\$2745	\$2034	\$2114	\$1979	\$2085
NEC PowerMate SX/20	20	2	42	none	\$2199	\$1688	\$1682	\$1722	\$1590
	1 20	1	14	1 10110	72177	71000	71002	41122	41374
80386DX-based desktop PCs		1 0	110	1101	Arror	£4110	č.	64000	60700
AST Premium 386/25	25	2	110	VGA	\$5595	\$4119	\$4252	\$4233	\$3720
Compaq Deskpro 386/33L	33	4	120	VGA VGA	\$6199 \$2400	\$4945 \$2400	\$5088 \$2400	\$5039 \$2400	\$4546 \$2400
Dell System 333P	33	2	100	VGA	2000	721202	\$2722	\$2598	\$2400
Epson Equity 386/25 Plus	25		100	1	\$3199	\$2486			1000
Gateway 2000 33-MHz 386VGA IBM PS/2 Model 70-A16	33	4	200	VGA VGA	\$2320	\$2320	\$2320	\$2320	\$2320
Tandy 4033 LX	25	2	160	VGA	\$6445 \$4398	\$4825 \$4398	\$4963 \$4398	\$4746 \$4398	\$4930 \$4398
80486SX-based desktop PCs									
ALR BusinessVEISA	20	5	120	none	\$4295	\$3361	\$3502	\$3107	\$3307
AST Premium II 486SX/20	20	4	80	VGA	\$3495	\$2761	\$2754	\$2665	\$2669
IBM PS/2 Model 90XP-OG5	20	4	80	XGA	\$8345	\$6370	\$6426	\$6496	\$6378
80486DX-based desktop PCs									
AST Premium 486/25E	25	4	110	VGA	\$8595	\$6407	\$6532	\$6560	\$6078
Compaq Deskpro 486/33L	33	4	120	VGA	\$8999	\$7142	\$7399	\$7282	\$6599
IBM PS/2 Model 95 XP	33	4	320	XGA	\$16,445	\$12,308	\$12,827	\$12,168	\$12,563
NEC PowerMate 486/25E	25	4	140	none	\$7399	\$5601	\$5821	\$5457	\$5352
Portables/laptops									
AST Premium Exec 386SX/20	20	2	40	VGA-LCD	\$3395	\$2657	\$2761	\$2713	\$2669
Compaq LTE/286	12	640K	20	CGA-LCD	\$1949	\$1564	\$1607	\$1626	\$1429
Compaq LTE 386s/20	20	2	30	VGA-LCD	\$4399	\$3499	\$3618	\$3656	\$3226
Dell System 320LT	20	2	40	VGA-LCD	\$1999	\$1999	\$1999	\$1999	\$1999
IBM PS/2 Model L40 SX	20	2	60	VGA-LCD	\$5245	\$3914	\$4039	\$3884	\$4010
NEC UltraLite 286F	12	1	20	CGA-LCD	\$2199	\$1702	\$1754	\$1686	\$1630
TI TravelMate 2000	12	1	20	VGA-LCD	\$2369	\$1697	\$1726	\$1810	\$1582
Toshiba T1200XE	12	1	20	CGA-LCD	\$1999	\$1640	\$1724	\$1619	\$1674
Toshiba T2000SX	16	1	40	VGA-LCD	\$3749	52942	\$3120	\$2954	\$2924

From an IDC survey of more than 180 computer dealers in eight metropolitan areas. Figures based on at least four price quotes for each machine. Prices are based on manufacturer's standard configuration without monitor.

Of all the computer vendors in this magazine, how many offer you the assurance of ULL Listing?

One that we know of: ZEOS°

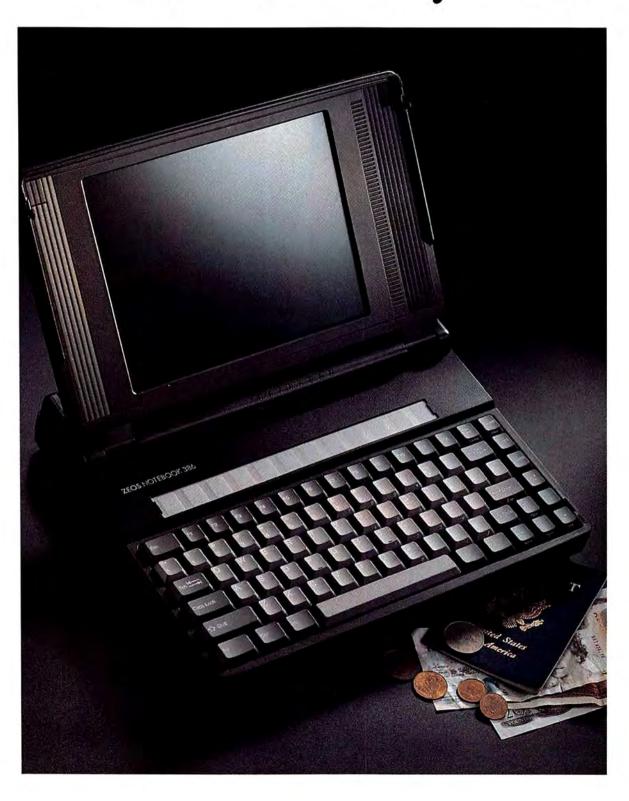
ZEOS°

Every System UL° listed.

For more information on ZEOS systems call 800-423-5891.

Circle 323 on reader service card

The ZEOS '386SX Now 20MHz Only \$2295! 16



Notebook. MHz Only \$1995!

"THE HOTTEST DEAL ON THE NOTEBOOK MARKET"—PC MAGAZINE





"King of the Hill...Sensational...The best priceperformer ... Astonishing

value... The number one contender... The praise goes on and on. Winner of PC Magazine's Editor's Choice Award and PC World's Best Buy Award, the experts love the ZEOS Notebook. And

you'll love it too. Because as PC Magazine said, the ZEOS Notebook is simply "the hottest

deal on the notebook market."

INCREDIBLE DESK-TOP FEATURES IN A NOTEBOOK.

Pick your power. Choose our '386SX-16MHz version or go for the incredible new ZEOS '386SX-20MHz version. Combine that with

our high speed hard disk, built-in 1.44MB floppy drive, VGA and more you've got the greatest notebook going

at any price!

Look closely at the details. Like our large, easy to read 10" VGA display. The ultimate in sparkling clarity featuring advanced fluorescent backlighting for vivid VGA graphics. And then the drives.

You're getting our whisper quiet high speed, hard disk plus a built-in 3.5 inch floppy as well. And we don't stop there.

DETAILS MAKE THE DIFFERENCE!

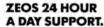
For instance, the battery system of your new notebook is the most advanced on the market. You can quick charge, or trickle charge, any time your system is plugged in.

Either way, you're also sure to appreciate our light weight snap-in, snap-out battery packs. They're so light and easy with you on those really long trips. Plus, charge by using our programmable hour of notebook computing power!

CONNECTIVITY TOO!

Connect to the world using our optional built-in 2400 baud MNP™ Class 5 modem. Plus your new ZEOS

> notebook has the same industry standard port connectors you'll find on your larger desktop system. Serial and Parallel ports; even an external VGA connector. Completely compatible!



Don't forget your new ZEOS notebook is backed by the best Technical and Sales support in

the industry, 24 Hours a Day.

Your new notebook is also backed by our 30 Day Absolute Satisfaction Money Back Guarantee and One Full Year Limited Warranty. You're going to be very satisfied. We don't just say it. We guarantee it.

ORDER YOUR OWN ZEOS NOTEBOOK NOW!

You can order your own ZEOS Notebook right now. Simply pick up the phone and give us a call now at 800-423-5891. Larger hard drives, carrying cases and more are also available! At last, a full featured notebook that lets you compute anywhere. You're going to love it!

ORDER NOW TOLL FREE: 800-423-5891

Purchase Orders from Fortune 1000 companies, Governments and institutions subject to approval. All prices and specifications are subject to change without notice. Please call to confirm pricing, specifications and warranty details. The following are trademarks of their respective companies: MNP of Microm Systems, ZEOS (ZEOS International, Ltd.); © 1991, ZEOS International, Ltd.); Co 1991, ZEOS International, Ltd.); So 1991, ZEOS international, Ltd.); Co 1991

to use, you can easily take an extra one you can get even more life out of a single power management system. Hour upon NOW. YOUR COMPLETE '386SX-16 NOTEBOOK! VGA, 20MB HARD DRIVE 1.44MB FLOPPY AND MORE, LIGHT AND LOADED! INCREDIBLE. ONLY \$1995! 20MHz ONLY \$2295!

'3865X-16 or '3865X-20. 1MB DRAM, expandable

to 3 or 5MB.

20MB High Speed HDD. Built in High Density 3.5"

1.44MB floppy drive. High resolution VGA display. Fluorescent backlit 640x480, 32 grey scales. Bright and clear!

Removable quick charge NiCad battery. Two hour plus battery life typical, more using Programmable **Power Management!**

Quick charge or trickle charge using included AC power adapter.

Extra battery packs and external charging stand available.

82 key keyboard. True 101 key emulation.

Industry standard Serial and Parallel Ports.

VGA port for external VGA color display. Great for demos!

Total system weight 7 lbs.

with battery. 30 Day Absolute Satisfaction Money Back **Guarantee and ZEOS Customer Satisfaction** Package.

One Full Year Limited

Warranty. 24 Hour a Day Toll Free Technical Support, 365 Days a Year.

FAX Orders: 612-633-1325 Minnesota: 612-633-4591 Hearing Impaired (TDD): 800-228-5389 Outside US and Canada: 612-633-6131 MasterCard, VISA, Discover, Am Exp, Z-Card, and COD. Open 24 Hours a Day, 365 Days a Year!

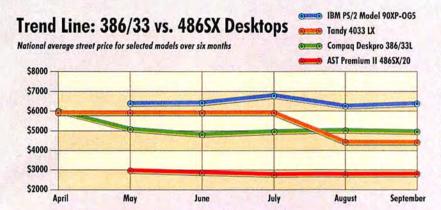


When you buy a new Windows system package from ZEOS you really get a bundle.

Lotus 1-2-3 for Windows Lotus Ami Pro 2.0 Microsoft Windows 3.0 Microsoft DOS Microsoft Mouse

ZEOS.
There's no reason to buy anything else.
800-423-5891

This offer is good for a limited time only. A ZEOS Windows system is any new ZEOS computer system packaged with Windows, 2MB DRAM or more and a mouse. Lotus, 1-2-3 and Ami Pro are trademarks of Lotus Development Corporation, Microsoft and Windows of Microsoft Corporation. All prices and specifications are subject to change without police, call for current information 2 FOS is a publicly traded company NAS Symbol 2FOS C 2FOS International Ltd. 3-30 5th Asymptotic Symbol 2FOS (a public Symbol 2FOS) is a publicly traded company NAS Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 3-30 Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 3-30 Symbol 2FOS (a public Symbol 2FOS) and a public Symbol 3-30 Symbol 3-30



while many expected the 4865X systems that debuted last spring to place severe pricing pressure on 33-MHz 386 models, IDC's surveys don't necessarily reflect such a trend. The price of Compaq's 386/33L dropped in April (along with those of the rest of the vendor's line) but held steady afterward. Tandy waited until August to adjust its pricing. Meanwhile, costs of 4865X machines held moderately steady.

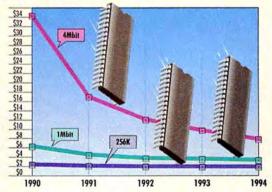
Los Angelos	Miamil Miamiler Male Ft. Lauderdale	NewYork	San Francisco Bay Area	D.C.
\$1341	\$1419	\$1471	\$1553	\$1404
\$1784	\$1878	\$1925	\$1933	\$1858
\$2026	\$2123	\$2092	\$2073	\$2099
\$1400	\$1400	\$1400	\$1400	\$1400
\$1944	\$1902	\$1948	\$1878	\$1915
\$2067	\$1919		\$1989	\$2007
\$1686	\$1761	\$2108 \$1677	\$1707	\$1732
\$1000	31/01	310//	31491	31/32
\$4193	\$3991	\$4330	\$3906	\$3955
\$4803	\$5065	\$5182	\$5161	\$4942
\$2400	\$2400	\$2400	\$2400	\$2400
\$2346	\$2459	\$2673	\$2399	\$2463
\$2320	\$2320	\$2320	\$2320	\$2320
\$4963	\$4786	\$4877	\$4666	\$4738
\$4398	\$4398	\$4398	\$4398	\$4398
				-
\$3415	\$3436	\$3311	\$3376	\$3454
\$2742	\$2921	\$2746	\$2920	\$2720
\$6426	\$6313	\$6325	\$6194	\$6546
\$6446	\$6189	\$6652	\$5969	\$6051
\$6990	\$7413	\$7409	\$7261	\$7213
\$11,973	\$11,985	\$12,537	\$11,289	\$12,94
\$5549	\$5771	\$5320	\$5424	\$5716
\$2559	\$2597	\$2562	\$2672	\$2541
\$1533	\$1591	\$1679	\$1557	\$1553
\$3390	\$3594	\$3619	\$3469	\$3546
\$1999	\$1999	\$1999	\$1999	\$1999
\$4039	\$4013	\$3796	\$3686	\$3868
\$1686	\$1702	\$1597	\$1730	\$1709
\$1657	\$1836	\$1864	\$1857	\$1490
\$1628	\$1653	\$1567	\$1721	\$1642
\$2915	\$2872	\$2865	\$2980	\$2933

PC Futures: Prices Poised for a Drop

Overall, costs keep drifting down—for example, prices dropped on every notebook and laptop PC in this survey. Price leaders like AST, Dell, and Gateway continue to tighten their belts, and the combination of flat U.S. sales and traditional fourth-quarter market free-for-alls should produce plenty of bargains in the next month or two. The Gateway 2000 33-MHz 386VGA and Dell System 320LT were the most aggressively priced desktop and portable PCs in IDC's latest survey.¹ IBM's two-year-old PS/2 Model 55 SX and three-year-old 20-MHz PS/2 Model 70 still top the best-seller list. Early next year, systems based on new CPUs from AMD, Chips & Technologies, and Intel should further boost price/performance. Memory costs also continue to drop, although not at a breakneck pace. Even high-end 4-megabit chips are in high-volume production and feeling the squeeze from slow market conditions.

Memory: Falling Less Rapidly

Vendor costs of DRAM memory chips in dollars



Except for 4-megabit models, prices on standard memory chips are no longer plummeting. The market is dominated by 1-megabit chips; Instat expects 867.5 million to ship worldwide this year. Deliveries of 4-megabit chips will soon surpass those of 256K chips.

¹Bargains of the Month are determined by adjusting prices on PCs of a given class for standard memory and storage, then finding which PC compares best.



ZEOS 386SX-20! Only \$1195.

INCREDIBLE 20MHZ ZERO-WAIT PERFORMANCE \$1195!

That's right! Now you can own the incredible new ZEOS 386SX 20MHz system, complete for only \$1195! Using *ultra high speed* 53 nanosecond DRAM, your new ZEOS 386SX-20 delivers *blazing* zero-wait state performance without the need for a cache. And that's just for starters.

Your new ZEOS 386SX-20 also includes the most advanced SX motherboard available anywhere. Because we've not only added incredibly fast 53ns DRAM, we've also integrated the hard and floppy drive controllers *plus* the serial, parallel and game ports *right on the mother board!* This results in even greater reliability *and* expandability.

ZEOS SX SYSTEMS RATED #1!

After all, the ZEOS 386SX-20 comes from a family of *Editor's Choice '386* systems. And most recently, in PC Magazine's Service and Reliability issue, ZEOS systems received the #1 SX rating overall. When you receive your new ZEOS 386SX you'll see why ZEOS is #1. Take our case and power supply for instance.

Your new system will include our custom 200 Watt power supply and seven bay SpaceSaver desktop case.

You save space and still have room for lots of future expandability! And the components in your system will last longer too because ZEOS gives you not just one, but *two cooling fans*. After all, the cooler your system runs, the longer it will last. Now that's uncompromising value. That's ZEOS value.

24 HOUR A DAY TOLL FREE SALES AND TECHNICAL SUPPORT!

Too, you will receive our legendary ZEOS 24 Hour a Day Toll Free Technical Support. Plus our full 30 Day Absolute Satisfaction Money Back Guarantee, One Full Year Limited Warranty and Express Parts Replacement Policy.

Performance. Quality. Price. Support. These are the hallmarks that have made ZEOS America's favorite choice. These are the values that make ZEOS your best choice as well. You're going to be *very* satisfied. We don't just say it. We Guarantee it.

ORDER NOW TOLL FREE: 800-423-5891

Order your new ZEOS 386SX now with confidence. Your choice of ZEOS quality and performance is Guaranteed. Order now toll free by calling 800-423-5891.

INCREDIBLE 20 MHz ZERO-WAIT PERFORMANCE ONLY \$1195

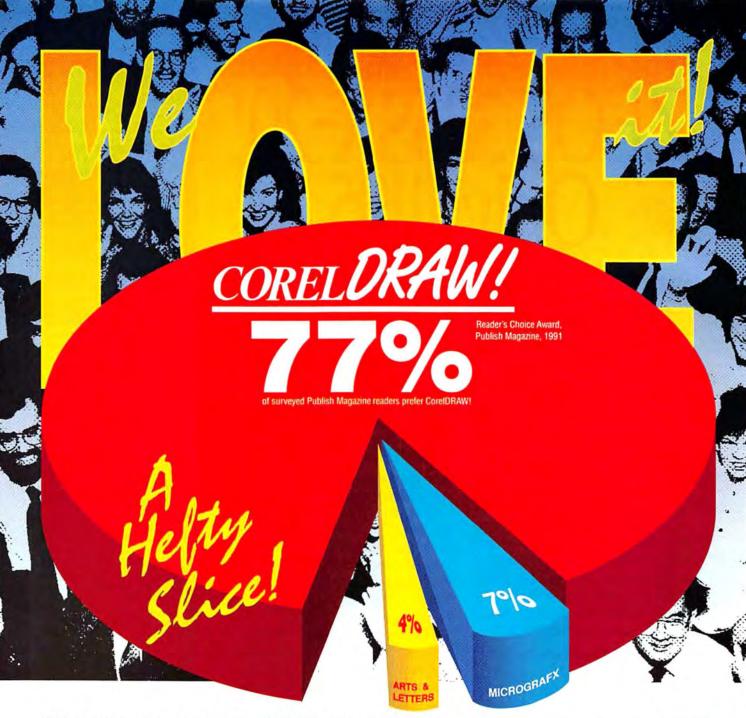
- 386SX-20 CPU, 8/20MHz.
- Ultra Fast 53ns DRAM providing true Zero-Wait state performance.
- 512K memory expandable to a System Total of 16MB. Right on the motherboard.
- 42MB High Speed IDE hard drive. Teac* 1.2MB floppy.
- ZEOS 14" Hi-Res amber monitor with Tilt/Swivel. Includes Genuine Hercules* brand graphics controller!
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two Serial, one Parallel & one Game Port.
- 6-16, 2-8 bit expansion slots. 80387SX math coprocessor support.
- Rugged ZEOS 7-bay
 SpaceSaver case with
 our 200 Watt power
 supply and two cooling
 fans for added reliability
 and product life.
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

Options Galore:
Including 14" 1024 VGA,
more memory, an incredible selection of hard
drives: SCSI, IDE, ESDI RLL
or MFM and virtually any
other add-on you could
want. Ask about other
special money saving
packages too.

800-423-5891

FAX Orders: 612-633-1325
Minnesota: 612-633-4591
Hearing Impaired (TDD)
Orders: 800-228-5389
Outside US and Canada:
612-633-6131
MasterCard, VISA, Discover,
Am Exp, Z-CARD and COD.
Open 24 Hours a Day,
365 Days a Year!





With success after success, CoreIDRAW continues its sweep across the industry, winning over 40 international awards. Now yet another award is added to the list: Publish Magazine's "Reader's Choice Award '91" for PC drawing and PC clipart, beating Micrografx and Arts and Letters ten to one! Join the CoreIDRAW winning team today. Everyone loves it!

MOST VERSATILE

Dress up any document. Watch your project go from the ordinary to the spectacular using CorelDRAW's unique special effects.

EASIEST TO USE

Just point and click. CoreIDRAW's interface was designed to do all the work. It's fast and it's fun! No wonder it's the world's #1 seller.

MOST FONTS

Over 150 on-screen high resolution fonts can be altered in any way. Skew, rotate, extrude, envelope, etc. Nobody else comes close!

BEST CLIPART

Choose from over 4,000 images and symbols. Use them as they are or as a short cut to your own designs. Voted best clipart by Publish readers!





PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

50-MHz 486s Push To the Limit—and Beyond

Systems based on Intel's racehorse chip burst from the starting gate, only to be reined in as the chip maker stumbles on technical problems.



If this won't make Windows run right, nothing will! Dell is one of the first system vendors to blast off with a 50-MHz 486. But for the moment Intel's chip is literally too hot to handle.

Michael Goodwin

Yes, Intel is raising the stakes again with a new, faster chip: the top-of-the-line 50-MHz 80486. This time the performance handicappers have it easy because its 50-MHz clock means no other chip—not even AMD's impressive 386/40—can deliver comparable throughput. And major vendors such as Acer,

ALR, Compaq, Dell, and Everex have already announced 50-MHz systems, as have a host of smaller manufacturers.

Despite the predictable marketplace chaos that accompanies the emergence of any new processing platform—not to mention the extra confusion caused by Intel's temporary halt in manufacturing because of chip overheating problems—the 486/50

offers exciting performance gains.

Not everyone needs a machine this fast or has the budget to buy one. But there have always been a few businesses where mission-critical applications like CAD/CAM or huge spreadsheets are so demanding that every last tweak of performance translates into profit. With the expanding popularity of Windows, that

group now includes quite a few "ordinary" business users. For all these folks, 50 MHz is a likely next step.

Beating the Clock

Architecturally the new chip is identical to the familiar 486/33, complete with built-in math coprocessor; but the execution is slightly different. Designed with .8 microns between etch lines (instead of the traditional 1.0 micron spacing), the new chip can run a bit faster since signals don't have as far to travel. The closer lines may make the chip run hotter, too-but this temperature differential is slight compared to the heat generated by the faster clock. Because of the cutting edge technology involved, only one Intel plant is currently capable of manufacturing the 50-MHz chip. Fortunately this chip factory is one of the largest and most modern plants that Intel oper-

SNAPSHOT

50-MHz 80486 Systems

These top-end speedsters are the last word in speed assuming Intel can beat the heat.

KEY FEATURES

- 33 percent faster on CPU-intensive applications (preliminary test)
- 10 percent faster on disk-intensive applications (preliminary test)

AVAILABILITY

Fourth-quarter 1991

PRICING

\$2995 (Atronics ATI 486/50) to \$22,249 (AcerFrame 3000), depending on configuration

50-MHz Front-Runners

These hot PCs are not only the fastest in performance, they are also the fastest out of the gate.

Model	List price1	EISA	SCSI	External cache (K)	CPU upgrade	Fast-RAM capacity	Bays	Compact footprint	Warranty (months)	Percentage .
AcerPower 500	\$10,3482	Y	Υ	256	N	256MB	4	Y	24	Y
AcerFrame 1000 (server)	\$13,159	Υ	Y	256	N	128MB	7	N	24	Υ
AcerFrame 3000 (twin-tower server)	\$22,2493	Y	Y	256	N	128MB	8	N	24	Υ
ALR BusinessVEISA Array 486/50	\$10,3944	Y	N	64-256	Y	49MB	4	Y	12	Y
ALR PowerPro Array 486/50 VM 420	\$13,9644	Υ	N	64-256	Y	49MB	9	N	12	Y
ALR BusinessStation 486/50 Model 200-DMA	\$7144	Y	N	64-256	Υ	33MB	3	Y	12	Υ
Atronics ATI 486/50	\$2995	N	N	256	Υ	64MB	5	Y	12	Υ
Austin 486/50	\$5690	Υ	Υ	128	N	64MB	8	N	12	Υ
Compaq Deskpro 486/50L Model 120	\$12,5975	Υ	N	256	N	104MB	- 7	N	12	N
CUI Advantage 486-50CX	\$4400	N	N	64-256	N	64MB	10	N	12	Υ
Dell PowerLine 450DE	\$7299	Y	Y	128	Υ	48MB	5	Y	12	Υ
Dell PowerLine 450SE	\$9299	Y	Υ	128	Y	128MB	11	N	12	Y
Dolch 486-50E Portable	\$16,9956	Y	Y	128	N	32MB	3	n/a	12	Υ
Everex Step Megacube 486/50	tha	Y	N	256	N	64MB	8	N	12	Υ
Everex Tempo Modular Series 486/50ms	tbo	N	N	256	Y	32MB	3	Y	12	Υ
Lightning 486/50	\$3395	N	Y	128-256	N	32MB	5	Y	12	Y
Lightning 486/50E	\$4295	Y	Y	128-256	N	64MB	5	Y	12	Y
Mitac 4280i	\$9070	Υ	N	256	N	64MB	7	N	12	Υ
Wang EC 461/50C	\$14,590	Y	N	256	Υ	64MB	4	Y	12	Υ

Except where noted, price is based on 4MB to 5MB RAM, 100MB to 200MB drive, one flappy, VGA, and color monitor. With 336MB SCSI drive

WHERE TO BUY

Acer Ame	rica	Corp.
	0.20	

401 Charcot Ave. Son Jose, CA 95131 800/733-2237

Reader service no. 849

Advanced Logic Research, Inc. 9401 Jeronimo Irvine, CA 92718

714/581-6770. 714/581-9240 (fax)

Reader service no. 850

American Mitac Corp. 410 E. Plumeria Dr. San Jose, CA 95134

800/648-2287

408/432-8519 (fax) Reader service no. 851

Atronics Int'l Inc.

1830 McCandless Dr. Milpitas, CA 95035 800/488-7776,

408/942-3344 Reader service no. 852

Austin Computer Systems 10300 Metric Blvd.

Austin, TX 78758 800/752-1577 Reader service no. 853 Compaq Computer Corp. P.O. Box 692000

Houston, TX 77269-2000 800/231-0900

Reader service no. 854

1680 Civic Center Dr. #101 Santa Clara, CA 95050 800/458-6686

Reader service no. 855

Dell Computer Corp. 9505 Arboretum Blvd. Austin, TX 78759-7299

800/289-3355,

512/338-8700 (fox)

Reader service no. 856

Dolch Computer Systems

372 Turquoise St. Milpitas, CA 95035 408/957-6575

Reader service no. 857

Everex Systems, Inc.

48431 Milmont Dr. Fremont, CA 94538

800/821-0806 Reader service no. 858

1133 Westchester Ave. White Plains, NY 10604 800/426-2468

Reader service no. 859

Lightning Computers

557 Howard St San Francisco, CA 94105 800/347-4486,

415/543-3532 (fax)

Reader service no. 860

Wang Laboratories, Inc.

One Industrial Ave. Lowell, MA 01851

508/459-5000 Reader service no. 861

For more information about all products in this article, circle reader service no. 908.

ates. That means once the silicon giant resumes full production, the 80486/50 CPU should be available in plentiful supply.

Because the chip's architecture is the same as that of the 486/33, systems engineers don't face any serious design

problems in bringing new PCs to market, which should help keep prices from going through the roof. Several engineers told PC World the only significant design issue is to make slight modifications in the memory cache architec-

ture in order to support the increased speed. Most suppliers simply use Intel's cache module, which is designed to run at 50 MHz; Dell and others have found that it is more cost-effective to design their own 50-MHz memory caches.

Introducing wait states when accessing memory is a cheaper alternative, but it clobbers throughput-and when the purpose of the chip is to boost performance, it's inappropriate to hobble throughput.

While the 486/50 clock

intative price, win 210MB drives. /rth 8MB RAM. /rth 8MB RAM, plasma display

Beats Pagemaking. Guaranteed.

Introducing
Ventura Publisher 4.0
for Windows.

Because pagemaking just doesn't make it for *real* publishing. That's where the document-making power of Ventura Publisher* wins.

"PageMaker is still the better choice for graphic artists, but Ventura [3.0] is better for everyone else."

PC World, June 1991

And Ventura Publisher 4.0 for Windows is even better. For everyone.

Quality with a money-back guarantee.

We're so sure Ventura Publisher 4.0 will win you over, we're offering a no-risk free trial. If you're not satisfied within 60 days, your purchase price will be fully refunded.*

New features & ease-of-use. A few examples:

 Search and replace for text, attributes, tags.
 Spell check, multilingual hyphenation.
 Undo/redo.

 Over 50 new style sheets.
 And lots more. Plus Adobe Type Manager free with purchase.

We've always beaten pagemaking for *real* publishing. Ventura Publisher's automation lets you format documents



of any length without repeating steps manually. And it does tedious jobs like footnoting, table creation, and cross referencing quickly and easily.

24-bit process color and PANTONE support for the PC.

Get the impact and excitement of color with a single-vendor solution. Ventura Publisher 4.0 plus new Ventura color extensions let you create professional

quality, fully-separated pages on the desktop. All using Windows.



OLE! For faster, easier communications.

Ventura Publisher 4.0 is also one of the first programs to use Object Linking and Embedding (OLE). OLE helps you keep Ventura documents current automatically as linked or embedded source files change.

\$129 upgrade offer—call today.

Offer available to registered users of any Ventura Publisher DOS/GEM or Windows Edition. Call the toll-free number below.

Upgrade from PageMaker. With Ventura: \$195.

PageMaker owners can now buy Ventura Publisher 4.0 for just \$195. But act now—it's a limited time offer.

Call today for full details.

(800)822-8221

Ventura Software Inc. A Xerox Company

New Ventura Publisher 4.0 for Windows.

SPELL CHECK AUTOMATIC TABLE OF CONTENTS WORD FOR WINDOWS FILTER INTEGRATED TABLES AUTOMATIC FOOTNOTE

COMPUTER SECURITY PRODUCTS

COMPLETE LINE OF PROVEN AND EASY TO INSTALL COMPUTER SECURITY PRODUCTS FOR COMPUTERS.

PREVENT COMPUTER THEFT!



ACCESS SECURITY

Kablit™ Security System

This system allows you to secure all your computer components: CPU, monitor, keyboard, printer. *Internal component security*: Kablit fasteners secure the rear panel of CPU protecting internal boards and hard drives. Fasteners available for all applications. Prices \$34.95 to \$49.95 depending on system.

Disk Drive LockTM



Prevent anyone from copying your data. Protect your data from harmful viruses. Prevent unauthorized use of your drive. Installs easily and quickly. Models available for 3 1/2" and 5 1/4" drives. List price \$24.95.

Order your free catalog of these and many other security products. Purchase orders accepted. Quantity pricing available. Shipping not included. MC/VISA accepted. Dealer inquiries invited.

Secure-It, Inc.

18 Maple Court

East Longmeadow, MA 01028

1-800-451-7592

Circle 31 on reader service card



speed is almost 50 percent faster than the 33-MHz 486, real system performance gains will be a bit more modest. Preliminary benchmarks on two similar machines from the same major vendor (a 486/33 and a 486/50) show the 50-MHz system racing through the processor-intensive 1-2-3 benchmark about 33

percent faster. On disk-intensive applications such as *dBASE IV* and *Windows*, the increase was only 10 percent.

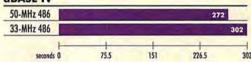
Some of these machines stick with the veteran ISA bus, but most boast EISA slots. Unless you're planning to max out the I/O bus by connecting your PC to a huge number of high-speed peripherals or

TEST REPORT

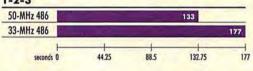
Vroom! PCs Hit 50 MHz

You can't find faster 486s than the new 50-MHz models—CPU-intensive applications run about 33 percent faster than on 33-MHz units.

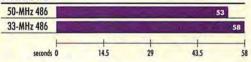




1-2-3



Windows



Methodology

This preliminary performance test compares a prerelease 50-MHz 486 system from a major vendor with a similiar 33-MHz 486 from the same manufacturer.

dBASE IV 1.1

With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

1-2-3

We load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We make various changes and run recales on each. Finally, we use the MAPS add-in from Management Advisory Services of Seattle to run a number of financial forecasts.

Windows 3.0

Timing begins and ends at the DOS prompt. We launch Windows along with a macro that loads Microsoft Excel with a financial worksheet and initiates a recalc. Then the macro loads Lotus's Ami Pro along with a 50K document that contains a 500K TIFF image. Finally, the macro launches Micrografx Designer, opens a drawing, displays it on screen, and exits to DOS.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

Ventura announces the most colorful news in PC publishing history.

New Ventura color extensions: process color from the desktop to film.

FULL PROCESS COLOR SEPARATIONS

Now get the impact and excitement of color with a single-vendor solution. Ventura brings you the complete

spectrum of color prepress software. To scan, retouch, color correct, and color separate-all using the easy and intuitive Windows interface.



Ventura Scan.~ Scan black and white, grayscale or full-color images directly into Ventura Publisher* 4.0 for Windows.

Color correct before you scan. Get professional quality using a range of popular reflective, slide or transparency scanners.

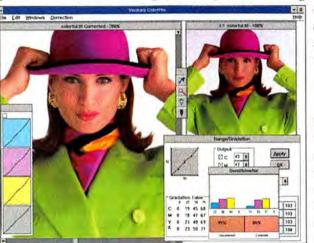
Full-page desktop separations.

Ventura Separator.™ Create professional color separations of Ventura Publisher documents with text, graphics, and continuous tone color images in place, ready to print. For quality color

without the complexity or cost of traditional separation processes.

> Color correct and separate images professionally.

Ventura ColorPro." High end, stateof-the-art color image processing with



the ease of Windows. Its precise, fullfeatured image color-correction and separation controls are designed for the demanding professional who requires trade-quality results. With PC speed, flexibility and economy.

Enhance your image.

Ventura PhotoTouch™ Professional retouching for grayscale or color. With



real-time color correction, imageediting, and masking for images of any

size or resolution. Plus special effects and creative tools to alter and enhance your image until it's picture perfect.

> More color for more software.

Both Ventura ColorPro and

Ventura PhotoTouch are compatible with software that supports EPS, DCS or TIFF files, including DTP. paint, draw and

word processing programs.

To put the power of color into your publications, put Ventura color extensions on your PC. Call today or see your dealer for more information.

(800) 822-8221

Ventura Software Inc. A Xerox Company





The New Ventura





SCANNING

BMP, TIFF, DIB, TARGA, VIFF, POSTSCRIPT, SCITEX CT

ELIMINATE MANUAL STRIPPING

ATTENTION ADOBE TYPE MANAGER USERS

LIBRARY STYLE IMPORT

SoftType™, The Font Toolbox, lets you unleash the power of Adobe Type Manager™ and Windows™.

LIBRARY. SoftType includes 63 ATM compatible, scalable typefaces. Incredible variety — including Baskerville, Park-Avenue, Stencil and others.

STYLE. Condense, expand, rotate, and slant. Give your documents stunning visual impact.

IMPORT. Bring PostScript® Type 1 (Macintosh® or PC), URW, and OTL typefaces into SoftType. Add style and use them with ATM and Windows.

SoftType is the only styling tool you will ever need. No more buying fancy fonts. Call for more information or visit your favorite software dealer.

1-800-444-4780 ext. 3C



ZSoft

Soft ye is a trademark and ISOR is a trademark of Local Construction. ProdScript is a registed trademark, and Adobe Type Manager and ATM are trademark of Adobe pystems in processor in producing an international CPVII Uni

Circle 321 on reader service card

using it as a file server, your choice of bus will have little impact on your system's performance. Even slower CPUs have plenty of muscle to handle all the I/O activity one user is likely to generate. If you do find yourself in the high I/O category, you can keep from hitting a bottleneck by choosing an EISA bus-assuming your peripheral controllers take advantage of it. But that's not a processor-related issue, since it's just as true at 25 MHz as it is at 50 MHz.

You Want It, You Pay for It

Naturally, vendors have been quick to announce systems based on the new chip. And just as naturally, most of the new systems are expensive.

If you want a "basic" 50 (an ISA machine with 4MB of RAM, a 100MB to 200MB hard disk, and a color VGA monitor) you can get one for \$3000 to \$4400 from Atronics, Lightning, or CUI. (By comparison, a similarly configured 486/33 can be had from the same companies for as little as \$2000.) As you move into higher-end, EISA-based 486/50s, prices run from \$4300 (Lightning) to \$15,000 (Wang). (EISA-based 486/33s in a similar configuration start at around \$2700.) In tower configurations for network servers, a 486/50 can cost as much as \$22.249.

If this seems like a lot to swallow, you may be able to do it in two bites-assuming your system allows you to upgrade the CPU. IBM, for example, does not yet offer a 50-MHz system, but if you've got \$3695, it will sell you a 50-MHz upgrade board for 33-MHz PS/2 Models 90 and 95 XP. Many other vendors in this preview follow the same pattern, so if you were clever enough to buy one of their upgradable systems, you will probably be able to make a painless step up to the 50.

Too Darn Hot?

Despite the price premium, plenty of takers were lining up for the new 50-MHz PCs when Intel abruptly suspended chip production and asked system vendors to halt their shipments. Intel blamed "high-temperature, high-frequency testing problems," which is to say that the chips overheated and became unstable. However, our interviews with vendors revealed only one instance of actual malfunction.

Shortly after the problem surfaced, Intel found a way to screen for it, but the yield of good chips was so low that resuming production would have been uneconomical. Instead, Intel elected to redesign the masks used in manufacturing despite the additional delay involved. By the time you read this, Intel is expected to have resumed production.

Topping Off

Choosing a top-end CPU won't always be this easy. Early next year, Intel's user-installable, "double-speed" 486 CPUs should offer yet another highperformance option that may prove a lot cheaper. All you'll need to do is remove your present 486 chip and replace it with one of the new upgrade chips, which run twice as fast internally while using the same system clock and motherboard. (On 486SX systems, the chip fits into the coprocessor socket.) Initial reports suggest that performance improvements are impressive.

But for the moment, 50-MHz systems are the clear speed champions. And if the first round of announcements is any indication, speed addicts will certainly have no trouble choosing a real racer to meet their needs and pocketbooks.

Michael Goodwin is an associate editor for PC World.

BUY THE SUPERFAST NEC CDR-36 OR CDR-72 AND GET CLIP ART 3-D FREE!



ever before has such an unbelievable offer ever before has such an uniform NEC is been made on quality CD-ROM readers. NEC is a leader in computers and peripheral technology, so you know that you're getting the most advanced, trouble-free device available. The CDR-36 is now just \$399. That's it. You're ready to enter the world of CD-ROM affordably!



size of a hardcover book, but this quality instrument connects your PC or laptop to the most impressive type library available. And Tiger offers you great prices on PostScript and LaserJet compatible typfaces - hundreds faces on one CD!

The Superfast NEC CDR-72.

We've also got the CDR-72 in stock and ready to ship. This is the CDR-36's bigger brother, with more speed and power for more demanding users. And, when you're ready to step up to the fastest reader built, we've got the incredible CDR-73.

FREE \$399 CLIP ART 3-D DISC! With Access to 2500 True 3-D Images.



flion colors to enhance images. You have complete and instant control over the size, perspective, and lighting. Easily move and combine images and much more. Each image is stored in multiple formats including TIFF, EPS, PICT, and WMF for quick and simple downloading to desktop publishers

NEC DESKTOP PUBLISHING

CD ROM technology can instantly transform your PC into a complete graphic design studio. Choose from over 5500 professional black-and-white and color shots, or 5300 designs, illustrations and 3-D images.

2800 Designs and Illustrations.

Image Gallery gives you a wealth of art from professional designers and illustrators, encompassing a broad range of techniques and styles. Compatibility with all leading desktop publishers and word processors.

Over 1500 B&W Photos.

A picture's worth a thousand words. Add power and impact to anything you print in house with NEC's Photo Gallery, a collection of B&W photography from UNIPHOTO.

Authorization and/or color transparencies for all other uses may be ob-tained from UNIPHOR) for a reduced licensing fee

4000 Full-Color Photos.

Image Folio features an incredible collection of professional photograps in dazzling color. Dozens of categories, from nature to business. Image Folio also contains advanced paint tools.

1000 Typefaces.

The most extensive collection of typefaces available anywhere! CD-ROM Technology allows you to access 1000 individual typefaces from a single CD-ROM (rather than gobbling up precious space on your hard disk) and instantly access them for use in letters, reports, newsletters, brochures - anything you publish. These high quality typographic libraries are compatible with virtually all desktop publishing systems and not imitations - they are licensed by Adobe Systems Incorporated from famous type foundries.

HOT CD-ROM TITLES. ANY 3 JUST '79%'!

When you buy a NEC CD-ROM Reader. Titles may be purchased at regular prices (shown) without buying CD-ROM reader. \$49.95 to \$950.00 values!

Complete 21-Volume Illustrated Encyclopedia. Features the entire text of a 21-volume encyclopedia (9 million words) - stored on a single CD! (Reg. \$395.00)

Complete Reference Library. Includes Webster's New World Dictionary, Webster's New World Thesaurus, Webster's New World Dictionary of Quotable Definitions, The New York Public Library Desk Reference and more. (Reg. \$159.95)

A Unique Time Table. A chronological perspective on the history of human events. (Reg. 899.95) U.S. History. Detailed coverage on political, aerospace, geographic, social, military and economic history. (Reg. \$395.00)

World and USA Atlas. Atlas, almanae and world fact book in one. Over 240 detailed, EGA/VGA maps. (Reg. \$159.95 & \$99.95)

CD Game Pack. Includes The Chessmaster 2000. Bruce Lee Lives, Beyond the Black Hole, Gin King-Cribbage King, and Life & Death. (Reg. 899.95) Mammals. From the pages of National Geographic. photos, animation, facts. (Reg. \$149.00)

Time Compact Almanac. NEW! Millions of facts and figures, comparisons, rankings, annual averages and other information. (Reg. \$159.95)

Magazine Rack. Over 100,000 full-text articles from over 300 magazines. (Reg. 889.95)

Bible Library. Enter word or verse and the reference is instantly on-screen! (Reg. 8149.00)

Family Doctor. Complete guide to your family's health, fitness and nutrition. (Reg. \$149.00)

TIGER CLASSIC COLLECTION

Three great titles in one low-priced paackage: Multi-Media Birds of America. Fascinating stories told by James Audubon, including the bird's

habitat, range, and more. (Reg. \$99.00) Shakespeare on Disc. All of Shakespeare's works, including plays, poems, and sonnets in both Queen's English and modern versions. (Reg. 899.00)

Sherlock Holmes on Disc. Entire treasury of Sir Arthur Conan Doyle's classic tales on a single CD. Word search and browsing capabilties. (Reg. 899.00)

NEC CD-ROM

BL9036 CDR-36 Reader w/FREE Clip Art 3-D . \$399.00 BL9072 CDR-72 Reader w/FREE Clip Art 3-D . \$499.00 Complete Interface Kit, \$159.00, (specify XT/AT, PS/2, NEC Prospeed, Macintosh or parallel SCSI kit) BL9073 CDR-73 Reader instead of CDR-36 Add \$399.00

NECTYPE GALLERY BL8440 Type Gallery PS Premium, all 1000

PostScript Typefaces (\$15.99 ea.) .. \$15,995.00 FREE CDR-73 & Interface w/Type Gallery Premium PS! BL8420 Type Gallery PS, license to use any 15 of 1000 typfaces on disc (\$26.60 ea.) . . . \$399.0 BL8000-2 Type Gallery LJ, license to use any 12 of 76 AGFA PCL Typefaces (\$24.92 ea.) ... \$299. \$299.00

NEC DESKTOP PUBLISHING BL8200 Clip Art 3-D, 2500 color images \$399.00 BL8000-4 Photo Gallery, 1500 stock photos . . . \$399.00 BL8320 Image Gallery Premium, \$719.00 2800 Metro Images (80.25 ea.) BLS000-3 Image Gallery, any 600 on CD \$399.00 BL8000-1 Image Folio, 4000 stock photos \$399.00

YOUR CHOICE -ANY 3 TITLES BELOW JUST \$79.95*

When you purchase an NEC CD-ROM reader. †BL8510 Illustrated Encyclopedia \$395.00 BL8520 Reference Library BL8530 USA Atlas BL8540 World Atlas \$99.95 \$159.95 | BL8550 Game Pack | \$395.70 |
**BL8560 Mammals	\$149.95
BL8563 Time Compact Alamane	\$159.95
**BL8580 U.S. History	\$395.00
BL8570 Timetable of History	\$99.95
BL8830 Family Doctor	\$149.95
BL8800 Bible Library	\$595.00
C730 Madazina Back	\$149.95
C730 Madazi BL8720 Magazine Rack	
BL8895 SelectWare Demo System
+BL8750 Classic Collection \$149.95 \$99.95 \$297.00 Sherlock Holmes, Shakespeare and Birds of America BL9001 Aircraft Encyclopedia \$99.00 *BL9003 Book of Lists #3 \$889.95 BL9005 CIA World Fact Book \$99.00 BL9007 Coate's Art Review: Impressionism . . \$99.00 BL9009 Cinderella \$89.95 *BL9013 Electronic Library of Art, Vol. 1 ... \$199,00 BL9015 GRIPS 2 \$49.95 *BL9019 Library of the Future \$199.00
BL9023 North American Indians \$129.00 BL9029 Publique Art: Public Domain Clip Art\$129.00 BL9031 Seals of the U.S. Fed. Government . \$89.00 BL9033 Shareware Gold . \$99.00 BL9035 Sporting News Baseball Guide . \$99.00 *BL9037 Sports ROM \$69.95 * BL9041 Sports Roll
* BL9041 Swimsuit CD \$199.95
* BL9045 USA State Fact Book \$99.00
* BL9047 USA Wars: Civil War \$99.00
* BL9049 USA Wars: Korea \$99.00
* BL9051 USA Wars: Viet Nam \$99.00
* BL9051 USA Wars: Viet Nam \$199.00
 BL9063 Programmer's ROM
 \$99.00

 BL9065 RBBS in a Box
 \$192.00

 BL9067 Tale of Peter Rabbit
 \$89.95
 BL9069 Zany Golf . . . \$69.00

* Add \$10.00 each when selecting these titles as part of the \$79.95 bundle. † Add \$20.00 each when selecting these titles as part of the \$79.95 bundle. CALL US... for information on exciting new CD-ROM titles as they become available.

Prices subject to change, Limited availability.

Sorry free shipping is NOT included on above items.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010



LASERNET®

The Sharing Family With Peripheral Vision

Only Western Telematic's LASERNET sharing devices have true peripheral vision the widest family of products to meet the needs of today's data sharing requirements. Whether it's a simple sharing set-up or a complex network LASERNET has a device to fit your need and budget.

Western Telematic has peripheral vision in support software too! LASERNET provides



easy-to-use deviceselect software operable with both Windows™ or MS-DOS[®] applications.

You won't need glasses to see that LASERNET offers the widest selection

and best value for your money. Just take a close look at these LASERNET models and see which one fits your application:

HIGH-LEVEL



Multi-Link

Serial/parallel device for twelve or

more users. Expandable, through dedicated high-speed link, up to 384

any-to-any, user-selctable ports, over 4000 feet. Perform printer/plotter sharing, modem/FAX sharing, PC-to-PC file transfer and more.

- · 12 concurrent high-speed ports 8 serial, 4 parallel
- High-speed link up to 32 Multi-Link devices — 384 total ports!
- · Dynamically allocated, field-expandable SIMM memory — 256 KB to 4 MB
- · RJ-11 serial ports for snap-in cabling
- · Any-port-to-any-port connectivity
- · Any-port designation for printer or plotter
- Each port individually programmable
- Windows or DOS pop-up menu software for instant device selection and status
- Uses standard parallel PC-to-printer cables

12 any-to-any ports; buffered from 256 KB to 4 MBstart at \$795

GENERAL



PSU-82C/SP

Programmable sharing units for both serial/parallel printers,

plotters and PCs. Designed for CAD/ CAE, high-level graphics, Desktop publishing or general applications.

- · 4 concurrent serial and 4 parallel inputs (SP)
- 8 concurrent serial inputs (C)
- 1 serial and 1 parallel output
- Expandable buffer memory from 256 KB
- · Separate baud rate, flow control, parity and messages for each port
- · Pop-up menu software for easy printer/ plotter selection
- Easy menu-driven configuration and set-up
- Prompt and response messages for plotter applications
- Support all laser printers including Post-

Script® printers and all types of plotters.
8 inputs; 2 outputs; buffered from 256 KB to 2 MBstart at \$595



OwikShare® III

Low-cost, expandable, all-parallel, highspeed printer sharing system. From one to

32 PCs independently share up to three remote and one local parallel laser/dot-matrix printer or plotter.

- Expandable to 32 PCs by adding Expansion
- · Memory expandable up to 4 MB
- · Printer Select Switch no software or TSR program required
- All parallel port connections PCs, printers and plotters
- Maximum network distance 4000 feet
- Quick and easy installation using snap-in, RJ-11 cable & standard parallel cables

Printer Server; buffered from 256 KB to 4 MBstart at \$295 **Expansion Module with Printer** Select Switch\$149 ea.



OwikShare® II

Low-cost, buffered printer sharing. Supplied with

Windows and MS-DOS device-select software which provides pop-up menus for easy printer port selection.

- 6 RS-232 serial inputs RJ-11 connectors
- · 2 user-selectable laser/dot-matrix printer ports
- Expandable memory to 2MB using SIMMS
- Input speeds up to 115K baud

6 inputs; 2 outputs; buffered from 256 KB to 2 MBstart at \$295

BASIC



QwikShare®

Complete, plug-n-go, "no-wait" sharing system. Up to six IBM PCs or compatibles can share a serial laser/dot-

matrix printer or plotter. Each system contains: sharing unit; super-fast spooling software; three -9- and 25-pin connectors; four -25 ft. PC cables; one -5 ft. printer cable & connector. Compatible with most popular graphics, word processing and spreadsheet software including Microsoft* Windows"

6 inputs; 1 output;\$195

LASERNET products are made in U.S.A., and backed by a 3-year limited warranty with service and technical support. To get a closer look at LASERNET, just call on our technical sales representatives.

To order* or for More Information, Call Toll-Free 1-800-854-7226



5 Sterling, Irvine, CA 92718 • FAX (714) 583-9514

*Visa, MC Accepted; Same Day Shipping

Word for Windows 2.0: Getting Better All the Time

Microsoft's Windows word processor gets a major upgrade, including exceptional graphics tools, easierto-use features, and some innovations.



Word for Windows 2.0 has the features you need to create complex documents. Here, a chart from the charting module plus clip art included with the program helps punch up a newsletter.

George Campbell

Microsoft's Word for Windows, already a good Windows word processor, is now more appealing than ever. In Word for Windows 2.0, Microsoft has simplified many of the features that you use on a daily basis, and its drawing and business graphics tools make this version stand up to graphical wizard Ami Pro 2.0. The new release also offers many tools not available in WordPerfect for Windows. Microsoft used new techniques in designing this version, with user testing going on simultaneously with program coding.

The benefits are obvious in WinWord 2.0, especially in the way it makes common jobs less tedious.

More of a Good Thing

WinWord 2.0 is chock-full of improvements over earlier versions, starting with a new tool bar that holds icon buttons for your most commonly used functions. You can customize this bar by inserting icons or by attaching your own macros to a button. What's more, you can save different tool bars in template files, creating customized options for your different document types. Although the tool bar isn't mov-

able, as are *Ami Pro 2.0*'s similar SmartIcons, it's always off the editing screen and out of the way. Add this feature to the convenient ruler and ribbon commands from version 1.1, and you'll rarely have to use the menus.

Click-and-Drag Text

The most striking change in editing features is WinWord 2.0's capability to move text with the mouse. To move a block of text, simply highlight it, then click and drag it to another location; this procedure avoids cut-and-paste commands. If you need to select a special character or

bullet style, a dialog box lets you paste it in from a chart showing all the available characters. There's even a magnifying-glass feature. Just click on a character to see an enlarged view.

WinWord 2.0 now has five editing views, rather than the previous version's four. To see the fine details in your document, use the new zoom-in layout mode to any magnification. As with the previous version, you can also choose from a draft mode for fast typing, a normal mode that lets you see fonts and graphics, a page layout mode with full editing and graphics controls, and a page preview mode that gives you an uneditable snapshot of your printed pages.

Also new are WinWord's

SNAPSHOT

Microsoft Word for Windows 2.0

improvements and new features keep Word for Windows in the forefront.

KEY FEATURES

- Frames for text and graphics
- Drag-and-drop text moving
- Object Linking and Embedding (OLE) support
- Drawing and charting modules
- Zoomable page layout mode

AVAILABILITY

Fall 1991

PRICING

\$495, upgrade from any Word version or competitor's product \$129

Microsoft Corp.

One Microsoft Way Redmond, WA 98052 800/426-9400, 206/882-8080

Reader service no. 862

preview boxes. As in Ami Pro and WordPerfect for Windows, you can see samples of fonts, borders, and most other features as you select options in dialog boxes. This eliminates much of the guesswork in setting up complex documents.

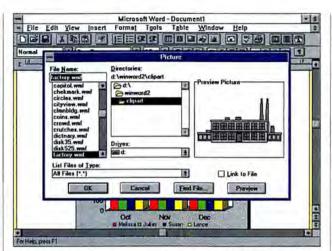
File handling also gets a major boost. Word for Windows 2.0 automatically recognizes the format and loads the file without forcing you to confirm the file type in a dialog box. A fast search tool lets you find text anywhere on your system. And the file manager gives you a preview of document and graphics files before you import them.

Power Plus Comfort

Microsoft didn't just improve WinWord 1.1; it threw in a slew of impressive new features. WinWord 2.0's envelope creator, for example, lets you say good-bye to addressing envelopes by hand. Click on the envelope icon in the tool bar, and the program finds the address in your letter, then creates the proper envelope format. Place an envelope in the printer, and you're done.

Mail merges, usually a hair-pulling task, become simple. Version 2.0 can read dBASE and other data files directly. Choose a data file, then paste field names or merge commands into your letter from a dialog box. Once your document is written, WinWord lets you combine the spelling checker with the integrated grammar checker to spot goofs.

Microsoft also devised a secret weapon against its major competitor—a Word-Perfect Help option that lets you use WordPerfect 5.1 commands while receiving a demo of equivalent commands in WinWord 2.0. The commands work fine, and the option makes the transition from WordPerfect to WinWord 2.0 relatively easy.



Insert a picture into a document and you get a preview of the picture. WinWord 2.0 offers previews for most functions.

Getting the Picture

WinWord 2.0 makes up for earlier gaps in its graphics capability-and surpasses WordPerfect for Windowswith a new set of powerful drawing and charting modules, along with frames for text and graphics. The frame tools let you position text or graphics anywhere in the document with a simple click-and-drag operation. You size a frame by dragging frame handles; image scaling and text wrapping are automatic. Frame options include several border types, shading, and automatic shadows, but Ami Pro's rounded borders aren't available.

You can overlay graphics and text on any graphics file and import most graphic file formats into the drawing program. Using the module's set of basic drawing tools, you can then modify graphics with lines, curves, and more. A few dozen useful clip-art images come with the program.

The charting module provides several variations of twoand three-dimensional graph types. You can enter chart data in a spreadsheetlike data sheet, copy a table from your document, or import 1-2-3, Excel, or comma-delimited data. Including the chart in your document is as simple as exiting the module. Once the chart is in the document, you can move it around or change its size with automatic scaling of the chart and its text.

Linking Up

If you need to work with multiple documents and applications, you can take advantage of a new Object Linking and Embedding (OLE) feature, which Microsoft added to its Dynamic Data Exchange (DDE) feature. DDE links let you exchange data between other Windows programs, like Excel. Besides being easier to set up than DDE links, OLE links let you actually work with Excel tools from within Win-Word. In WinWord 2.0, you

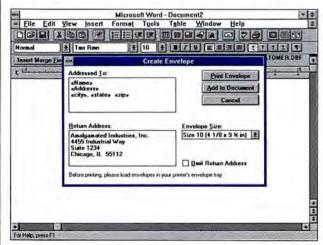
form an OLE link to, say, an Excel worksheet simply by clicking on an entry in the Insert menu. When you want to make changes, you can simply double-click on the data, and then edit in the program that created the worksheet.

You can use both DDE and OLE links in WinWord 2.0's Master Document feature. You can break down one very large document into manageable chunks that include links to other applications, and then use the Master Document feature to create a single master document that has both page numbers and indexes.

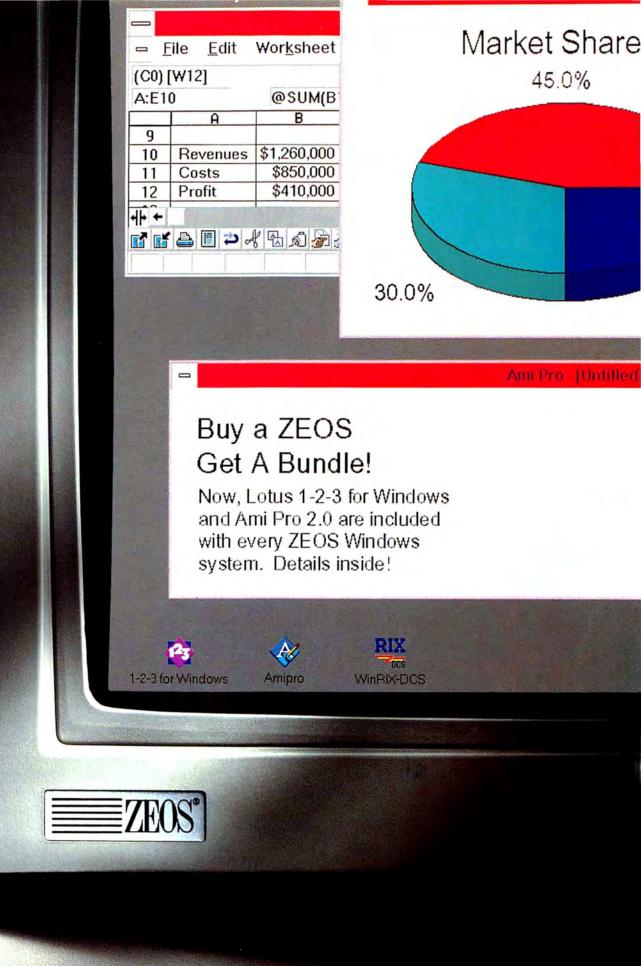
An Outstanding Upgrade

With all these features added to an already excellent program, Word for Windows 2.0 gives Windows users just about everything they need in a graphical word processor, and more. Word for Windows 2.0's friendly interface nearly rivals that of WordPerfect for Windows. And only Ami Pro 2.0 offers an equally powerful set of options, plus superior handling of gray-scale files. All around, WinWord 2.0 is a great upgrade and a good bet for new users. @

George Campbell is a contributing editor for PC World.



WinWord 2.0 lets you create and print envelopes with one simple command. You can even attach envelopes to mail merge documents for automatic printing.



1-2-3 for Windows

Now included in every



Unbelievable? Believe it! Because now, when you buy any new ZEOS Windows* system, you will also receive Lotus 1-2-3 for Windows plus Lotus' new word processor for Windows, Ami Pro™ 2.0 at no additional charge!

It's the ultimate bundle! First, you're going to be receiving the incredible new ZEOS modular system complete with the upgradable CPU of your choice. These new ZEOS systems are the hottest computers money can buy. And that's just for starters.

Because you're also receiving the hottest software money can buy. Yet you don't have to buy it. Because we're including it at *no additional charge*. Go ahead and pinch yourself, it's really true!

And not only are you receiving the *amazing* new Lotus 1-2-3* for Windows and Ami Pro.2.0, you're also getting Microsoft* Windows itself, plus a genuine Microsoft Mouse plus Microsoft DOS 5.0. All included at one low package price.

These are not some scaled down versions or trial disks either. They are the *complete* and *fully documented* editions of Lotus 1-2-3 for *Windows* and Lotus Ami Pro 2.0 for Windows provided to you by special arrangement between ZEOS and Lotus. This is one incredible value that no one else can offer. You're going to love it, too.

Because nothing else brings out the power of the most powerful software like your blazing new ZEOS system. And when you strap your-

plus Ami Pro 2.0!

ZEOS Windows System.



self in and fire up *Windows* with Lotus 1-2-3 and Ami Pro, you're in for the ride of your life!

After all, nobody knows spreadsheets better than Lotus. And when they sat down to write 1-2-3 for Windows they created a masterpiece. It starts out as a full-fledged Windows application. Offering that perfect balance of power and simplicity, it remains fully compatible with all the earlier versions of 1-2-3. And it's absolutely loaded with new features.

Power, Simplicity, complete Compatibility plus loads of new features. It's Lotus 1-2-3 for Windows and it comes with every ZEOS Windows system. And so does Ami Pro 2.0!

After all, *Ami Pro 2.0* is the Lotus word processing program that was designed for

Windows from the ground up. Linking with a full suite of Windows applications *including* your new Lotus *1-2-3 for Windows, Ami Pro 2.0* is perhaps the finest word processor on the market today.

Buying your new ZEOS Windows system is possibly the best purchase decision you'll ever make. Then add to it Lotus 1-2-3 for Windows, Ami Pro 2.0 plus Windows 3.0, DOS 5.0 and a genuine Microsoft mouse. It's an offer that can't be beat and one we simply can't offer for long. So pick your new ZEOS Windows package now and we'll include a bundle! Call now 800-423-5891!

Upgradable. High Performance. Low Cost. And every ZEOS Windows system comes with Lotus 1-2-3 for Windows and Ami Pro 2.0 at no additional charge. Absolutely incredible!

With ZEOS 386-25s starting at only \$1395 right thru '486-33MHz systems starting at \$1795, computing will never be the same again! And it's not just the prices that make these new systems hot. It's Performance and Upgradability as well.



When we first sat down to design these new systems, we wanted computers that would blow the doors off anything else out there. Plus, we wanted you to be able to upgrade from one CPU to another as your computing requirements changed, without having to buy an entirely new system. The results?

Incredibly low cost, high performance systems so very advanced you can move freely from the '386 family of processors to the latest '486s all

without a moment's hesitation.

Now, you can pick your power! Today and tomorrow. Choose from high speed '386-25 and 33MHz systems, either cached or non-cached, plus the '486SX and '486-33MHz with or without a secondary cache. Whichever you decide upon you know that as your computing requirements change, your processing power can change as



Fradable. Hot New ZEOS'386



well. But are the prices really that good?

Yes. Absolutely Yes! The prices really are that good, and the quality too. Because when you buy from ZEOS you're buying directly from the man-

ufacturer. Starting with the main system board, your new computer is designed and built by us right here in Minnesota. That saves money for you. And your ZEOS factory direct advantages are evident not only in the price, but

and quality of your system too. Not only that, but

in the performance

FASTER

Z . SPEED METER

To help you select the processor option that's right for you, we have developed the Z-Meter. The Z-Meter shows you the relative performance gains achieved by moving from one processor module to another—fast, faster, fastest! No matter which system you select you can be sure of one thing—these babies are Hot!

your new ZEOS system is supported around the clock by our 24 Hour a Day Toll Free technical support hotline. Should you have any questions, we're here to help, 24 hours a day, 365 days a year!

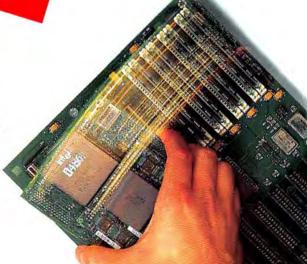
So if you're looking for a high speed, upgradable, rock solid system supported like none

other and you want incredibly low prices, you've found your company. And your computer. Read on!

This ZEOS ad reviews
each of four money saving
upgradable system pack.
ages based on processor
type. For a limited time
system includes Lotus 7-2-3
charge! Call 800-423-5891.

Low Cost.

and 486 systems!



ZEOS COMPLETE SYSTEM PACKAGE #1

- The Processor and Speed of your choice plus future upgradability!
- IMB of High Speed 53ns DRAM, expandable to a system total of 32MB right on the motherboard.
- 42MB High Speed IDE hard drive with its own cache.
- 1.2MB or 1.44MB Teac* floppy drive.
- ZEOS 14" flat screen Hi-Res amber monitor with Tilt/Swivel base.
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- Two Serial, one Parallel & one Game Port built right onto the motherboard.
- 7-16, 1-8 bit expansion slots. 80387 math coprocessor support for '386 systems.
- Rugged ZEOS SpaceSaver case with twin cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply for your future expansion!
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

PACKAGE #1

INCREDIBLE ZEOS PACKAGE #2

We take Package #1 and upgrade your ZEOS Modular System to include:

- 2 full Megabytes of Riproaring 53ns DRAM.
- Our incredible 85MB IDE hard drive with its own built in cache.
- Both the Teac* 1.2MB and 1.44MB floppy drives.
- The awesome Diamond SpeedStar Plus VGA graphics card Complete with 1MB DRAM.
- ZEOS 14" High Res VGA Mono Monitor with Tilt & Swivel base.
- Lotus 1-2-3 for Windows, plus Ami Pro 2.0, plus Microsoft Windows and DOS 5.0, plus a genuine Microsoft mouse!

PACKAGE #2

ZEOS. Your



For Vertical Systems add only \$150.

486-33 \$1795 4865X-20 \$1595 386-33 \$1495

386-25 \$1395

Harnessing the ZEOS power and value you want is easy. Pick your processor then your package. Package #1 gets you up and running for a very reasonable price. To add even more options *and*

savings select from Packages 2, 3 or 4.

Because when you select from Packages 2, 3 or 4 you receive VGA, additional memory, larger drives and more. You also receive *Windows 3.0* plus Lotus 1-2-3 for *Windows* plus Lotus' great new *Windows* word processor *Ami Pro 2.0*, plus Microsoft *DOS 5.0* plus a genuine Microsoft Mouse. Nobody

gives you this combination of hardware and software power. And it's yours, all for one low

package price!

And that's just for starters. Because *inside* your new ZEOS system rests the very latest advancements in surface mount, high integration technology. As an example, we have freed two normally occupied expansion slots by placing our high speed IDE hard drive and

floppy drive interfaces right on the main board. Then, we put the high speed serial, parallel and game ports on the motherboard too. The result?

Eight expansion slots, *seven* of which are available for your future use! After all, expansion and non-obsolescence are what these great new ZEOS systems are all about. We've built in some other very important expansion features for you as well.

Like our 300 watt power supply. Providing you with all the pure clean power you'll need right now, your ZEOS 300 watt supply also provides you with plenty of power for the future as well. Plenty of slots, plenty of power. How about space? This is where ZEOS has performed something akin to magic.

486-33 \$2395 4865X-20 \$2195 386-33 \$2095 386-25 \$1995 It's your new ZEOS SpaceSaver case! Complete with *seven drive bays*, this incredible case is actually *smaller* than many cases offering only five bays. We've also added *a second whisper quiet cooling fan*. Why? Because whether you expand your system or not, the cooler it

Best Value!

486-33 \$2895 4865X-20 \$2695

386-33 \$2595

386-25 \$2495

runs, the longer it will last. Now that's ZEOS value. Speaking of which. How about UL* listings?
Right now every ZEOS system is UL* listed. This listing means your entire system (not just the power supply) has met stringent safety requirements of Underwriters Laboratories. We believe

UL* listings also say a lot about quality. And UL* safety listings are something many of our competitors simply don't (or can't) provide. At ZEOS quality and safety are important to us. *You* are important to us.

Price. Performance. Quality and Support. There are *many* reasons to buy your new ZEOS upgradable system. Plus, your ZEOS advantages include *24 Hour a Day Toll Free* Support and our 30 Day Money Back Guarantee and ironclad warranty (for more ZEOS advantages see the section entitled "Why ZEOS is Your #1 Choice").

Selecting your new ZEOS system is easy. Choose from any of the money saving packages shown here. Or let your friendly and knowledgeable ZEOS Systems Consultant help you configure exactly what you want from our huge selection of upgrades and options. Whatever you select, one thing is for certain.

Buying your new ZEOS system is perhaps the best purchase decision you'll ever make! Simply pick up the phone and give us a call now. Incredible ZEOS power awaits you! *Call now Toll Free*, 800-423-5891.

486-33 \$3395 486\$X-20 \$3195 386-33 \$3095 386-25 \$2995



For Complete Processor and Package Pricing, simply turn the page!

Pick You Package Or Let Us Custom Build to

Now, ZEOS lets you pick the power you want for the price you want to pay! Not only that, every ZEOS Windows System (Packages 2, 3 and 4) includes not only Microsoft *Windows*, *DOS* and a mouse—we're also including Lotus 1-2-3 for Windows plus Lotus' new Windows word processor *Ami Pro 2.0!*

And with your new ZEOS modular system, the computer that's right for you today is also the computer that's right for you tomorrow. In the future, you can upgrade to even more performance with a new '386 or '486 processor module.

And that's only the start of your many ZEOS system advantages. But what more could there be than dazzling performance, incredible prices and upgradability? From ZEOS there's lots more.



Z.SPEED METER

Let the "Z-Meter" help you pick the processing power that's right for you. The comparisons are easy to make. Fast, Faster or Fastest! Because your new ZEOS system is not only fast, it's absolutely loaded with features. Like our 300 watt power supply, eight expansion slots, twin cooling fans (for even more reliability) and our unique seven bay SpaceSaver case. And, every ZEOS system is UL* listed.

Your Exact Specifications.

PACKAGES 2, 3 AND 4 INCLUDE LOTUS BUNDLE!

	Pkg. #1	Pkg. #2	Pkg. #3	Pkg. #4
386-25	\$1395	\$1995	\$2495	\$2995
386-33	\$1495	\$2095	\$2595	\$3095
486SX-20	\$1595	\$2195	\$2695	\$3195
486-33	\$1795	\$2395	\$2895	\$3395

Add \$200 to any price for a 128K cache.

In addition to all of these standard ZEOS advantages, you're also receiving our legendary ZEOS Technical Support, 24 Hours a Day, 365 Days a Year. Plus, our 30 day Absolute Satisfaction Money Back Guarantee and more!

So pick your Power, and your Price then give us a call! Your expert ZEOS Systems Consultant is ready to answer any questions you may have. Why not give us a call right now, Toll Free at 800-423-5891.

Call to confirm current pricing, product specifications and configurations, all are subject to change without notice. Purchase orders subject to approval. Lotus, 12-3, Ami Pro, Classic and Sonarticons are trademarks of Lotus Development Corporation; Windows and Microsoft of Microsoft Corporation; Z-Cani, Space-Savet, and ZeDS of ZEOS international, Ltd., 530 STh Acenue NW, St. Paul, MN 5512 USA C 1991.

INCREDIBLE ZEOS PACKAGE #3

Add even more memory, a larger drive. And more Savings! You now receive:

- 4 full Megabytes of Ultra High Speed 53ns DRAM.
- Our fast 130MB IDE hard drive with built in cache.
- Both Teac' floppies, the 1.2MB and 1.44!
- Your Diamond VGA Plus card with 1MB DRAM.
- ZEOS 14" 1024×768 VGA Color Monitor w/Tilt & Swivel.
- Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 plus a Microsoft mouse!

PACKAGE #3

THE ULTIMATE ZEOS PACKAGE #4

Now, Memory goes to 8MB and the drive to 210MB. The ultimate Power User's **Dream Machine!**

- 8 full Megabytes of High Speed 53ns DRAM.
- Your screaming 210MB IDE hard drive with its own built-in cache.
- Both Teac floppies, the 1.2MB and 1.44!
- The Diamond VGA Plus card with 1MB DRAM.
- ZEOS 14" 1024×768 VGA Color Monitor w/Tilt & Swivel.
- Lotus 1-2-3 for Windows, Ami Pro 2.0, Microsoft Windows, DOS 5.0 plus a Microsoft mouse!

PACKAGE #4

FAX Orders: 612-633-1325

FAX Orders: 612-633-1325
Hearing Impaired (TDD):
800-228-5389
Govt. & Educ.: 800-245-2449
Outside US and Canada
Call: 612-633-6131
MasterCard, VISA, Discover,
Am Exp, Z-CARD, COD and
Leasing Programs.
Open 24 Hours a Day,
365 Days a Year! 365 Days a Year!



WhyZEOSis

Now, your ZEOS modular system allows you to upgrade from one CPU to another as your computing requirements change. Obsolescence is virtually obsolete!

You may choose between a variety of '386 and '486 processor options, both cached and non-cached.

Made in USA! Your new ZEOS system boards are designed and manufactured by ZEOS, right here in the USA.

ZEOS has utilized the very latest in highly integrated surface mount technology. Faster, cooler, more reliable systems for you!

Every ZEOS modular system comes standard with incredibly fast 53 nanosecond DRAM.

Plus, you may expand your system with up to 32 megabytes of memory right on the motherboard.

Your new system features the *exclusive* ZEOS seven bay desktop case, smaller than most five bay cases yet plenty of room for future expansion.

Two whisper quiet cooling fans move more cool air thru your system increasing reliability and component life.

CHECK YOUR EXCLUSIVE

If you're deciding which new computer to buy, there are many important considerations.

Here, we've gathered together a number of these considerations for your review. Some are of obvious importance,

Your *entire* system is UL* listed (not just the power supply). Few others offer this security; we wonder why.

Eight slots, one for the video, seven more open providing plenty of room as your system requirements grow.

Two high speed serial ports, one parallel port and one game port.

Our top quality 300 watt power supply provides you with plenty of power for your present *and* future needs.

ZEOS uses *only* genuine Teac* floppy drives. Accept nothing less.

Monochrome TTL systems feature Genuine Hercules* brand graphics controllers. Only the best for you.

Your#1 Choice!

ZEOS ADVANTAGES:

while others are subtle yet critical to your ultimate satisfaction. We'll go over them here with you one by one.

Please feel free to use these as a basis for comparison with other system vendors. We believe you will come away with the conclusion that ZEOS is indeed Your #1 Choice.

VGA color systems feature the high-res ZEOS 1024x768 monitor with the incomparable SpeedStar Plus card complete with One Full Megabyte of memory!

Special package savings are available incorporating our most popular upgrades. Many packages include Microsoft* DOS plus Windows and a Mouse!

For a limited time every ZEOS Windows system also comes with Lotus 1-2-3 for Windows plus Lotus' incredible new Windows word processor Ami Pro 2.0!

PC Magazine said ZEOS offers "more options than even the most configuration hungry hound could possibly need." Let us build whatever you require.

Everybody loves ZEOS' 24 Hour a Day Toll Free Technical Support. You can call for advice any time of the day or night, 365 days a year!

ZEOS systems have been selected by *PC Magazine* as *Editor's Choice, Eight Times!* These, along with many other consumer and industry awards attest to ZEOS' consistent and outstanding value.

Your new system is backed by our 30 Day Absolute Satisfaction Money Back Guarantee, One Full Year Limited Warranty and our Express Replacement Policy.

Buy with confidence. ZEOS is a strong and rapidly growing public company (NASDAQ Symbol: ZEOS). We've been around since 1981. We'll be around for a long time to come as well.

ZEOS offers you a wide variety of payment options including MasterCard, VISA, Discover, American Express plus our own Z-Card, the ZEOS credit card featuring low consumer rates. Credit terms are also available along with very attractive leasing programs to qualified corporate customers.

Friendly, knowledgeable ZEOS Systems Consultants are available 24 Hours a Day by calling 800-423-5891. You can call any time.

When you add it all up, there's nothing like buying from ZEOS. There is certainly nothing like these new ZEOS systems!

CALL NOW TOLL FREE: 800-423-5891

Take Your Pick. We'll Ship Today!

RIGHT NOW. GUARANTEED!*

Yes, we can ship your new ZEOS '386 or '486 today! We've built up an extra supply of the hottest selling computers in America in their most popular configurations.

Here's how it works. We have these incredible ZEOS '386 and '486 color VGA systems pre-built and ready to ship. While supplies last, we will ship any of these systems to you *the day you order* subject to these conditions:

- Your order must be received by 1PM Central Time M-F.
- 2. Credit Cards are subject to authorization.
- 3. Orders must be for ZEOS '386 or '486 systems configured as shown here. Any other systems or upgrades are custom built and will take slightly longer.



Yes! We can ship
your new ZEOS system
Right Now!
Place your order
by 1:00 PM Central
Time and we'll ship
today. Guaranteed!*

***OUR GUARANTEE TO YOU:**

If we accept your order for immediate shipment and fail to ship your system under the conditions outlined, we will ship it at *our expense* as soon as it is ready.

This offer is good only as long as these pre-built systems remain in stock; please give us a call to verify availability. This offer does not apply to other ZEOS systems or custom configurations.

IMMEDIATE SHIPMENT IS ONLY PART OF THE STORY.

These are not just any computer systems. They're the high performance, high quality ZEOS *upgradable* systems. Packing all the ZEOS value that has won PC Magazine Editor's Choice—*eight times!*

So why not give us a call right now. If we hear from you by 1:00 this afternoon, we'll get your new system on the way to you today! Call now Toll Free 800-423-5891.

Purchase orders from Fortune 1000 companies, Governments and institutions subject to approval. Leasing programs available. All prices and specifications subject to change without notice. Please call to confirm pricing, specification and warranty details. The following are trademarks of their respective corporations: Microsoft, MS-DOS and Windows of Microsoft Corporation; ZEOS, Computers Nowl, SpaceSaver, SuperCase and Z-Card of ZEOS International Ltd. & ZEOS International Ltd., \$35 ofts Avenue, N.W., St. Paul, MN 55112 USA, ZEOS is a publicly traded company, NASDAQ symbol; ZEOS. Lotus is a registered trademark of Lotus Development Corporation. Ami Pro is a trademark of Samna Corporation, a wholly owned subsidiary of Lotus Development Corporation.

Our most popular '386 & '486 packages! 128K Cache, 130MB Drive, 4MB Memory and More. Ready to ship today!

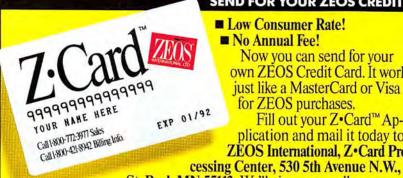
'386-33 ONLY \$2795. As a '486-33 ONLY \$3095!

- Upgradable CPU module allows you to change processors as your computing needs change!
- Ultra high speed Zero-Wait 128K SRAM Cache.
- 4MB of Zero-Wait 53ns DRAM, expandable to a Total of 32MB on the motherboard.
- Ultra Fast 130MB IDE Hard Drive.
- 1.2MB and 1.44MB Teac* floppies.
- ZEOS 14" High Res 1024x768 VGA Color Monitor with Tilt/Swivel base.
- High Speed 16-bit Diamond SpeedStar Plus VGA 1024 color graphics card with 1MB RAM!
- Lotus 1-2-3 for Windows, plus Ami Pro 2.0, plus Microsoft Windows and DOS 5.0, plus a genuine Microsoft mouse!
- Shadow RAM and EMS support for enhanced performance.
- ZEOS/RS 101 key SpaceSaver keyboard.
- High Speed ZEOS I/O with two Serial, one Parallel & one Game Port built in.
- 7-16, 1-8 bit expansion slots. Math coprocessor support for '386.
- Rugged ZEOS SpaceSaver Case with two cooling fans for added reliability and product life.
- Seven drive bays and our custom 300 Watt power supply for your future expansion.
- Includes ZEOS 24 Hour a Day Toll Free Technical Support and Customer Satisfaction package.

ORDER NOW TOLL FREE 800-423-5891

FAX Orders:
612-633-1325
Minnesota:
612-633-4591
TDD Orders:
800-228-5389
Outside US and
Canada: 612-633-6131
MasterCard, VISA,
Am Exp, Discover, Z-Card and COD.
Open 24 Hours a Day, 365 Days a Year!

pply Now for the **Z**•CARD!



SEND FOR YOUR ZEOS CREDIT CARD

■ Low Consumer Rate!

■ No Annual Fee!

Now you can send for your own ZEOS Credit Card. It works just like a MasterCard or Visa for ZEOS purchases.

Fill out your Z•Card™Application and mail it today to ZEOS International, Z. Card Pro-

St. Paul, MN 55112. We'll give you a call as soon as your credit line is established!*

Please complete all appropriate sections, providing at least two years residence and employment history. THIS IS NOT A CREDIT AGREE-MENT! One will be sent to you upon authorization of an account. (This Form Must Be Signed To Process Your Order.) All Financed Purchases Are Subject To Credit Approval. If You Have Any Credit Questions, Please Call 800-421-8942 For Assistance, Thank You!

A married person may apply for individual credit. I am applying for (please check appropriate box):

- □ JOINT CREDIT with another person. Complete entire application.
- ☐ INDIVIDUAL CREDIT but rely on income or assets of another person as a basis for repaying the credit requested. Complete entire application.
- ☐ INDIVIDUAL CREDIT. Do not complete Section C.**
- **If you are a married Wisconsin applicant, you must provide your spouse's information as indicated, even though your spouse may not be signing the contract.

NOTICE TO WISCONSIN APPLICANTS: YOU MUST DISCLOSE YOUR MARITAL

☐ married ☐ unmarried ☐ legally separated

A. YOUR PERSONAL INFORMATION	B. CREDIT INFORMATION
Name	PLEASE TELL US IF YOU HAVE: Checking Account Savings Account S
CUSTOMER AU	THORIZATION
I authorize ZEOS International, Ltd. or its assignees to investigate credit records and to report my performance hereunder to credit agencies. I hereby certify that the following information is furnished to you for the purpose of obtaining credit and is true and correct to the best of my knowledge and belief. Applicant's Signature Date	Joint Applicant's Signature Date FOR MARRIED WISCONSIN APPLICANTS: I acknowledge that the obligation described herein is being incurred in the interest of my marriage or family. Buyer's Signature Date

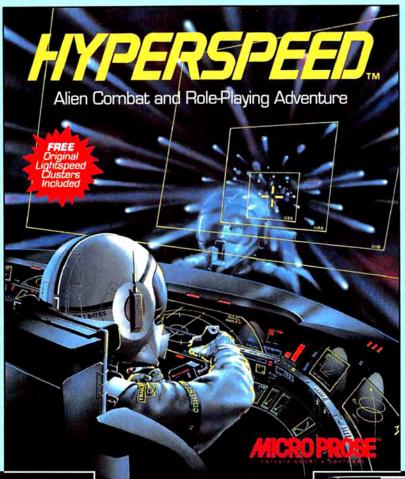
There are costs associated with the use of this credit card. To obtain more information about these costs, call us at 800-421-8942 or 612-635-0613 or write to ZEOS, Z*Card Processing Center, 530 5th Avenue N.W., St. Paul, MN 55112.

NY-A consumer credit report may be requested in connection with this application or in connection with updates, renewals or extensions of any credit granted as a result of this application. If I subsequently ask for this information, I will be informed whether or not such a report was requested and, if so, the name and address of the agency that furnished the report.

OH—THE OHIO LAWS AGAINST DISCRIMINATION REQUIRE THAT ALL CREDITORS MAKE CREDIT EQUALLY AVAILABLE TO ALL CREDITWORTHY CUSTOMERS AND THAT CREDIT REPORTING AGENCIES MAINTAIN SEPARATE CREDIT HISTORIES ON EACH INDIVIDUAL UPON REQUEST. THE OHIO CIVIL RIGHTS COMMISSION ADMINISTERS COMPLIANCE WITH THIS LAW.

*Financing not available in Alaska, Hawaii or outside the continental U.S.

"Aliens approaching... fightercraft launched."



for an F-117A
Stealth Fighter Demo
in specially marked
in specially marked
packages of TDK Micro
packages of TDK.



IBM-PC screens shown.





There's no room for error when traveling faster than the speed of light, racing through star systems in a desperate search for a new world to house Mankind. But there are plenty of opportunities for mistakes. Alien races of every conceivable size, shape, temperament and sophistication seek to aid, use, corrupt or destroy you — and you don't know which.

- **Diplomacy**. Negotiate with a variety of alien races. Forge strategic treaties and alliances with those you trust. Each alien race is uniquely animated.
- Firepower. Pilot a massive starship armed with remote-controlled fightercraft, kamikaze attack ships, a devastating plasma gun and high-tech probes. Customize the ship's engine and weapons systems. Battle alien warships in Super 3-D Graphics.

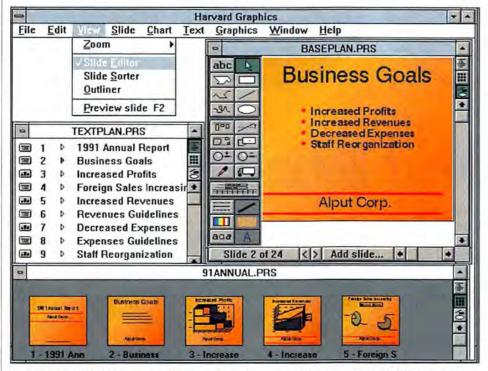
Hyperspeed is a dramatic enhancement of MicroProse's popular interstellar action epic, Lightspeed, featuring four giant star clusters to explore, an all-new animated opening sequence, more aliens and more role-playing adventure.

For IBM-PC/Tandy/compatibles. For the latest information on release dates and availabilities, call MicroProse Customer Service at 301-771-1151, 9 am to 5 pm EST, weekdays. © 1991 MicroProse Software, Inc., 180 Lakefront Drive, Hunt Valley, MD 21030.



Harvard Does Windows

Harvard Graphics joins the Windows generation—blending presentation power with simplicity.



Harvard Graphics for Windows lets you open and edit multiple presentations in different views—including an outliner and slide editor—or shuffle slides using a graphical slide sorter.

Richard Jantz

ne by one the leading presentation packages have taken to Windows like dogs to a bone. Now Harvard Graphics, top dog in DOS presentation software, has joined the Windows pack and the result is a howling success.

Harvard Windows makes it easier than ever for you to produce 35mm slides, transparencies, printouts, and screen shows. Its global presentation controls should make Windows believers out of its DOS devotees, and should give Microsoft's PowerPoint, Aldus's Persuasion, IBM's Hollywood, and Lotus's Freelance for Windows a run for your money. (See "One-Touch Presentation Software," November 1991.)

Easy and Obedient

With Harvard you can edit multiple presentations in separate windows and swap slides between them. You can apply predesigned templates and color schemes with a few clicks of the mouse. And you can shuffle slides using a graphical slide sorter, edit your presentation via an integrated outliner, or zoom in for detail work on individual slides.

Like PowerPoint, Harvard is well designed and highly intuitive—it even includes design tips as part of its context-sensitive help system. A generous selection of templates and 15 scalable Bitstream fonts make it easy to create professional-looking text charts, tables, and graphs. Longtime Harvard users can rest easy: You can import pre-

sentations made with the DOS version, but you'll have to do it one slide at a time.

Harvard gives you easy access to the latest data. You can hotlink chart and spreadsheet files using Windows' Dynamic Data Exchange (DDE), which updates charts whenever the source data changes. You can also launch another application during a screen show—so you can, say, jump right into an Excel worksheet for on-the-spot data analysis.

However, gaining simplicity means sacrificing some features. Harvard's outliner and master templates aren't as sophisticated as Persuasion's, and its drawing and enhancement tools can't match those in Hollywood or even the DOS-based Harvard 3.0. You can't, for example, align text on a

curve or create simple animation effects. Harvard also lacks such niceties as Hollywood's automatic speaker notes and run-time (self-running) screen show capability.

Still, Harvard Windows strikes a careful balance between PowerPoint's ease of use and the advanced features of Hollywood and Persuasion. Easier to master than its DOS predecessor, Harvard will appeal to users looking to unleash the power of Windows in their presentations.

Richard Jantz is a contributing editor for PC World and author of the forthcoming Ventura Publisher 4.0 for Windows (John Wiley & Sons, New York, 1991).

SNAPSHOT

Harvard Graphics for Windows

windows With its global controls and predesigned templates, Harvard Windows promises to be a surefire hit with presentation novices and veterans alike.

KEY FEATURES

- Integrated outliner, slide sorter
- Library of 55 professionally designed presentation template styles
- Built-in spelling checker
- Capability to launch other applications during screen show

AVAILABILITY

February 1992

PRICING

\$595; upgrade from Harvard Graphics 3.0 \$50, from 2.x \$125

Software Publishing Corp.

3165 Kifer Rd. Santa Clara, CA 95051 408/986-8000







Add six libraries to your home



You're looking at enough information to fill up thousands of books. And with one small addition to your PC, you can get it all with just the push of a

button. Introducing the new Sony Laser Library™ CD-ROM



system. It's a CD player for your computer. And it's available for only a fraction of the cost of many PC's. Connect it to your IBM XT/AT® or compatible computer and get libraries of information presented in a way you've never seen or heard before.

Bringing information down to size.

Now, here's the amazing part. The Laser Library

CD-ROM system comes complete with Compton's

Family Encyclopedia™ CD. It contains 26

volumes with 32,000 entries, all accessible in the blink of an eve.

The world is in your hands.

But the encyclopedia software is only one of six



valuable CDs that comes complete with the Laser Library

CD-ROM system. Also included are Languages of the World, a translation program, The Software Toolworks™ World Atlas CD, Mixed-Up Mother Goose™, an interactive game for children, the National Geographic Mammals CD, and

SONY

©1991 Sony Corporation of America. All rights reserved.

Sony and Laser Library are trademarks of Sony, IBM, AT and XT are trademarks of International Business Machines. Britannica: Software \$1991 Compton's Learning Company, Britannica is a trademark of Encyclopaedia Britannica, Inc. \$1999 NTC Publishing Group, \$1990 The Software Toolworks, Inc. Software Toolworks is a trademark of Software Toolworks, Inc. \$1990 National Geographic Society. Produced in conjunction with IBM. \$1991 Microsoft Corporation. Microsoft and Bookshelf are trademarks of Microsoft Corporation.







without buying a single book.



Microsoft® Bookshelf™1991 Edition which includes a dictionary, thesaurus, a world almanac and book of facts, as well as Bartlett's Familiar Quotations.

Just the beginning.

This collection of software obviously makes the Laser Library an irresistible offer. Its total suggested retail value is over \$2,000,* several times the cost of the CD-ROM drive itself.

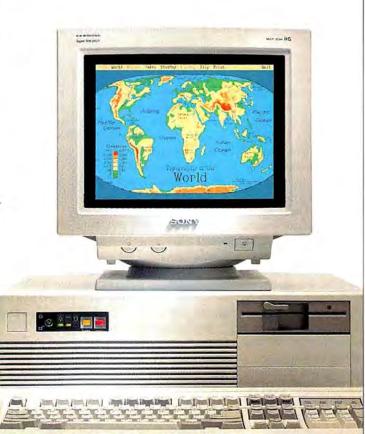
But the value of its technology goes far beyond its price. Included with this package is a catalog listing dozens of additional titles that you can order directly from Sony. And more new programs for business, education and entertainment are being made available all the time.

Easy does it.

Everything is included for an installation that

takes no time at all. Soon you can have a world of information about any subject imaginable, right at your fingertips.

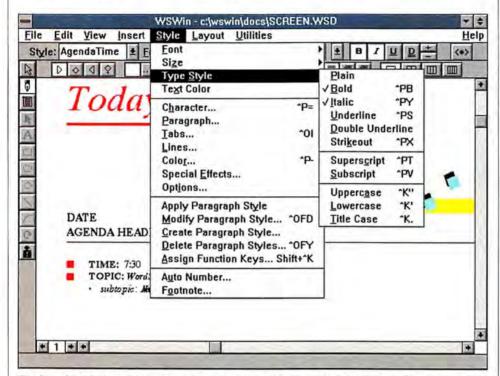
Call 1-800-222-0878 for a dealer near you.



*Based on manufacturers' suggested retail prices for comparable products

WordStar Soars Into Windows

Does WordStar for Windows have the right stuff to launch WordStar fans into the graphical word processing world?



WordStar for Windows lets you access functions using familiar WordStar keyboard commands.

Rex Farrance

confess—I'm a WordStar user. And I'm proud of it, despite all the heckling I take from my co-workers. The composition tools are quick and capable, and there's nothing like that <Ctrl>-key cursor diamond for fast editing.

Still, I've lusted in my heart as I watched colleagues make words jump through hoops in Ami Pro and Word for Windows. When would WordStar come out with a Windows version for me? Well, WordStar for Windows 1.0 is here at last. And WordStar is smoothing the transition by letting DOS veterans hang onto manythough not all-of the classic WordStar commands. The program has particular appeal to those of us who perform light desktop publishing.

Entering the Windows World

WordStar has squeezed a wealth of tools onto the default page-editing screen: The Menu bar, Style bar, and Tab/Align bar cross the top; publishing tools line the left side; and the Status bar crosses the bottom. Zoom in to magnify or shrink your page, and you can edit in zoom views.

It's a snap to style text. You have quick access to Bitstream FaceLift scalable fonts and to color choices. The program's 40 modifiable templates let you set up paragraph styles with 60 attributes.

But far beyond that, the program gives you plenty of desktop publishing moxie. You get an impressive array of layout and typographical tools. You can place graphical or text elements in fixed or floating frames that can be positioned, sized, stretched, cropped, or rotated in 1-degree increments. Typographical controls include precision kerning, tracking, leading, and widow control. The program imports nine graphics formats and includes 75 clip-art files. The Micrografx Designer-based drawing tools are first-rate.

So are the on-line help and tutorial, and the package integrates *Correct Grammar* plus a powerful spelling checker and a thesaurus. It also automatically recognizes and imports files from almost all major word processors.

Still Wishing on a WordStar

But WordStar for Windows 1.0's ease of use doesn't quite keep pace with that of Ami Pro, Word for Windows, or WordPerfect for Windows. You have to muddle around

with dialog boxes to complete a few common tasks such as setting margins. And you can open only one document at a time. The program lacks a macro language, outliner, group editing tools, math functions, automated templates (prompted fill-in forms), and a charting module. It supports DDE but omits application-invoking OLE links.

This new variation on an old favorite may not rocket past the Windows competition. But if you need capable desktop publishing tools and don't want to retrain your fingers, it may be just what you're looking for.

This new variation on an old favorite may not need to compete the past of the windows and the windows and the windows are not need to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to compete the windows and the windows are needed to

Rex Farrance is a PC World assistant editor:

SNAPSHOT

WordStar for Windows 1.0

■ WINDOWS This graphical word processor delivers desktop publishing power without abandoning its fast editing skills.

KEY PEATURES

- Choice of keyboard configurations
- Frame-based layout system
- Precision typographical controls
- On-the-fly file conversion
- Bundled Correct Grammar and FaceLift

AVAILABILITY

Immediate

PRICING

\$495, upgrade from DOS WordStar or most other word processors \$129, upgrade from WordStar Legacy \$49.95

WordStar Int'l

201 Alameda del Prado Novato, CA 94949 800/227-5609, 415/883-1629 (fax)

The Intelligent Road Atlas For Your PC!

lanning a vacation? Heading out on the road on business? Now there's a system that helps you plan any road trip for fastest, prettiest or most convenient route — with hundreds of up-to-date, color maps right on your computer screen.

Clear, detailed maps that can get you anywhere in the United States that you want to go. Just tell AUTOMAP where you're going, when and where you'll be starting from, what areas you'd like to avoid, what areas you'd like to visit on the way and how you like to drive. It's fast, fun and informative.



Select your starting point, end destination, and areas to visit and let AUTOMAP create a detailed map of your next trip!

AUTOMAP's powerful intelligence takes over from there. Instantly, it searches its massive database of over 300,000 miles of roads and highways for the best route to meet your requirements. It even gives you a list of alternative routes if you decide you'd like to wander a bit. AUTOMAP also gives you a list of "places" from over 50,000 in its database. It's like having a travel guide pointing out the very

best there is to see and do. Business travellers won't have to worry about being unfamiliar with new territories — just a quick session with AUTOMAP and you'll know exactly where you're going.



AUTOMAP's driving instructions tell you which roads to travel, how far to go, and approximate traveling time.

AUTOMAP allows you to view your entire journey as a full color map and gives you all the details on mileage. Zoom out to see the entire region, or zoom in to see every detail. AUTOMAP's driving instructions list all the roads you'll be traveling, exactly how far to go, exactly where to turn and even the signs to look for! These maps and directions can be viewed on your screen and printed out to refer to as you need them.

Government Highway Data.

AUTOMAP uses data with the renowned accuracy of government sources. It has been designed to remain accurate with constant updates of new maps and details as they become available. AUTOMAP has

AUTOMAP BRID MEAS

proven itself with the most demanding businesspeople and vacationers. It's helpful and convenient, but more importantly, AUTOMAP will save time, money and frustration. In fact, surveys show that AUTO-MAP can easily save up to 20% in driving time and related costs. There's even a built-in quiz to test your knowledge of geography.



	AUTOMAP		
1	BL4098-5 AUTOMAP 51/2" \$79.95		
ı	BL4098-3 AUTOMAP 31/2" \$79.95		
1	Hercules, OGA, EGA, VGA, 512K RAM, hard disk, mouse recom-		

JUST RELEASED — AMI PRO 2.0!

The Number-One Rated Windows Word Processor. Easier, Faster, More Creative.

mi Pro has created a world of possibilities for the printed page. It is a pure Windows product, not a "ported" DOS counterpart. It features the visual power and easy-to-use nature of Windows 3.0 to produce top-notch results. Indeed, it established a new standard in word processing for the graphical user interface. Now, version 2.0 breaks new ground with a rich visual environment along with an amazing array of easy-to-use tools at your fingertips. You'll write and format sophisticated documents you may have never attempted before because Ami Pro 2.0 is designed to work like you do, associating pictures and symbols-with concepts. Your ideas take shape faster and expressing them becomes easier. That's the key: Ami Pro 2.0 is extremely easy to use. So easy to use in fact, that you can create crisp, professional-looking letters, reports, proposals and presentations the very first time you use it-even if you've never used a word processor before!

An Ideal Writing Environment. Fast, Smart — and Visual.

Ami Pro 2.0 features fast outlining, easy revision marking, mathematical equations and even free-hand drawing. You'll put together charts and tables with simple point-and-shoot action. You'll see your work with true WYSIWYG display. You'll enjoy the built-in portfolio of style sheets and graphics-manipulation tools. Simply choose from pull-down menus to generate a table of contents, flow text around graphics, change fonts, colors and more. You'll select typefaces and move elements on the page easier than you ever thought possible. Ami Pro 2.0 gives you the best spell checker in the business, a thesaurus with 1.4 million selections, a full macro

language, an interactive ruler, status bar, color palette and much more. More than Word For Windows. More than WordPerfect.

Power Under the Hood!

Although Ami Pro 2.0 is a breeze to use (and use to its fullest), it posesses enormous power under its sleek interface. You'll seamlessly import and export files from WordPerfect, Microsoft Word, MultiMate, DCA, DisplayWrite, WordStar and others. Ami Pro 2.0 contains over 120 one-click SmartIcons (which match those found in Lotus 1-2-3 for Windows) that make moving through Ami Pro 2.0 fun, and you can customize and arrange them any way you like.

Open and edit multiple documents at one time, see them in four editable view levels — all WYSI-WYG and instantly "hot-link" to other Windows applications, including Lotus 1-2-3, with 2-way Dynamic Data Exchange (DDE).

Power Fields.

You can actually create documents automatically using this innovative technological feat. Power Fields are embedded commands that, typed directly into a document, enable it to perform a task automatically. For example, a business letter can request the input of a name, look up the address from another file, automatically place the name and address on the page in a pre-defined format and include various paragraphs or passages depending on the data provided. A power field could also be used to check the state or zip code in the address and determine whether a local or toll-free phone number should be included in the body of the letter.

FREE! The Fast, Easy Windows Tutor Program — WIND-EASE. A \$49.95 Value.

Learn Windows in less then one hour!



EXCLUSIVE TIGER PACK

PLUS WINDOWS 3.0 and THE LOGITECH MOUSE

ALL JUST \$169°5!

UPGRADE TO VERSION \$491

Restrictions apply. Call TigerSoftware for details.

Lotus

Ami Pro

BL5090 Ami Pro Competitive Upgrade 5¼ * & 3½ * , \$109.95 BL5095 Tiger Pack: Ami Pro Competitive Upgrade, Logitech Mouse and Microsoft Windows 3.0; 5¼ * & 3½ * \$169.95 Sorry, free shipping is not included on this special offer.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

FREE FEDERAL EXPRESS

International Orders: 305-443-8212 24-Hour Fax: 305-444-5010

NEW! The Daily Number Buster Version 2.0!

The Most Advanced Daily 3-And-4-Number Software Available!

rom the makers of the smash hit The Complete Lottery Tracker and Wheeler comes the winningest DAILY number program available today. The Daily Number Buster will increase your chances of winning 3 and 4 digit daily number games and all daily deal games (California's "Decco" and Ohio's "Cards"). It's fast, fun and completely menu driven, so it's ready to go right out of the box.

This new version has been completely redesigned, with dozens of new screens and features to help you play these games with the odds on your side! You can store hundreds of 3 and 4 numbers and dates, and The Daily Number Buster allows you to print detailed reports and charts of game statistics, recorded numbers and position hits. These reports become the basis of future picks and daily strategies. And of course, Daily Number Buster makes it easy to determine HOT, DUE and AVERAGE winning numbers!

Each 3 and 4 number game includes all straight and combination bets and unlimited number BOX-

ING bets. You also get a complete explanation of odds and a handy Odds Chart for instant reference. Start winning more of those lucrative daily games with the most comprehensive, easy to use software product of its kind - the all-new Daily Number Buster!

Lottery Tracker & Wheeler Version 4.0

The Complete Lottery Tracker & Wheeler gives you the ability to track and play as many lotto games as



you want, it provides the tools to produce charts, stats, reports and your own customized programs for the world's most popular number wheeling systems. And now you can create trend charts, analyze past winning numbers any way you like, produce accurate statistics on frequency, recency, bell curves, percentages and "hot" or "due" winning numbers.

Designed by the Pros.

Lottery professionals and enthusiasts agree that The Complete Lottery Tracker & Wheeler is the one system powerful enough for the serious player. They play many state lotteries on a consistent basis, carefully tracking the results and formulating winning strategies. The developers of The Complete Lottery Tracker & Wheeler listened to what they had to say about the science of winning lotteries and incorporated a lot of their techniques into this new version.

Check for Winners.

The new Check for Winners addition to the Tracker and Wheeler program is useful as another analysis tool, or, simply, to review your database for past winning numbers against tickets you have purchased, but have not checked. Select from 3 to 18 numbers for your search as well as the number of drawings to go back in your lottery database.

FREE BONUS 'Lottery Winning Strategies' **Audio Cassette!**

Learn What The Big Winners Know!

We're also very proud to introduce the all-new "Lottery Winning Strategies" audio cassette, containing new information, new strategies, new tips and techniques. It's FREE when you buy The Complete Lottery Tracker & Wheeler.

In Use Around the World!

"The COMPLETE Lottery TRACKER and WHEELER" is sold in all 50 U.S. States and 23 foreign countries. You can be confident that you are using a tested and accepted tool for "handicapping" (TRACKING) and WHEELING lottery numbers.

FREE BONUS!

Coupon for a Free "Winning Combinations" Database Inside Daily Number Buster and Complete Lottery Tracker & Wheeler

A history of winning numbers in your state!

LOTTERY SYSTEMS

BL3615 Daily Number Buster 54 " & 34" BL3610 Lottery Tracker & Wheeler 54 " & 34" \$49.95 IBM PC, XT, AT, PS/2 and compatibles. Requires 256K.

Guided Tour of the Human Body.

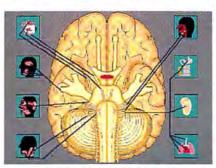
The Human Anatomy System For Your PC.

he human body. A perfect machine. It grows and develops, protects and heals itself and is designed to last for decades. Now the wonder of the body is combined with the power of the PC to produce a fascinating journey into its structure and functions. You'll see detailed, full-color graphics of the entire human body and a comprehensive database of facts, descriptions and explanations. Do you know the exact function of the hypothalamus? How about the kidneys? How do bruises heal? How does the brain work, and where is your duodenum? Experience a world of knowledge and beauty that provides profound insight into life itself. It's called BODYWORKS, and it could be the most interesting software program you'll ever own - perfect for students, artists and hobbyists.

Explore the cardiovascular system..

You begin by exploring the major body systems: select the skeletal system and view the bones and

how they work, the joints, mechanics of the ball and socket. Select the muscular system and see the tremendously resilient human muscle, capable of developing enormous strength. Discover how the delicate muscles in the eye allow instant focusing and movement, far beyond the capabilities of even the most sophisticated camera. Move to the nervous system, and how the signals sent to the brain can detect even the slightest touch to the skin. Learn about how your nervous system allows the brain to instruct the body to perform complex movements like walking! Then select the digestive system - the body's systematic breaking down of food. Its incredible ability to process and extract nutrients. From the mouth to the intestines, BODYWORKS shows you in great detail how your body nourishes itself, how it accumulates fatty tissue (and how it uses fat).



...Or discover the workings of the brain

There are complete sections on lymphatic, endocrine and cardiovascular systems. Explore the most



amazing four-square-inches of tissue man has ever seen - the human heart. How it feeds the body with a constant supply of necessary chemicals to sustain life. You'll learn how the human heart can be damaged, and exactly what happens when someone suffers a heart attack.

When your child asks "Where do babies come from?" you can simply select the section on the human reproductive system for a clinical explanation of the process

You'll see all of the organs and tissues of the body, each described in exhaustive detail. Colorful graphic screens also provide information on sports injuries, first-aid advice on illness, insect and animal bites, along with other topics. This program is simple to use, just click or select any organ or system for instant retrieval of BODYWORKS' thousands of facts. A must for the home computer.

BODYWORKS		
BL4101-5 BODYWORKS 5%*	\$79.95	
BL4101-3 BODYWORKS 315"	\$79.95	

TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212 24-Hour Fax: 305-444-5010

A World of Information on Your Desktop!

Random House Encyclopedia

The best-selling encyclopedia that puts a fullblown reference center right on your PC! Simple and fun to use — without a CD-ROM player. Ideal for students, professionals, researchers, writers and a wonderful gift for any student. Just click to explore History, Geography, Philosophy/Religion/ Mythology, Social Sciences, the Arts, Science, Sports and Leisure, Law, Government and more.

Using the powerful, built-in search and retrieval tools, you can see a quick overview of Chinese history, the advent of computers, facts about Romanian agriculture or learn how a nuclear power plant works. Click on Sports and learn about Ty Cobb, Hank Aaron and the immortal Babe Ruth. Click on Science and travel back to July 20, 1969 and Neil Armstrong's historic moon walk, or click on aircraft

and span decades from Kitty Hawk to the present. Click on Leisure and travel through the careers of Elvis, the Beatles and others. Click on Government and explore the lives of George Washington, Thomas Jefferson, JFK and others. It's fast, easy and fun — ready to go right out of the box.

Inside Information

This new Desk Accessory is a comprehensive reference tool which organizes the English language into logical Categories of defined words. Far more than a dictionary or thesaurus, INSIDE INFORMATION lets you quickly and easily explore any of seven general Classes: Nature, Science & Technology, Domestic Life, Institutions, Arts & Entertainment, Language, and The Human Condition. These Classes contain 20 Subclasses, 125 Categories, and 700 Subcategories.

Categories are defined by subject matter, such as Chemistry, Law or Music — or by a common property, such as Colors, Tools, Verbs of Motion — or even a specific usage, like Insults, Slurs & Epithets.

Dig deeper into each Class in three different ways: outline view, graphic view or tree view. The reverse dictionary lets you type a few descriptive words then see a listing of appropriate terms and definitions.

Strunk & White's Elements of Style

Reviewers have called it "...the best of its kind" and raved, "The work remains unparalleled, direct, correct and delightful." Now The Elements of Style is available for your Apple Macintosh or IBM PC compatible computer.

Based on an original work by William Strunk, Jr., a Professor of English at Cornell University, this updated third edition, prepared by noted writer and grammarian E.B. White, has become a classic of conciseness. It's the ideal tool to make your writing crisp, succinct and powerfully effective.

Anyone who needs to communicate effectively in writing will find *The Elements of Style* packed with specific, pertinent examples to improve writing style and structure. It's an easy-to-access educational reference work for the rules and principles of correct English usage. Includes seven rules of usage, eleven principles of composition, several matters of form, a list of often misused words and a style guide.

Microlytics



Add Sound To Your PC!

hat's it all about? MultiMedia? Audio boards? I can tell you that it's not just for professionals anymore! Now, with Media Vision's easy-to-use, low cost audio systems, you'll hear the blast of rockets, the screech of tires, listen to soundtracks and special effects built into games and other software! You can record, edit and playback your own sound files (up to 22KHz). You can use synthesized instrument sounds for use in presentations. Mix different sounds and effects. The power of your PC makes it simple!

The Thunder Board™

This sound card slips into your PC and brings with it on-board capabilities for digital recording and playback. You get a built-in joystick port and amplifier. Thunder Board reproduces all digitized sounds: speech, music and sound effects and records any sound through the input microphone jack. Its dynamic filtering provides low-noise, digital recording and playback, compatible with AdLib and Sound Blaster. There's audio compression, and the synthesizer can play up to 11 simultaneous instrument sounds to deliver rich music and spectacular audio effects.

Thunder Board includes Thunder Master software which allows you to modify and enhance the files you create. Record and playback (up to 22



KHz); mix pre-recorded sound files; change sample rates; edit wave forms; compress and decompress sound files; add special effects.

Pro AudioSpectrum"

This single audio card transforms your computer into a full Microsoft Level 1 multimedia platform. One card — mega sound, with plenty of built-in instrument sounds, noise reduction features, studio and special effects, mixing features, output amplification — even a music clip library (jazz, pop, rock, classic and more!). It's fast, easy and fun. Record soundtracks, voice overs and more from a variety of stereo sources. It's even MIDI compatible.

MediaVision

BL6816 Thunder Board\$169.00 BL6818 Pro Audio Spectrum \$389.00 Thunder Board requires 512K RAM minimum. Pro Audio Spectrum (Dual media) requires 600R RAM, 720KB or 1.2MB disk drive (low density formal available)

Instant Loan Calculations!

If you are planning investments, preparing taxes, negotiating a lease or mortgage, or evaluating consumer loans, Amortizer Plus takes you from data input to detailed output in seconds.

Amortizer Plus offers the simplicity of pull-down menus,

pop-up windows, and contextsensitive help. In minutes you will be calculating sophisticated multi-phase loans, leases and investment analyses.

Calculate Loans Instantly.

Quickly and easily calculate, evaluate, and compare a variety of financing options such as fixed and variable interest rates, interest or principal only, balloon payments and more.

Set compounding and payment intervals independently. Select 360 or 365 day years, fiscal or calendar years ends, and last payment rounding preferences.

Enter the known variables and Amortizer Plus solves for the unknown variable. Easily investigate "what-if" scenarios. Just change loan assumptions and results are recalculated automatically. Quickly determine a note's yield if sold or re-



paid early, or see the loan balance at any specified date with the push of a button.

Plan Financial Investments

Creating a retirement, college tuition, or wealth building plan? Amortizer Plus helps you analyze the effect of compounding and changing inter-

est, deposits, and withdrawals on the future balance of any security. Or specify the desired future value goal and calculate the needed interest rate or deposit amount to reach that goal.

Leasing equipment or a car? Amortizer Plus helps you determine the appropriate lease terms. Specify the known variables and Amortizer Plus solves the unknown variable.

View reports on-screen, print them, or write them to disk in ASCII or .DIF formats for inclusion in Lotus 1-2-3, Quattro Pro, Excel, etc.

WINDOWS VERSION NOW AVAILABLE!

Amortizer Plus

BL4300-5 Amortizer Plus 5¼* \$79.95 BL4300-3 Amortizer Plus 3½* \$79.95 IBM PC, XT, AT, PS2 or compatibles; 646K EAM; DOS 2.0 or greater. Hard disk recommended.

TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212 24-Hour Fax: 305-444-5010

After I Bombed with dBASE, I Almost Gave Up Automating Our Invoices...

Simpler Than dBASE and Paradox — More Powerful Than Q&A!

t our Monday morning staff meeting, I announced I was going to automate our invoicing system later that afternoon. Skepticism ran high. "Paul, you promised me an application like that two years ago," said Marge. "You couldn't do it and neither could that dBASE programmer you hired. It'll never happen."

On the other side of the room, Tim, a new employee whispered to Richard, "I didn't know the boss was a programmer too." "He's not," said Richard, "Couldn't write code to save his life. But he keeps trying because he thinks it's vital to the business."

I had already tried three times before to program a database: first with dBASE (much too complicated). Then I tried Q&A (not powerful enough). Then I bought Paradox (just like dBASE). All were either too complicated or not powerful enough.

either too complicated or not powerful enough.

This time I was confident. Why? Because I just bought Alpha FOUR, the powerful database for non-programmers like me. I spent 45 minutes over the weekend with Alpha FOUR's audio cassette tour. So I knew how easy application designs with Alpha FOUR would be, even the first time. I knew within hours, I'd be able to build a fully relational customer tracking and billing system, complete with custom menus, beautiful screens, extensive help messages and automatic error-correction for trouble-free data entry. And that's exactly what I did. You should have seen Marge's face when the first, perfectly formatted invoice came off the printer!

I Developed My Application in Minutes.



First, I needed a system of menus and submenus. Was I ever surprised to see how easy that was! With Alpha FOUR's "Application Editor" I wrote an outline of my menus and sub-menus. (Look at the screen.) Alpha FOUR automatically created my multi-level menus right from there. Changing my menus was just as easy. I inserted and moved a few around until I got it just right — nice and simple for my new employees.

I Made My Data Entry Bulletproof.

I've got a high employee turnover rate, so I needed something simple that a new hire could run right from the screen. I wanted my system absolutely safe and secure, so no "accidents" or mistakes could damage the data I've worked so hard to gather. That's when I really started to appreciate the well-thought-out way Alpha FOUR works. The "validation" capabilities ensure data gets entered correctly. I set it up so Social Security numbers must be 9 digits long (otherwise a custom error message is displayed).

When I enter a new customer, Alpha FOUR automatically skips over unneeded fields (determined by my validation rules). And best of all — I use "lookup" fields whenever I can. So when I get to the "Customer Type" field, a window pops up with my choices. All I do is highlight and hit ENTER. No chance of an error!

I'll Never Enter Data Twice Again.



I always ran out of power with other simple-touse databases; they weren't relational, meaning I couldn't link up separate files that share a common field. But with Alpha FOUR I easily created different databases for customers, invoices and inventory, and linked them all together just by drawing the links between the databases on the screen. (Look at my screen.) Now, we never have to enter the same information twice. I can display and edit information from up to 10 databases on one screen all at the same time. Before, when I changed a customer's address, I had to do it in 3 different places. Never again. And my database files are so much smaller now — because the actual data is only stored in one database.

Forms and Reports Look Great!

Alpha FOUR's Report Writer was even more impressive. I "painted" reports and invoices on-screen. They looked exactly like I wanted them to — much better than our old paper forms. This "What You See Is What You Get" approach to report writing gives me the flexibility I need to create meaningful and detailed reports that really get my point across.

\$549 VALUE JUST \$99.00!

Totally dBASE Compatible.

I was delighted to hear Alpha FOUR is totally compatible with dBASE .dbf files. Our mailing list went right into the new application without even having to be converted! And when my Alpha FOUR application grows, it'll import those Lotus 1-2-3 files used over in accounting. In fact, Alpha FOUR can import and export Lotus 1-2-3, Symphony, VisiCale, PFS, MultiMate, WordPerfect and other packages.

And Now I Get Fancy...

First I breezed through the tutorial just to get a fully operational application, but now I have the time to dress it up and make it fancy. First I'll change my menus to 3D boxes for the menu selections, and change some of the colors here and there. Alpha FOUR makes it all so easy. Then I'll customize some of the data entry screens so they look just like the paper forms the employees are used to working with. I know — I'll call up Alpha's free Bulletin

Board Service and get some tips from other Alpha FOUR users.

In the future, I'll use Alpha FOUR's "Documentation" program to print out a full report of my database design, complete with all the details. That way, someone else can pick up where I left off and further expand the system.

NOW JUST \$99!

If you already have any database software, integrated package* or mail list manager, or if you are currently using your spreadsheet to manage data, you can upgrade to Alpha Four for just \$99.

*Qualifying packages include programming dalabases (dBASE II, III and IV, Paradax, Clipper, Faxbase Fax Pro, Revelation, etc.), flat-file databases (Q&A, PFS:Professional File, Rapid File, etc.), integrated packages (Microsoft Works, PFS:First Choice, Lotus Works, etc.), and mailing list managers (FustPak Mail, etc.) or spreadsheets with databases (Lotus 1-2-3, Quattro Pro). Retail price \$549.



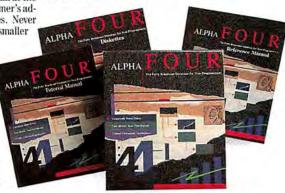




Alpha FOUR Version 1.1

BL3455-5 Alpha FOUR V1.1 5¼". \$99.00 BL3455-3 Alpha FOUR V1.1 3½". \$99.00 Regular Tiger price \$319. Hard disk, 360kb, MS-DOS 2.0 or above, 512kb RAM. Includes over 40,000 Zip Codes with corresponding cities and states — completely cross-referenced for ensy fill-in.

Risk-free, 60-day money-back guarantee. Limit one per customer. Offer good through November 30, 1991. Sorry shipping is not included on this special offer.



TIGERSOFTWARE

TO ORDER 1-800-888-4437

International Orders: 305-443-8212

24-Hour Fax: 305-444-5010

Detailed World Maps at Your Fingertips.

New Version 2.0!

This innovative program brings the entire globe to your computer screen, combining a complete atlas, almanac and world fact book into one exciting, informative package.

You'll have instant access to over 200 fullydetailed, VGA maps, ocean maps and useful international information on 270 topics in 11 categories. Explore the geography, people, government, and economy of any nation on Earth, including such details as climates, health, population, language, labor force, military strength, inflation, industry, highways and waterways, and more. Easily display this information as text, graphs, or maps (index, topographic or statistical). Data and graphs can even be combined to create new, customized maps.

Indispensible Reference Tool.

World Atlas is an ideal reference tool for travelers, educators, business people, librarians and students. It's an indispensible guide that brings together all types of important information that would take months to research and assemble. New version 2.0 includes conversion tables for currency, weights and measures; city to city mileage indicators; and local time and date information (World Atlas is the only program that adjusts for daylight savings time!)

World Atlas is very easy to use. You don't need to learn lengthy commands. Just point to a country on any index map, click - the desired map appears instantly. From there, simply select specific information and statistical maps for individual countries from sleek, drop-down menus.

You can easily print customized reports mixing maps, graphs and text - even export maps to desktop publishing programs.

Create Over 4,000 Stat Maps.

Users can select from 10 categories containing approximately 300 data topics to create statistical maps at the world level or for any region. Data can be display using a Shaded Map (for comparative data) or Bar Map (for total amounts).

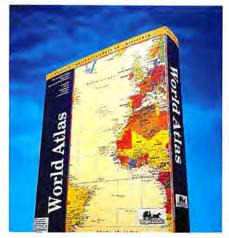
There's also volumes of comparative data on every country in the world in five subject areas: geography, people, government, economy, trade, and communications. User's can create a bar graph for any of the statistical topics.



Maps like the one you see here are highly detailed and contain information on travel, climate, geography and population. Both World Atlas and USA Atlas give you a wealth of information.

NEW! U.S. ATLAS

U.S. Atlas brings the entire North American continent to your computer screen! Simply click on a state or city to explore such information as: population, average temperatures/precipitation, local time, area codes and zip codes. Everything you need to know will be displayed in easy to read windows.



INTRODUCING THE ALL-NEW ATLAS PACK

Both of these incredible titles in one package. Just \$79.95 - a great value!

These Titles Now Available for Windows 3.0.

THE SOFTWARE TOOKWORKS

WORLD ATLAS
BL3235 World Atlas 54 " & 34" \$59.95
BL3220 U.S. Atlas 54 " & 34" \$49.95
BL3230 Atlas Pack (World & U.S.) Dual Save \$30 \$79.95
BL5520 World for Windows \$69.95
BL5510 USA for Windows
IBM PC or compatibles with 640K. Hard disk; EGA or VGA graphics eard color monitor; Microsoft mouse or compatible.

Fast, Easy Way To Learn Windows 3.0!

The Most Advanced Windows 3.0 Teaching Method Available!

s with any new task, "visualizing" teaches A you far more than just reading about it. And although Windows was built on the concept of ease of use through its interface, some aspects of Windows may be new and perhaps a little intimidating for first-time users. WIND-EASE is the innovative software tutorial that allows you to forego the lengthy manuals and get right to work. Real dropdown menus and application menus provide dramatic insights into the power and beauty of Windows 3.0.

Sophisticated in presentation, it facilitates indepth understanding by matching Windows' commands, visual displays, and dialog boxes to clear, concise explanations.

Perfect For Beginners and Intermediate Users.

WIND EASE gives you a thorough understanding of Windows 3.0. If you're new to the environment, you'll quickly grasp the rudiments and progress quickly through its many advanced features. If you're a current Windows 3.0 user, you'll find loads of information on features you may never have used before. It's also fun to use WIND. EASE. With WIND EASE, learning Windows is enjoyable and so will be using it

More In-Depth Than Even The User's Guide.

As you quickly learn Windows you'll discover WIND EASE actually takes you beyond the user's

TIGERSOFTWARE

guide. Here, you'll learn how to install and use other applications, how to quickly and easily set up networks, printer and fonts, how to create time-saving macros, how to customize PIFs, and use MS-DOS Executive. There's dozens of tips and techniques for using Windows 3.0 to its fullest.

WIND-EASE is a rich graphical program with 18 distinct program-segments, designed to isolate and teach you window concepts. Study at your own pace and direction!

The unique and easy installer allows you to choose the segments you wish to install. You can customize the program to suit your learning needs and interests!

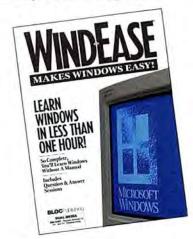
- · Basics (for beginners) · Setup
- · Program Manager
- · File Manager
- · Print Manager
- · Write
- Terminal
- · Paintbrush
- · Clipboard
- · Control Panel
- - · PIF Editor
 - · MS-DOS Executive
 - · Notepad
 - · Calendar
 - Calculator
 - · Recorder · Clock
 - · Cardfile

The program is structured for ease of use and thoroughness. Consequently, it is ideally suited for corporate training programs, at home/office users, and even the first time Windows user. And, because WIND EASE runs under Windows, it is always there if you need instantaneous assistance!

WIND EASE is your fastest key to unlocking all that Windows can do for you!

Helpful Q&A Sections.

WIND. EASE includes a question and answer exercise at the end of each segment. This was designed to reinforce, clarify and offer additional insights into the material presented in each segment.



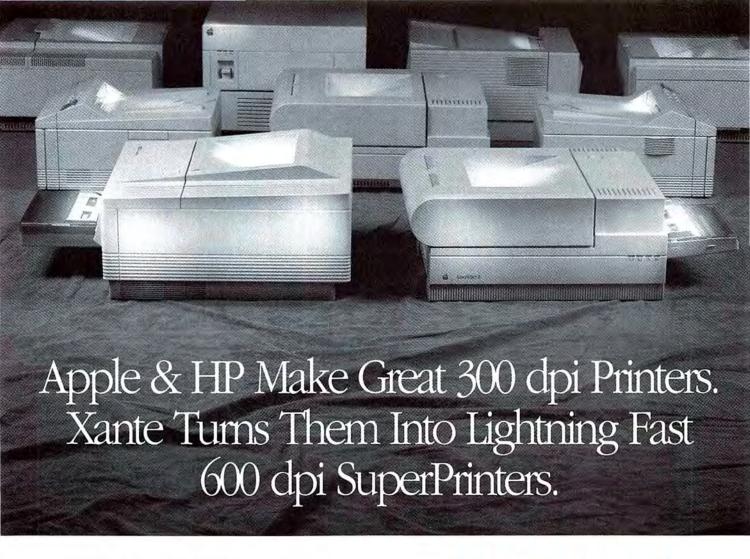
BL5070 WIND-EASE 54 " & 34" Microsoft Windows 3.0, 286 or higher processor, 640K plus IMG extended or expanded memory, hard drive, VGA monitor, mouse.

FREE FEDERAL EXPRESS

NEW! Learn Windows 3.0 in One Hour Without Ever Touching a Manual!

International Orders: 305-443-8212 24-Hour Fax: 305-444-5010

TO ORDER 1-800-888-4437



Now easy-to-install Accel-a-Writer[™] controller boards from Xante[®] turn any Apple[®] LaserWriter[®] or HP[®] LaserJet[®] into a true 600 x 600 dpi PostScript[®] compatible superprinter.

Affordably.

Whether you're the owner of a LaserWriter or LaserJet, the Accel-a-Writer delivers other important advantages, too. Like an advanced RISC processor that makes your printer assemble text and graphics 4 to 12 times faster. Expanded connectivity for simultaneous operation of Apple® Macintosh®, IBM®/compatibles and other popular workstations. A SCSI port to plug in external hard drives for permanent storage of downloadable fonts and programs. And dual page processing which gives your printer the ability to print a page while assembling another. If you want all the speed and connectivity but don't currently need 600 x 600 resolution, Xante even makes an Accel-a-Writer for you at just \$1295!

Call Xante toll-free to order the Accel-a-Writer you need today. And get the professional advantages of increased resolution, speed and connectivity, affordably.

Accel-a-Writer™

FEATURES	XANTE ACCEL-A-WRITER	HP LASERIET ILIIP,HLIIIP	APPLE LASERWRITER IIg	QMS 815 MR	LASERMASTER 1000 PERSONAL TYPESETTER
True (00) x (00) dpi	V			N	
RISC Processor	V.				
Standard 6MB RAM	√.			N.	*
SCSI Connectivity	V -		V		
Sim dianeous Interfacing (Apple Lalk, senal, parallel)	N.			٧.	
Dual Page Processing	V		1	V	
Advanced Memory Management	N			V	
PostScript Compatibility	4		V.	×	?

1-800-926-8839



\$\$\$\$¹/2

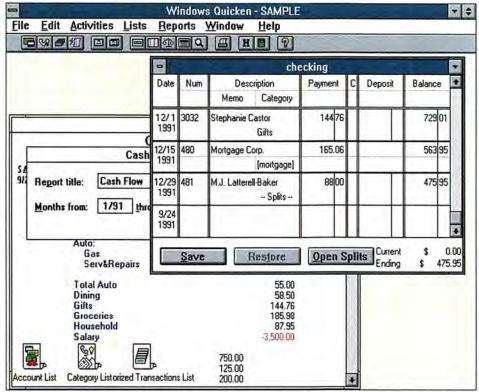
"The Accel-a-Writer II board turns any LaserWriter II into a graphics speed demon..."

MacUser Magazine, Sept. 1991

®1991 XANTE Corporation. XANTE Accel-a-Writer is a trademark of XANTE Corporation. Other brands and product names are trademarks or registered trademarks of their respective bolders. XANTE Corporation: 2559 Emogene St., Mobile, Al. 36606, Post Office Box 16526, Mobile, Al. 36616-0526 USA, TEL. 205/476-8189

Bill Paying Quickens

Quicken 5.0 picks up shortcuts and additional smarts, while the Windows version sets more modest goals.



Quicken for Windows multitasker lets you keep any number of check registers and reports open on screen simultaneously, with Quicken lists iconized below for quick reference.

Mike Hogan

What could be more fun than sitting down every month to pay your bills? Balancing your checkbook, maybe? Intuit's *Quicken 5.0* and *Quicken for Windows* may not make these chores a chuckle, but they certainly can ease the pain.

Quicken's no-hassle checkbook interface and low price have made it the preferred solution for automating routine personal finance chores and tracking investments. Yet it packs enough functionality to be used by small businesses for single-entry accounting. DOSbased Quicken 5.0 adds mouse support and more familiar Quick-Key shortcuts for navigating data. This version is also smart enough to guess your next action and charitable enough to forgive you for hitting <Enter> instead of <Tab>. Tutorials give you several ways to learn.

Unlike previous versions, Quicken 5.0 lets you see the reports you're designing and assign multiple subcategories to income and expenses for more informative reports. For example, you can track costs for fuel, loan, and service under your Auto category. A new QuickZoom feature gives you instant detail on line items, and you can create a budget of future income/expenses using the past 12 months' data.

And Windows Too

Quicken for Windows lacks most of 5.0's enhancements, although Windows eliminates the need for some of them. You won't need QuickZoom since you can keep checking, savings, and investment registers on screen while you transfer funds or develop financial reports. Quicken for Windows gives you Windows fonts in your reports and a customizable desktop where you can pop up, say, checking and credit card icons at the beginning of each session.

Both versions let you process a series of transactions in a batch. *Quicken* gives you warning of due dates. And as before, you can split a transaction, such as a mortgage payment, so that a portion is assigned to principal and a portion to interest (which is tax deductible and should be reported to *Quicken's* tax module). In fact, *Quicken 5.0* adjusts the amortization to reflect the amounts that go to principal and interest.

If you've standardized on Windows, Quicken for Windows will do the job, but Quicken 5.0 is a better version of this old favorite. ●

Mike Hogan is a senior editor for PC World.

SNAPSHOT

Quicken 5.0

Shortcuts and mouse support keep the personal finance leader on top.

KEY FEATURES

- More Quick-Keys and other ease-ofuse enhancements
- More flexible report generation

Quicken for Windows

For the DOS version, but a fine alternative for Windows

KEY FEATURES

- Keep multiple accounts and lists open on screen
- Customizable

AVAILABILITY

Immediate

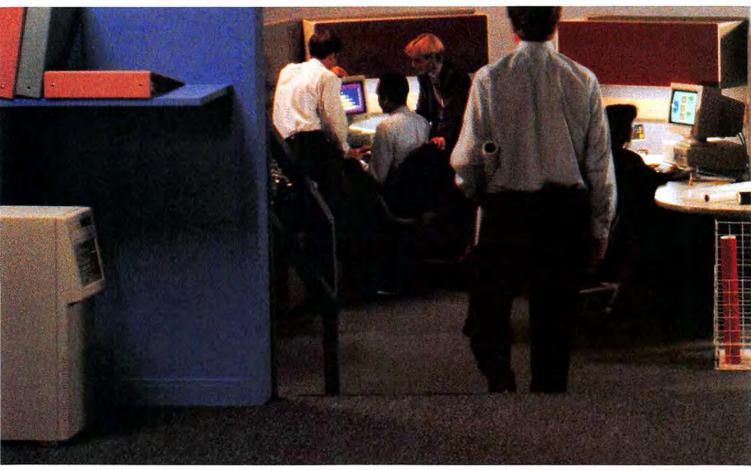
PRICING

Quicken 5.0 \$69.95, Quicken for Windows \$69.95

Intuit, Inc.

155 Linfield Dr. P.O. Box 3014 Menlo Park, CA 94026 800/624-8742, 415/322-0573

Introducing the COMPAQ Designed for small groups.



Now you can have exactly the server features you need at a price you can afford. With the quality, expandability and drive technology of the award-winning COMPAQ SYSTEMPRO. The COMPAQ SYSTEMPRO/LT Family is the ideal server solution for

small to mid-size groups.

Intelligen
makes the diff
goes beyond

Three models let you start with precisely the processing power you need now—Intel's 386/25, 486SX/25 or 486/33. And they're easy to upgrade as your needs change.

Intelligent Modularity
makes the difference. It
goes beyond ordinary
modularity. Not only can
you choose just the features
you need today: processor,

memory, video, high-performance I/O devices, fixed disk drives or drive arrays. But more, each component is designed to work at its best with each of the other components. So you get optimum system performance in any configuration you choose.

When you need more power or options, upgrading is fast, easy and affordable. RAM expands up to 64 megabytes with industry-standard SIMM modules. Storage grows to 22.2 gigabytes. Without exaggeration, the COMPAQ SYSTEMPRO/LT has the greatest capacity and flexibility in its class.

Even better, you can switch out parts and options with our new COMPAQ DESKPRO/M Family. And use all the

same storage devices as the COMPAQ SYSTEMPRO so servicing and supporting your system is easier. And your investment today will still look smart tomorrow.

True to the COMPAQ SYSTEMPRO reputation, these servers are built to last. Superior thermal design keeps things cool. And the 355-watt power supply handles any configuration.



SYSTEMPRO/LT Family. Priced for small budgets.



Setup is easier, too. COMPAQ Integration ToolKits tell you just how to do it. We've already tested and proven reference platforms—combinations of hardware and software that you'd likely use-including Banyan, Microsoft, Novell and SCO UNIX operating environments. We know the ropes.

Once you're up and running, the new COMPAQ System Manager keeps you in conknowledgeable people is ready to help. trol. It continually monitors server performance and instantly notifies you if something is wrong. You can even diagnose and correct problems from remote locations.

If you have a problem with one of our reference platforms, we'll get it solved. No buck-passing. Through Technical Support Alliances, we and leading hardware and software developers cross-train our support people so we can help you better. Our Technical Support Line gives subscribers extra help with complex problems. And spare parts can

be shipped to your dealer within the same day.

Learn more about how the COMPAO SYSTEMPRO/LT Family can serve your workgroup's needs and budget. Call for our free brochure and the location of an Authorized COMPAQ Computer Dealer with

expertise in your preferred operating environment. Just call 1-800-231-0900, Operator 177. In Canada, you can call 1-800-263-5868, Operator 177. COMPAQ

It simply works better.

Got a question? Call us. At our Customer

Support Center, a bank of

ELVIS HAS BEEN SIGHTED.

And you're rocking and rolling through a presentation on his life and times, thinking what a blessing it would be if your PC could sing and dance to his greatest hits. On CD, of course.

Introducing CDPC. One-Stop Multimedia from Media Vision.

Well, your multimedia prayers have
finally been answered. Because
CDPC is the first
fully-integrated
multimedia system—beautifully
embodied into
one remarkably
compact component
—to bring together

the excitement of CD-ROM and Audio. Giving your PC the power of high-quality sound. With a multitude of other multimedia functions.

Like 100 watts of music power. And total Spectrum Sound with low-noise audio, bass enhancement and speaker imaging. It's quality sound like you've never heard before on your PC. And it's so easy to use. Just plug-in and play.

Besides eliminating the hassle of buying separate components, CDPC costs half of what you'd pay for all those multimedia pieces. And unlike any other multimedia alternative, CDPC works cross-platform on IBM AT or MicroChannel compatible computers.

For Business Presentations, Education or Pure Unadulterated Fun.

What's the big deal about multimedia anyway, you ask? Well, for starters; sound, music and visuals enrich business presentations beyond your wildest expectations. Interactivity lets you tailor your communication, precisely—to fit each audience's specific interests. And features like CDPC's external volume control, built-in speakers and microphone make presentations a breeze. Plus, with CDPC, applications like MacroMind's Action!, Animation Works and Asymetrix ToolBook help your business presentations take

on even greater depth and dimension. And it's no surprise that multimedia is a

suPC

teacher's dream come true. It entices, enlightens and entertains—and everyone knows that entertainment is the best form of communication—especially when used with applications like Compton's Multimedia Encyclopedia, Bookshelf for Windows and The Berlitz Foreign Language Series.

GIVE YOUR PC THE OPPORTUNITY TO MOUTH OFF LIKE NEVER BEFORE.

(Say adios to boring instruction, hello to dynamic learning experiences.)

Commander,

Jones In The

Fast Lane,

So, if you're playing games, or playing music, your PC can once and for all be heard. Loud and clear. PC games, for example, get so highly-fueled with sound, they're down right explosive. Characters come roaring to life. Plus, CDPC is Sound Blaster and AdLib compatible, helping you access virtually all your favorite software. Like Battle Chess, Wing

you name it.

Regardless of whether
you're scoring
points or scoring
music, the
multi-source
analog mixer
gives you
total control
over the
audio output. Also,
CDPC is
MPU-401 com-

patible. And

offers a full orches-

tra at your command — with 4 operator FM synthesis that delivers 20 in-

strument sounds, simultaneously. That's entertainment!

PC PC Multimedia PC.

Windows For A Song. (And That's Not All.)

What's more, you get Microsoft* Windows graphical environment with Multimedia Extensions 1.0. FREE. Which means that you can begin opening windows to your multimedia world immediately. If not sooner.

Plus two FREE software applications! Jones In The Fast Lane by Sierra On-Line, the ultimate parlor game of the '90s. And Compton's Multimedia Encyclopedia, which contains twenty-six volumes

worth of valuable information. And a whole lot more.

COLVER

Altogether, that's over a \$1000 worth of FREE software.

So give your PC the opportunity to be more expressive than ever. Call Media Vision today at 1-800-845-5870 for the name of a CDPC dealer near you. And give your PC the ability to mouth off like never before.

MEDIA XXX VISION

CDPC from Media Vision. The One-Stop Multimedia Solution.

Media Vision, 47221 Fremont Boulevard, Fremont, CA 94538. 510-770-8600, FAX: 510-770-9592

Media Vision and CDPC are trademarks of Media Vision, Inc. All other trademarks and registered trademarks, designated or undesignated, are owned by their respective companies. © 1991, Media Vision, Inc.

PRODUCT



OUTLOOK

Edited by MIKE HOGAN

Momenta Computer

Notebook Takes an Express Ride With Pen Central



Momenta gives you a go-anywhere platform with a suite of built-in applications you can direct with a simple pen point.

Pen-based computing promises direct action: By using a pen on the PC screen, you'll be able to issue commands faster and more easily than with a keyboard or mouse. You'll also be able to take actions impossible with most PCs, such as marking up a fax and instantly sending it back, or unobtrusively taking notes in a meeting.

The Momenta Computer starts with a 6-pound 20-MHz 386SX notebook that accepts input on screen. Its well-integrated operating environment includes address book, spreadsheet, calendar, presentation graphics, freehand note taking, charting, fax, and word processor plus desktop util-

ities. These applications have helpful touches like deferred transmission (finish a fax now, and the system sends it automatically when a phone line is attached), but *PC World* saw prototypes only.

Momenta has been designed to minimize the need for handwriting recognition—sensible, since this technology still has a ways to grow. Unlike its peers, the Momenta has an on-screen "command compass" that shows you how to perform actions such as cutting or copying simply by touching an object and gesturing (moving the pen) in a given direction, rather than forcing you to memorize a new vocabulary that involves more elabo-

rate pen gestures.

Several third-party vendors will offer Momenta applications, and customers can grow their own with a Smalltalk-based development environment. Alternatively, flip the screen up, attach the keyboard, and run existing DOS and Windows applications. Momenta will add support for Microsoft's Windows for Pen Computing when that arrives.

The system comes with a 40 MB hard drive (larger drives are available), 4MB of memory expandable to 8MB, an integrated fax-modem, and file transfer cable, for a list price of \$4995. A reflective 10-inch VGA LCD screen is also standard; a backlit version will be offered early next year.

State-of-the-art power-saving techniques let you run the system for 6 hours on nickel-cadmium batteries that recharge in 90 minutes. However, battery life will drop if you choose the backlit screen. The system slips into a dashing black case, but take pen in hand to make sure it's right for you before signing the check.

-Eric Bender

IN BRIEF

Momenta Computer

This powerful notebook should be an impressive system when it's polished for shipping.

Momenta Corp.

295 N. Bernardo Ave. Mountain View, CA 94043 800/666-3682, 415/969-3876

Reader service no. 825

PRODUCT

122 Freelance Graphics for Windows A DOS presentation favorite gains WY-SIWYG display, graphing power, and new flexibility.

124 By Design 2.0, By Design for Windows

Turn DOS WordPerfect into a no-fuss desktop publisher, or add new DTP talents to WordPerfect for Windows.

124 **PSX** Seiko's thermal transfer printer gives color without sacrificing speed.

128 LANSpool 3.0, LANSpool Fax, Net SatisFaxtion 1.0 A trio of Intel products makes sending a PC fax as simple as printing a document.

130 IBM PS/1 386SX

New power and expandability give this homebody the punch for business applications too.

130 **Object Vision 2.0** Borland's forms manager gains big-league data handling talents and lets you fine-tune the look and content of forms.

136 Paradox SE, Quattro Pro SE No-nonsense versions of Borland's best-sellers for under \$100.

137 Lexmark PPS II 2380, PPS II 2390

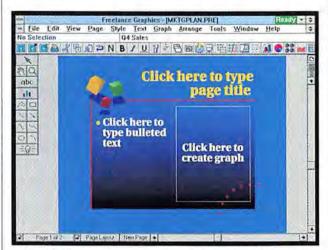
Durable, reasonably priced dot matrix printers from IBM spin-off.

138 Harvard Draw for Windows 1.0

Sophisticated illustration package is quick on the draw.

Freelance Graphics for Windows

Getting Into the Swim With Windows



Unlike its DOS cousin, this Windows presentation package lets you make global changes in format, style, color, and so forth easily.

Freelance Graphics takes to Windows like a fish to water. You get a WYSIWYG display, more powerful and flexible graphing than the DOS version's, and a grab bag of enhancements for ease of use, most significantly the ability to make global changes.

Like Microsoft's Power-Point, Freelance Graphics for Windows employs the paste-board metaphor, keeping all your slides and pages in a single file for easier simultaneous preview and manipulation than with its DOS-based version. You can work in the program's outliner or on the pasteboard, confident that any changes to a page are reflected in the outline, and vice versa.

Freelance gets you going with 60 modifiable master designs called SmartMasters that give a series of slides a consistent look and simplify global changes to format, style, and color.

The package offers small ease-of-use improvements over *PowerPoint*—for instance, you can undo your last ten actions—plus innovative features such as the ability to break apart objects, be they

scanned in or selected from the 500-plus clip-art images that come with *Freelance*. Need an image of eyeglasses? Scan in a picture of a man wearing eyeglasses, and lasso just the glasses.

What really distinguishes Freelance Graphics for Windows is its preview capabilities during global redesign. Call up a list of SmartMasters, highlight the design you want and you see a sample of the effect that choice will have on your word charts and clip art. No more tedious loading of an item onto your work space only to find it wasn't really what you wanted.

The program provides nearly everything you expect in top-flight presentation programs—robust drawing tools, up to 256 colors per presentation, and gradient fills for objects as well as backgrounds. You can define an unlimited number of 18-color palettes and choose from 96 graph styles. You get a spelling checker and text-handling capabilities that include vertical justification.

You also get more than 100 "SmartIcons" for quick access to functions ranging from drawing tools to text operations such as justifying. Any combination of SmartIcons can be displayed on the desktop.

It would be nice if the program offered a title sorter as well as the slide sorter, since screen redraws are painfully slow. Tools for animating and evolving figures, and control of leading and kerning would also be welcome.

The program lists for \$495, but you can get it for \$49 if you bought a copy of the DOS version within six months of the Freelance Graphics for Windows' ship date.

-Patrick Marshall

IN BRIEF

Freelance Graphics for Windows

windows
gives this longtime DOS
favorite a new flexibility
that makes it easier to
create and change your
presentations.

Lotus Development Corp.

55 Cambridge Pkwy. Cambridge, MA 02142 617/577-8500

Reader service no. 828

Plus Impulse DriveKit

Quick Storage for Micro Channel PS/2s

Today's Windows and other graphics-intensive applications take up so much storage that unless your system has something on the order of a 100MB hard drive, you're probably scrambling for disk space. Going graphical is particularly tough if you're one of the millions of owners of an IBM PS/2 Model 50, 50 Z, or 70. You're stuck with a slow 20MB drive for the original Model 50, or 30MB for the original Model 50 Z, and even the 386-based Model 70 lacks an extra hard drive bay for adding storage without swapping out your hard disk.

The Plus Impulse DriveKit

for IBM Micro Channel systems is a slick solution to that dilemma. This fast 17ms SCSI hard disk with a 64K readahead cache can be added to the second floppy bay of any PS/2 except the Model 55 SX, so you no longer have to dump existing storage to add a new hard disk. (The 55 SX design requires swapping your hard drive out for the Plus Impulse DriveKit.)

In either case, installation is designed with you in mind: Just replace the old floppy controller connector, install the SCSI adapter, slide in the drive assembly, and run a quick software installation.

Quantum expects this to take around 10 minutes.

The kits come in 52MB, 80MB, 105MB, 210MB, and 425MB configurations with list prices of \$699, \$799, \$999, \$1749, and \$2999, respectively.

-Rex Farrance

IN BRIEF

Plus Impulse DriveKit

PS/2 desktop users can add fast storage in an unused floppy bay without discording their original IBM hard disk.

Quantum

500 McCarthy Blvd. Milpitas, CA 95035 800/624-5545

The Great Crash Of '91.

Not long ago, the PC world was shaken by the news that a surprisingly well-known communications package had crashed while attempting high-speed file transfers. It was not a pretty sight.

After testing different comm programs, the editors of PC Magazine reported that "Procomm Plus" locked up several times during our testing of high-speed file transfers. During our Character-based ZModem tests, on an 8-MHz AT equipped with a 16550A UART, it consistently froze at every port speed faster than 38.4 Kbps on the receiving side of the link."

This episode proved that you can't be too careful before investing in comm software. It also proved, once again, that you can't go wrong

with Crosstalk."

Crosstalk Cruises Through High-Speed Tests.

Not only was Crosstalk the one consistent benchmark throughout the



PC Magazine tests, but it was one which the editors of PC Magazine applauded for performance, price and flexibility.

As for the feature-rich Crosstalk Mk.4, the editors commented that "...it's a real bargain for all it accomplishes. Corporate managers who require features like a powerful script language, a variety of terminal emulation selections, and network communications capabilities will appreciate this product."

The editors of Software Digest drew a similar conclusion. They gave Crosstalk Mk.4 the only 4-star rating in their ranking of communications packages. And while Crosstalk Mk.4 proved to be an unparalleled program for power users, its sister product, Crosstalk Communicator, also scored highly in the PC Magazine tests. Crosstalk Communicator received points for "...matching its higher-end sibling, Crosstalk Mk.4, practically score for score." It provides "...a fast, flexible alternative for the budget-conscious, particularly anyone in an organization already using Crosstalk Mk. 4, because it can use scripts developed in that program?" Between the two of them, Crosstalk Mk.4 and Crosstalk Communicator can cover virtually any communications need you have.

Why Risk It?

So, before you risk a high-speed crash, take some free advice. Get our free reprint of PC Magazine's comm software round-up (including the tests with high-speed file transfers) plus helpful



information on choosing the right software for your particular needs.

Just call 1-800-348-DCA-1, ext. 85C.



Another Communications Solution From DCA.

© 1991 Digital Communications Associates, Inc. All rights reserved. DCA and Crosstalk are registered trademarks of Digital Communications Associates, Inc. All other brand and product









mm Crash

Circle 62 on reader service card

By Design 2.0, By Design for Windows

A Perfect Designer in Your PC

If you use WordPerfect to do desktop publishing, your dentist probably scolds you for grinding your teeth. While WordPerfect for Windows will make some publishing tasks easier, WordPerfect 5.0 and 5.1 users no longer need wait for help in designing professional-looking newsletters.

By Design 2.0 is a desktop



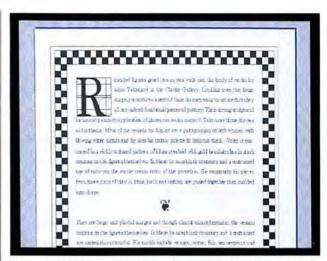
By Design 2.0, By Design for Windows

on turns the DOS version of WordPerfect into a desktop publisher or brings still more graphics garnishes to Word-Perfect for Windows.

Streetwise Software

1227 18th St., Ste. B Santa Monica, CA 90404 213/829-7827, 213/828-8258 (fax) Reader service no. 831 publishing program available for both *Windows* and DOS versions of *WordPerfect*. You can use *By Design* to produce all manner of designer-quality documents with a minimum of fuss. The program supports all the printer fonts available to you and lets you select from 65 classy, customizable designs for your letterhead, labels, resumes, page layouts, title pages, newsletters, tables of contents, fax cover sheets, and other documents.

You can get creative with your own designs using By Design's tools, such as large graphic lead characters, page borders and headers, symbols for icons or bulleted lists, plus a library of 600 clip art images. By Design's menus are available with a single keystroke at any time from within WordPerfect. A setting menu shows you a collection of matching tools and page layouts to assist in creating a logical, consistent design.



Now you can design newsletters and other small desktop publishing projects from within the familiar environs of WordPerfect.

With the Windows version of WordPerfect, you can even use By Design's rudimentary drawing tools right from the WordPerfect menu without having to import drawings via the Clipboard. By Design for Windows also provides page backdrop and text layout tools.

In the DOS version, you have to go to Print Preview to see what you'll get, but By Design improves this dismal situ-

ation by putting helpful comments on the text screen and not actually making a change until you okay it.

By Design may not give you all the desktop publishing artillery of PageMaker or QuarkXpress, but its design galleries can give your Word-Perfect documents a polished look. And at \$99, it's a lot cheaper than the services of a real live graphic designer.

—Bronwyn Fryer

PSX

Seiko Printer Gives Color With Speed

There are plenty of printers like Seiko's PS that let you put a little color pizzazz into your spreadsheets and desktop presentations. But Seiko's new thermal transfer PSX lets you do it at least 30 percent faster than the previous model.

The PSX includes a 25-MHz RISC processor instead of its predecessor's 16-MHz chip. It also has more memory uniquely configured to relieve the bottlenecks that occur during both the transfer of large graphics files from PC to printer and the description of those pages. Your PC won't be tied up for those interminable

waits typical of color printers, because the PSX decouples the output and print functions.

Instead of the PS printer's 40K buffers, the PSX assigns up to 3.9MB of memory as needed to each of its serial, parallel, and AppleTalk ports. Seiko has increased standard RAM to 10MB on the PSX Model 4 and 18MB on the PSX Model 14. But with third-party SIMMs, either can be expanded to 34MB, up to 17.4MB of which the printer partitions automatically to accommodate multiple pages.

Seiko has also addressed the long wait on the network queue. Instead of working on pages on a first-in, first-out basis, the PSX processes the first complete page to hit the queue. That means if a 12K memo arrives after a 24MB graphics page has begun transfer, the short page will print first. This shared printer can be hooked up to both Net-Ware and ethernet network bridges and features a 250,000-page life cycle—about six years of use at 35 percent of the workday.

Of course, the PSX's speed will cost you—\$9499 for the Model 4 and \$12,999 for the Model 14. But you can upgrade from the PS for the price of the controller—\$3000 for Model 4 and \$3500 for Model 14. Those controllers include the PS

printer's 300-dpi resolution and PostScript Level 1, and in the future should include an upgrade to PostScript Level 2.

-Susan Lusty

IN BRIEF

PSX

This thermal-transfer printer adds processing power, memory, and clever taskjuggling techniques so you don't have to give up speed for color.

Seiko Instruments USA Inc.

1130 Ringwood Ct. San Jose, CA 95131 408/922-5800, 408/922-5840 (fax)

ir Software.

It seems like no one fits into their comm software anymore. Your company's power users can't squeeze into programs that scrimp on high-performance features. Yet, your casual modem users and laptop users can't afford to be swamped by scores of power features they don't need.

To make matters worse, if everyone brings in their own comm software, PC anarchy breaks out and then nothing fits! You're left with a tangle of incompatible packages from the sloppiest shareware to the most sophis-

ticated software. You can't share scripts. Can't share support and training. Can't easily share much of anything!

What you can do is take a closer look at the Crosstalk® family of products.

Crossing The Communications Gap.

Crosstalk Mk.4 and Crosstalk Communicator not only let you fit the right software to the right users, but both comm programs actually work as a team. Since the two programs share the same code base and menu system, users can easily move from one to the other. Training and support are simplified. And complex scripts can be written on one, yet run on the other.

With both packages, you get the engineering excellence for which Crosstalk is famous-and the kind of support and back-up that only come from a company

like DCA®



The Most Fitting

Crosstalk Mk.4 is the ultimate comm software for power users. When the editors of PC Magazine chose it as the top performer among all comm packages for 1991, they called it, "A top-notch program that does almost everything and does it all right..." It has the CASL™ scripting language (a powerful programming language like C or Pascal) for automating communications. Plus, highly specialized capabilities from VT™ emulators and ZMODEM to FTTERM and IND\$FILE. Data transmission rates up to 115,200bps. Multiple sessions. And modem sharing on LANs.

Crosstalk Communicator is the favorite of executives and laptop users.



It's simple enough to configure and begin communicating in three minutes, yet includes so many of the same popular features as Crosstalk Mk.4 that Info World called it "an exceptional value...anything but stripped down."

Individually, Crosstalk Mk.4 and Communicator perform so well that PCWorld gave both products the "Best Buy" award in their respective categories. Together, they provide an unbeatable solution that can be tailor-made to your users and budget.

Avoid Nightmares Like The Great

Crash Of

Some say it's worth specifying Crosstalk for the reliability alone. Remember April of '91 and the popular comm

package that crashed repeatedly when PC Magazine attempted high-speed file transfers? Crosstalk was the benchmark for those very same tests.

So, if you're looking for the most reliable, fitting solution for all your comm users, look into Crosstalk. We'll send a free booklet to help you match the right Crosstalk programs to your particular needs.

For your free Communications Guide call

1-800-348-DCA-1, ext. 84C.



Another Communications Solution From DCA

cutions Associates, Inc. All rights reserved. DCA and Crosstell are I CASL is a trademark of Desial Communications Associates, Inc.

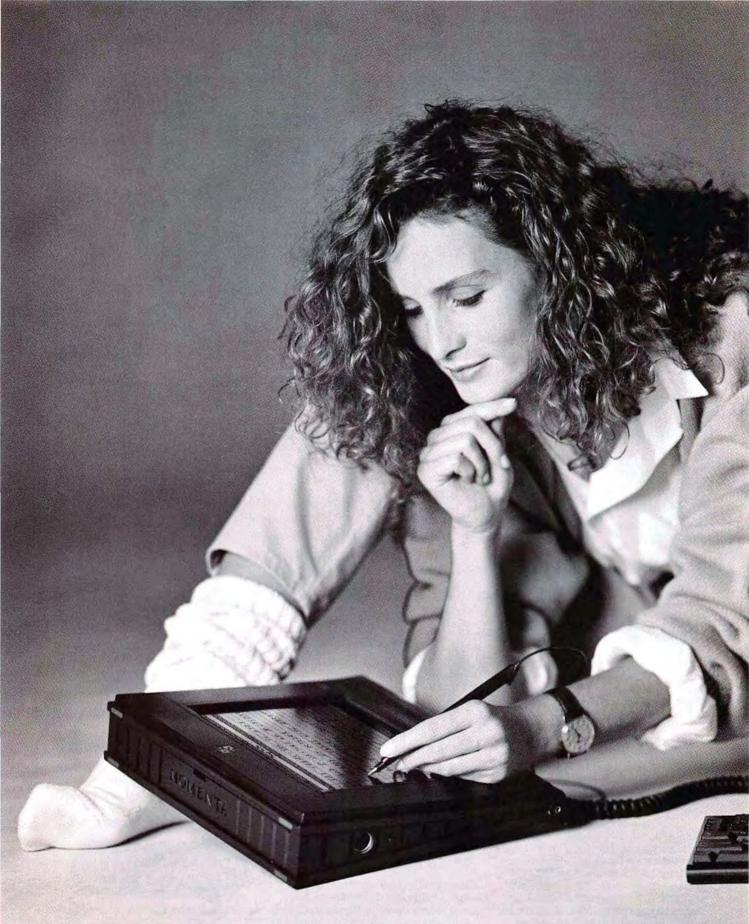




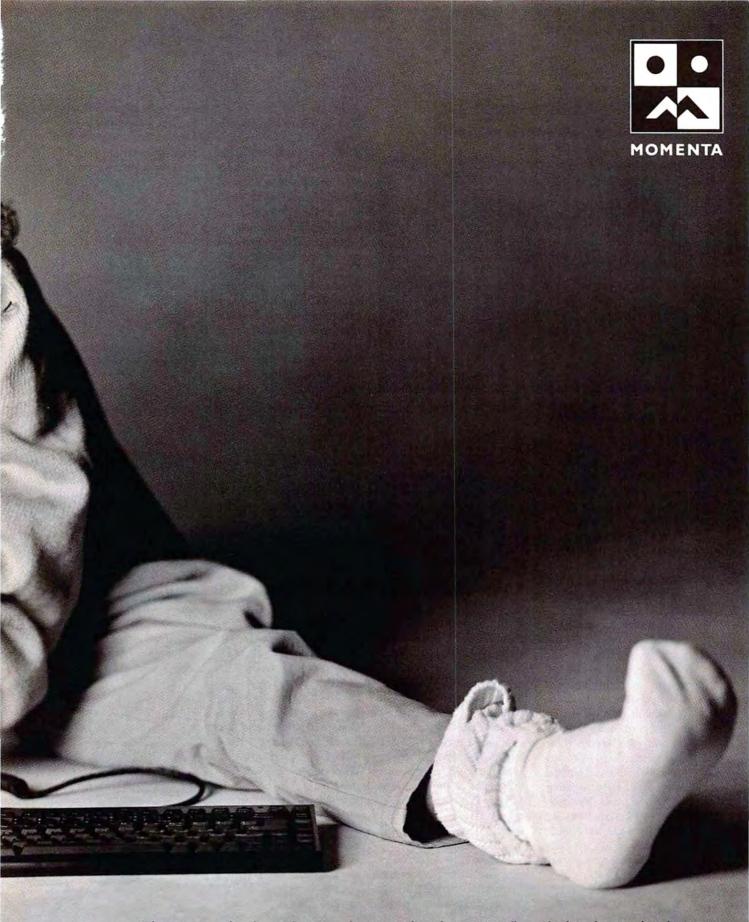




Circle 84 on reader service card



Finally a computer designed to work on a two-legged desk. Introducing the Momenta™ Computer. A computer that lets you write directly on the screen. Or you can use the keyboard. It's a fully-compatible 386 DOS™/Windows™



pentop computer that's equipped with a wide range of pen-specific software, as well as a built-in fax (send and receive).

The Momenta Computer. Technology has finally caught up with the way you work. To learn more, call 1-800-MOMENTA.

DOS AND WINDOWS ARE TRADEMARKS OF MICROSOFT CORPORATION. MOMENTA IS A TRADEMARK OF MOMENTA INTERNATIONAL.

Circle 163 on reader service card

LANSpool 3.0, LANSpool Fax, Net SatisFaxtion 1.0

Print and Fax Servers From Intel



Intel's new networking suite gives your work group print and fax services with plenty of management extras.

Faxing is nothing more than remote printing, so sending a PC-based fax should be as easy as printing a document. That's the logic behind several Intel network products. LAN-Spool Fax is a simple send-only fax server that works with version 3.0 of the LAN-Spool print server utility, and Net SatisFaxtion is a high-end send/receive fax server.

LANSpool 3.0 is a major upgrade to Intel's popular print server utility. Not only does it control networked printer use, ordering print jobs in queues, but its LAN-Qview utility lets you view up to three print queues and reorder print jobs. Version 3.0 also adds printer diagnostics, support for Windows and multiple servers, and faster printing. LANSpool costs \$395 per server for NetWare 2.1x, \$595 for NetWare 3.1x, and \$595 for LAN Manager or LAN Server. The upgrade from any prior version is \$195.

LANSpool Fax is a software add-in to LANSpool that lets any user on a NetWare network send faxes using from one to eight shared Intel Satis-Faxtion boards. You can't receive faxes, but the utility costs only \$295 (for users who already own *LANSpool*), so you can afford to buy a separate fax machine for receiving and still spend less than you

would for most fax servers. With LANSpool Fax, you can pop up a 5K RAM-resident utility over your current application, redirect printer output to fax format, and send it off on the spot. You can set up timed faxes for later delivery and include logos and signatures.

Net SatisFaxtion can send and receive faxes over a network. This \$799 fax gateway supports all major networks. Net SatisFaxtion consumes 45K on each workstation (22K with expanded memory). It includes all the features of LAN-Spool Fax plus LaserJet II printer redirection, administrative queue management, and Windows support via the bundled Faxit for Windows from Alien Software.

You can pile on eight Intel SatisFaxtion boards per server, but unlike some fax gateways that support direct inward dialing and other routing techniques, Net SatisFaxtion
requires an operator to route
incoming faxes manually. The
operator can view the cover
sheet only, ensuring privacy.

—Eric Brown

IN BRIEF

LANSpool 3.0, LANSpool Fax 1.0, Net SatisFaxtion 1.0

Spool print server adds queue management and Windows support, while the LANSpool Fax and Net Satis-Faxtion servers are simple but comprehensive ways to share fax services.

Intel Corp. 5200 N.E. Elam Young Pkwy. Hillsboro, OR 97124 800/538-3373,

503/629-7354 Reader service no. 835

Dr. Halo IV Paint and Imaging Pack, Halo Desktop Imager, Halo F/X

A Low-Cost Way to Doctor Images

A picture may be worth a thousand words, but creating and managing that picture can cost thousands of dollars in software tools. Now Media Cybernetics offers three low-cost packages for image-capture and -manipulation.

Media's Dr. Halo IV Paint and Imaging Pack is five programs in one. You get the latest version of Dr. Halo—the popular DOS painting package—plus a screen capture utility, file viewer/converter, slide show module, and font editor, all for \$139. An introductory deal offered through year-end lets you trade in your existing paint package and get the entire set for \$49.

The file viewer lets you view a 24-bit color image on a normal 8-bit VGA display, print it, and save it as a PCX, TIFF, TGA, BMP, or Ventura Publisher IMG file. With the font editor, you can take any of Dr. Halo's 31 bit-mapped fonts and customize the characters—good for designing logos or display type for presentations and newsletters. You also get 24 scalable fonts.

If you're married to Windows and already have Windows Paint, you can get the rest of the Paint and Imaging Pack suite in Halo Desktop Imager. For \$139, you won't be getting a full-fledged image editor, but as with its DOS cousin, you can capture screens and convert files. You can also crop and size images, control contrast and sharpness, and adjust color values for 15 images at once.

Finally, the \$299 Halo F/X 1.2 fills in some gaps Halo

Desktop Imager leaves in the handling of black-and-white images. This DOS-based package puts an electronic darkroom at your fingertips, letting you scan in black-and-white photos and retouch them. —Daniel Tyman

IN BRIEF

Dr. Halo IV Paint and Imaging Pack, Halo Desktop Imager, Halo F/X

packages lets you create and manipulate images on the cheap.

Media Cybernetics, Inc.

8484 Georgia Ave. #200 Silver Spring, MD 20910 800/992-4256, 301/495-3305



Product support for your IBM or compatible.

CompuServe, the world's largest network of people with personal computers, is also the world's largest network of people with answers to your hardware and software questions.

Brains abound on CompuServe. You'll

find quick solutions and information from our thousands of forum members, some of whom have already had your problem, some of whom are the product developers themselves. Company decision-makers are online, too, discussing the next generation of products, and giving CompuServe members software updates ahead of everyone else, and before they hit the market.

Got a question? Got a problem? Get smart. And get some answers, from the many minds of CompuServe.

To join, see your computer dealer.

To order direct, or for more information, call us today.

CompuServe®800 848-8199

ObjectVision 2.0

That Not-So-Obscure Object of Data

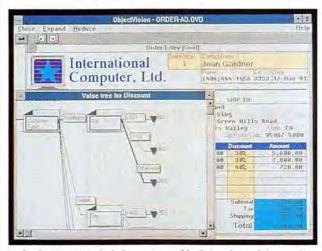
Despite all the wonderful forms you could create in ObjectVision 1.0, the first version of Borland's forms manager suffered from serious limitations. If you had to list multiple products in an order form, it was time to turn to a real data manager. Fortunately ObjectVision worked with dBASE, Paradox, and Btrieve files and could read data from any DDE-supporting Windows program.

Enter ObjectVision 2.0 with a new feature called a table object that you can insert into a form to see and print all the records in one data file that relate to one record in another. Now you have a place to put those multiple products in your order form.

Queries and reports are also more workable. You can create query forms that let you access only records you need. Previously you could print only one form at a time; now a single command lets you print forms sequentially for all the records in a data base. By adding table objects to your print form, you can create complex and varied reports.

There are now two kinds of decision trees, the graphic

tools for adding intelligence to ObjectVision fields. ObjectVision 1.0 introduced value trees—decision trees triggered by the contents, or value, of a field (IF this field is < 0 THEN...). Version 2.0 adds event trees (IF the mouse clicks on this field do...). Among their other capabilities event trees allow you to set up an application where clicking a button or changing the contents of a field



Borland's SE versions kick the price out of both Paradox and Quattro Pro with only moderate compromises in functionality.

IN BRIEF

ObjectVision 2.0

intelligent-forms package can now handle heavy-duty data chores while giving you more control over the look of your forms.

Borland Int'l, Inc. 1800 Green Hills Rd. Scotts Valley, CA 95066 800/331-0877, 408/438-8400

Reader service no. 833

brings up another form. Borland has improved the forms designer too, giving you finer grids to work with, color control, and the ability to set fonts for field values.

ObjectVision, which costs \$149.95, is still intended to support your other data management program, not to supplant it. But with version 2.0, you'll have fewer reasons to go elsewhere. ObjectVision 2.0 can run on any system with Windows. —Lincoln Spector

IBM PS/1 386SX

Built for Comfort, Not for Speed

f you bought IBM's original PS/1, you're probably reading the wrong magazine. IBM aimed that system at novice home users rather than PC World's savvy veterans, leaving out most features business users need and producing an underpowered AT with a clumsy upgrade path. Most home-office buyers opted instead for cheaper but better configurations from respectable compatibles makers.

But now Big Blue is back with a revamped PS/1 that promises much more power and expandability in home, home-office, and even small business roles at a more realistic cost. The PS/1 386SX comes in two flavors, both with a 16-MHz CPU, 2MB of memory, a mouse, a 2400-baud modem, and the minimalist 12-inch VGA monitor that's your only choice (it holds the PS/1's power supply).

The C42 model is identical to the existing color PS/1 except for the CPU and 40MB drive. You get the same software: DOS 4.01, a DOS shell, Microsoft Works, and start-up kits for two on-line services—the Prodigy-based PS/1 Users Club (with three free months) and Quantum-based Promenade. The machine lists for \$1699; IBM expects the street price to be \$1399.

The high-end B82 comes

with an 80MB drive in a taller; clunky-looking box but with two AT slots and an optional second hard drive. It features the same software bundle plus Windows 3.0 and the Windows Productivity Pack. This model lists for \$2199 but should sell for \$1799. Pop off the cover with its one-button

IN BRIEF

IBM PS/1 386SX

The homebody PS/1 gets 386SX power and a better upgrade path while retaining the Big Blue security blanket.

IBM

1133 Westchester Ave. Mail Drop 262 White Plains, NY 10604 800/426-3377

Reader service no. 826

release, and you can add an 80MB for \$1060 or a 129MB drive for \$1500. The credit card-style memory upgrades come in \$279 2MB and \$549 4MB versions.

But the PS/1's real appeal is not features but comfort level. Everything comes in a single box and zips together quickly, and once you've brought it home, you can depend on IBM. If you have questions, you can dial in to the on-line Users Club or speak directly to IBM support folks. If something breaks, you can exchange it, and IBM will have a replacement on its way to you via overnight service within 48 hours. While IBM still charges a premium, these safety net services should assure some happy homecomings for the PS/1 386SX. -Eric Bender









Do what you've always done before...

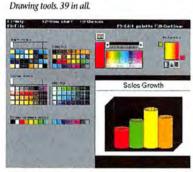
Twist it. Turn it.

From titles to footnotes. From colors to logos. Our global options keep it consistent.



FZ-Show chart F5-Mark F7-Spell/Text Acme Shoes Quarterly Sales Our company has sole Iltles/Footnotes Ctr1-7 Funtante: Ctrl-N X Axis Style Serie: Qua Quarter 4 39000 Loafers

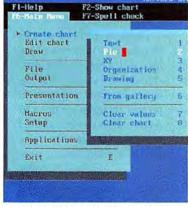
Pull-down menus: A new feature to get at the features. Easier than ever.



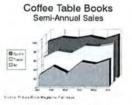
Choose from 32 color palettes. Then shade. Mix. Blend.



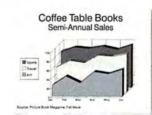
You enter the data, we'll make it look good. It's what you've known us for all along.



Look familiar? It should. It's Harvard Graphics.



What you see is what you get.



Yes, we have WYSIWYG.



verwhelming evidence that Harvard Graphics 3.0 is more than just another upgrade.

Our new DOS upgrade is loaded with features. Call 1-800-336-8360, Operator 760, for your own demo disk. And view the evidence yourself.



Power Launcher

Open Applications as You Wish on Your Windows Desktop

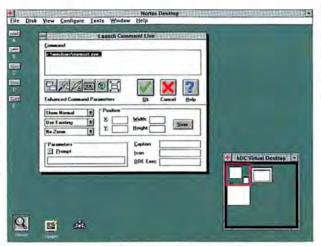
Following quickly on the heels of Norton's Desktop for Windows, hDC's Power Launcher is yet another utility aimed at enhancing Windows 3.0's menuing and program-launching capabilities. But the two packages take decidedly different approaches.

While the more expensive Norton program offers a grab bag of Windows extras, Power Launcher focuses on giving you control over when and how your Windows applications are loaded and run. The heart of Power Launcher is the Command Launcher, which is essentially an enhanced command line with a scrollable directory for selecting executable files. You also get pushbutton access to utilities for writing script files, recording keystrokes for macros, and setting windowing parameters such as window size and whether to load the program as an icon.

You'll find the program's menuing capabilities especially helpful if you have more applications than can be displayed conveniently with Windows' bundled icons. Power Launcher leads you through the construction of your own pulldown menus and submenus. The new menus, along with the program's utilities, are attached to a plus sign in the upper left corner of each Windows box and are accessible from any application.

Unlike Desktop for Windows or Windows itself, Power Launcher can launch batches of applications with a single command. You can, for example, create a menu item that will launch Word for Windows, Excel, and the Windows calculator, all sized and located just as you want them.

But Power Launcher's most interesting feature is the



Bringing order to your Windows desktop, Power Launcher gives you more control over how applications are loaded and run.

Virtual Desktop, which lets you switch between as many as nine full-screen applications by clicking on one of nine small boxes in the corner of your screen. The only problem is, the boxes are blank. Although box size is relative to the size of the program, the lack of labels makes it all too easy to forget which box represents which application.

Finally, an event scheduler helps automate certain types of tasks, essentially by writing a batch file that executes at a specified time. *Power Launcher* will carry a list price of \$99.95 but will be offered at an introductory price of \$79.95 through year-end.

-Patrick Marshall

IN BRIEF

Power Launcher

enhances the Program Manager by giving you control over when and how your applications are loaded and run.

hDC Computer Corp. 6742 185th Ave. NE Redmond, WA 98052 206/885-5550, 206/881-9770 (fax) Reader service no. 836

LapLink Pro 4.0

Linking the Extended Office

Business managers who spend more time out of the office than in need easy laptopto-PC communications. For many that has long meant LapLink. Now LapLink Proincludes a Windows-like interface with pulldown menus, mouse support, new file management features, and transparent communications functions that make staying in touch with your deskbound data less of a chore.

No longer are you restricted by the reach of your cable—the \$169.95 LapLink Pro provides full modem file transfer capabilities (an introductory price of \$149.95 is available through year-end). And using the modem is relatively easy. The program automatically identifies and con-

nects to the ports you and the recipient PC use. LapLink Pro's remote install feature even supports modem connections with users who don't have a copy of the executable file: Just a few keystrokes by the recipient, and he or she can receive, install and use LapLink Pro.

LapLink III's familiar split screen is retained, with the option of viewing tree displays of local and remote drives on the same screen at the same time. Want to go a little deeper? LapLink Pro's simplified file management lets you retain tree mode and look at subdirectory structures by opening a window below the tree. Pulldown menus ease navigation and make command selections more intuitive, while con-

text-sensitive help guides you through any sticky spots.

LapLink Pro speeds the transfer of data across phone lines with a compression algorithm that Traveling Software claims compacts text up to 30 percent and graphics up to 50 percent. Past versions allowed only one linked computer at a time to transfer files.

-Russell Glitman

IN BRIEF

LapLink Pro 4.0

This remote communication and file transfer software gains modem and mouse functionality at the same price as its predecessor.

Traveling Software 18702 N. Creek Pkwy. Bothell, WA 98011 800/678-6620, 206/483-8088

More eye-popping visuals from Harvard Graphics.



As you can see, Harvard Graphics* 3.0, the hot new DOS upgrade from Software Publishing Corporation, is a winner in everybody's book. Take, for instance, Software Digest* and the National Software Testing Lab.** In their highly regarded tests, Harvard Graphics 3.0 blew away not only all other DOS presentation programs, but the Windows* programs as well. Call and we'll send you a summary of their report. It's a real eye-opener.



Call 1-800-336-8360, Operator 769, for a copy of the report and a demo disk.

With Lotus 1-2-3 and more in the palm of your hand, HP gives you PC power to go.

At only 11 ounces, the new HP 95LX palmtop PC carries a lot of weight.

It measures just 6.3" x 3.4" x 1" (closed). And costs only \$699. Yet our new HP 95LX puts real PC power in your hand.

The Lotus 1-2-3 Release 2.2 is the real thing, since we created our palmtop PC in collaboration with Lotus Development Corporation. So it's easy to take your spreadsheets with you. Do "what ifs." Edit files. Attend meetings with all the latest figures in hand.



But the HP 95LX offers much more than spreadsheets. You can edit memos, and exchange



The optional Connectivity Pack makes our PC an extension of yours.

> information services such as CompuServe, Dow Jones News/Retrieval and electronic mail.

them with your desktop PC's word processor. Built-in organizer tools give you access to phone numbers and addresses. Let you schedule appointments and tasks. And set alarms.

One-key access to and between applications gets you where you want to be easily and quickly. And you can swap files with your desktop PC, using the optional Connectivity Pack. Or over phone lines via an optional modem.

A powerful HP financial calculator is built in, giving you easy access to a wide range of business functions. Data communication software lets you plug into remote

Add memory and applications with plug-in cards.

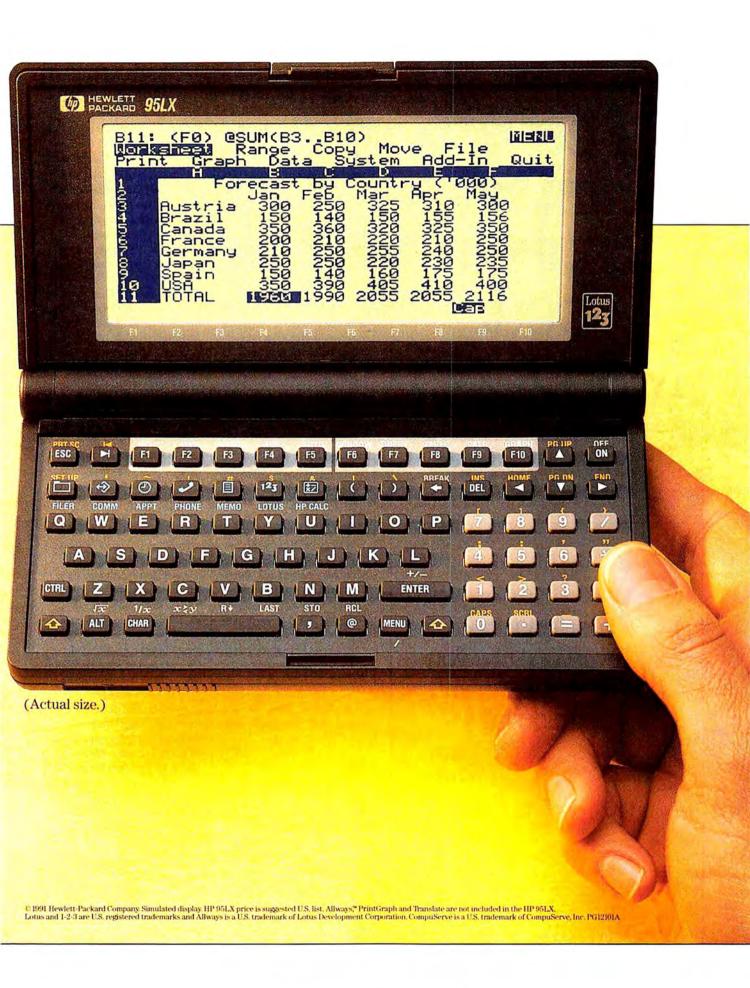
How did we get so much into so little? For one thing, we put all the applications in the 1-Mbyte ROM. Leaving most of the 512K built-in RAM for your files. A plug-in slot takes optional RAM and application software cards. And the two AA batteries give you 1 to 2 months of typical use.

A great way to evaluate its power is on your PC. Via our demo disk. Send us the coupon for your copy and product information. Or, if you can't wait, call 800-443-1254 to find the HP retailer nearest you.

You'll see that the HP 95LX is the way to go.

Yes, I'd like a demonstration of the HP 95LX palmtop PC's power. Send me your demo disk.* (Enclose \$5 check or money order, made out to Hewlett-Packard.)	Name
made out to Hewlett-Packard.) Thanks, Ljust want free product information. Mail to: Hewlett-Packard P.O. Box 997 Corvallis, OR 97339-0997	Title Company Address
Offer good in U.S. only and while supplies last. *5%-inch, 360-Kbyte, IBM-compatible disk. 718D	City/State/Zip Business Phone





People can't say enough about MS-DOS 5.

Microsoft

"...the one you and everyone else you know should finally upgrade to."

> Paul Somerson PC Computing July 1991 MS-DOS 5 Review

Microsoft

Paradox SE, Quattro Pro SE

Borland's Special Edition Bargains

Borland, the company that was built on good but inexpensive software, is at it again. Now you can get strippeddown versions of its best-selling Paradox and Quattro Profor under \$100 each. Both programs lack network support so appear bound for home and laptops.

Despite its \$69.95 price, Quattro Pro SE (for Special Edition) is still a very powerful spreadsheet program, with the full set of functions, data base tools, and hot-link capabilities that are found in the full-priced Quattro Pro 3.0. You can still move around your worksheets—and move your worksheets via your keyboard or mouse, creating simple or complex templates for handling and graphing your math and data.

But you probably won't need powerful presentation tools at home or for laptop analyses, and that's where Borland did most of its cutting. Gone is *Quattro Pro 3.0*'s interactive WYSIWYG display mode; if you want to see what a range looks like on paper, you must use the print-preview feature.

Also missing is the printto-fit feature, which scales a range to fit on a single page

IN BRIEF

Quattro Pro SE,

These reasonably complete, very reasonably priced versions have everything a home or laptop user might need but lack presentation and work group tools.

Borland Int'l

1800 Green Hills Rd. Scotts Valley, CA 95066 800/331-0877

Reader service no. 827

before printing it. And Quattro Pro SE gets by with seven rather than nine scalable font outlines. You'll also have to learn Quattro Pro. In what may be a simple piece of cost cutting, but might also be a decision inspired by attorneys, Quattro Pro does not sport the full product's optional 1-2-3—compatible menus and the ability to hot-key into Paradox.

Intended for the nonprogrammer, the \$99.95 Paradox SE contains many of the tools that helped make the Paradox data manager a recent PC World Best Buy, including the easy-to-use form and report designers and the famous query-by-example tool. With these features, you can easily set up a data base—relational or otherwise—enter data, pull out the information you're looking for, and print a clear, good-looking report.

But if you need to set up a data application for your work group, Paradox SE won't do at all. It runs applications written in the Paradox PAL language beyond recording simple macros, but you won't be able to make any, since the SE version doesn't support programming. Also missing are the tools that help nonprogrammers develop their own applications: These included the Personal Programmer code generator, the sample applications, and the Data Entry Toolkit library of PAL routines. And Paradox SE is strictly a one-person tool, with no provisions for managing data on a network.

Both *SE* programs come with revamped documentation that is intended for novice users who aren't familiar with spreadsheet or data base concepts.

-Lincoln Spector

Lexmark PPS II 2380, PPS II 2390

A Straight Path for the Paper Chase

If you need a printer for multipart forms and wide spreadsheets, IBM spin-off Lexmark offers a pair of reasonably priced dot matrixes. The 9-pin PPS II 2380 and the 24-pin PPS II 2390 sell for \$499 each in standard-carriage configurations and \$699 in wide-carriage. You'll find the 9-pin a bit faster, but the 24-pin offers more fonts and better letter quality and graphics printing.

Both printers feature a straight paper path, which reduces the chances of jamming or being off-register with forms. Both give you a variety of paper-handling choices, including a switchable push/pull tractor that can feed from the front, back, or bottom. With the push tractor, fanfold sheets tear off easily. To help with fanfold paper and perforated forms, paper feeds to the tearoff position. When the next job arrives, the first page is set to its first print position.

The 2380 and the 2390 include most other standard features. The 2380 offers 144-by-240-dpi graphics, while the 2390 can print the same files at 360-by-360-dpi. However, these resolutions can be reached only by using the maximum amount of buffer space. The 11K buffer on the 2380 and the 32K buffer on the 2390 can be expanded by 32K each, but that still doesn't leave much room for a big

IN BRIEF

Lexmark PPS II 2380, PPS II 2390

The first products from IBM's spin-off, Lexmark, are durable, reasonably priced 9- and 24-pin dot matrix printers.

Lexmark Int'l, Inc.

740 New Circle Rd. Lexington, KY 40511 800/537-2540

Reader service no. 832

graphics job.

The 2380 prints at about 279 characters per second in draft mode, the 2390 at about 180 cps. The 2390 offers you eight fonts—Presenter, Orator, Script, Prestige, Courier, Gothic, Draft, and FastDraft. The 2380 provides only the latter four.

Both printers boast an impressive 7000-hour mean time between failures, about 2000 hours higher than most of its competitors.

The printers ship with emulations for IBM Proprinters X24 and XL24 and Epsons LQ-850 and LQ-1050. You must contact your dealer for additional drivers or download them from the Lexmark bulletin board. Other options include a legal-sized paper tray and a stand to fit these 19.6-by-11.3-by-7.5-inch printers.

-Susan Lusty



This moderately priced dot matrix gives you a straight paper path, paper handling choices, and a long duty life, for difficult printing jobs.

"There's a first time for everything, even in the PC industry: Microsoft Corp.'s MS-DOS 5 actually lives up to its advanced billing."

David P. Chernicoff PC Week June 10, 1991

Microsoft

"With a Windows-like file manager, on-line help, more memory for applications, and the ability to load multiple applications, MS-DOS 5 is unquestionably the best DOS ever."

Scott Spanbauer PC World July 1991



"...if you're like most
Windows users, you
work with a mixture of
Windows and DOS
applications. In that
case run, don't walk, to
your software dealer
and buy the MS-DOS 5
upgrade kit immediately."

Paul Bonner PC Computing July 1991

Microsoft

"Transition to MS-DOS 5 is proving to be as painless as promised."

> Stuart J. Johnston InfoWorld July 29, 1991

Microsoft

Harvard Draw for Windows 1.0

Quick on the Draw

Presentation graphics programs are great for making snappy-looking charts and graphs, but their drawing tools are usually one step beyond Etch A Sketch. If you need to create a complex image such as a company logo, you need a sophisticated illustration package like Corel Draw, Micrografx Designer—or Harvard Draw for Windows.

HDW's main drawing card is speed. Software Publishing Corporation (makers of the leading presentation package, Harvard Graphics) claims its \$595 program is many times faster than the competition at redrawing complex images.

Draw's fast display skills mean you can do more work in preview mode (instead of bare-bones outline mode) and view colors, line widths, and fonts as you draw.

Users of Corel Draw or Designer should feel right at home with Harvard's iconbased interface. HDW comes with all the image-creation tools you'd expect in a highend illustration package, including Bézier curves and the ability to rotate text or align it along virtually any path.

A built-in auto-trace module lets you convert scanned images to vector drawings, and 16 levels of undo/redo give you wide latitude for changing your mind. You can display six editable views of each image, and thus see the entire image in one window while zooming in for detail work in several others.

For the less artistically inclined, *Harvard Draw* provides more than 1600 clip-art

IN BRIEF

Harvard Draw for Windows 1.0

-WINDOWS - Harvard

Draw combines speedy performance with sophisticated illustration tools.

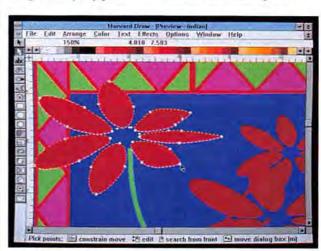
Software Publishing Corp.

3165 Kifer Rd. Santa Clara, CA 95051 408/986-8000

Reader service no. 829

images. You can also add text to drawings, choosing from 47 scalable Bitstream typefaces.

But you'll need to clear a wide swath on your hard disk. Installing the program files and fonts requires 10MB; adding clip art and other options brings required disk space to 28MB. —Daniel Tynan



Harvard Draw for Windows is so fast at drawing even complex images that you can do more work in preview mode instead of outline mode.

SolomoNotes

Adding Customized Client Information



Now you can attach data templates to any Solomon III data entry field, giving you 99 user-defined data fields with which to track information.

An add-on to the Solomon III high-end accounting package lets you track client-specific and vertical market data. With SolomoNotes, a relational information manager, you can attach to any Solomon III data entry field your own note that can hold any type of client information.

SolomoNotes data fields are displayed in pop-up windows called data templates. Templates are predefined for more than 500 Solomon III entry fields, and another 2000 Solomon III fields accept templates you define. Each template holds up to 99 user-defined data fields, enabling you to set up and track virtually any type of information.

For example, you can add a profile note to an employee ID file and then delete, move, or edit those note fields within the *SolomoNotes* templates. In addition to user-defined fields, *SolomoNotes* provides a 60K Comments field on every data template.

Once you create a new field in a SolomoNotes data template, its information is automatically available to Solomon III's Report & Graph Designer module, in which you can design custom reports that include both SolomoNotes and Solomon III accounting information.

SolomoNotes, which comes with a built-in calculator, runs as a memory-resident program. Optimal performance calls for a minimum 2MB of RAM, although only 640K is required. SolomoNotes also requires DOS 3.3 or higher and an 80286 or higher processor. Data is stored in DBF file format for access by dBASE and other data base programs. The price is \$795.

—Christine Whyte

IN BRIEF

SolomoNotes

This relational-informationmanager add-in to Solomon III lets you track client-specific and vertical market data in pop-up data templates.

Solomon Software

P.O. Box 414 Findlay, OH 45839 800/879-0444, 419/424-0422

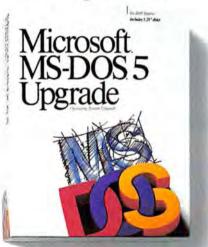
Reader service no. 838

And with Fast Tips, MS-DOS 5 puts yet another innovative feature at your fingertips. (206) 646-5103.

In addition to Microsoft's regular telephone support, MS-DOS*5 Upgrade users can take advantage of FastTips, a brand-new automated phone-in service. With three ways to answer the most common MS-DOS 5 Upgrade questions, 24 hours a day. You can choose to have your FastTips faxed to you, sent to you in the mail, or you can listen to FastTips over the phone.

Microsoft

It's what everyone's talking about.



No PC should be without it.

Microsoft^{*}

© 1991 Microsoft Corporation. All rights reserved. Printed in the U.S.A. Customers inside the 50 United States can call for additional information at 12061 546-5104. Outstomers in Canada, call (800) 553-9048. Outside the 50 Indied States and Canada, call (206) 506-6861. Afterword, the Microsoft lays and MS-DOS

Lights...Camer

Cast these stars of the silver screen in your next PC presentation. Sound, video, text, and graphics. All from Brown-Wagh.

Now featuring the most complete ensemble of PC-based multimedia stars— affordable and available today from Brown-Wagh Publishing.

Produce a multimedia blockbuster. Start by capturing some great-looking camera shots and video images through our VideoLinX:FrameBuffer™card. Then create action-packed animation and stunning graphics, synchronized for sound, with PC Animate Plus™.

Next, make all those pictures sing. Using Sound Blaster Pro's™ top-of-the-line stereo audio performance, arrange any combination of recorded voice, computerized speech, sound effects, MIDI music, Hi-Fi music, and CD-ROM audio.





If you are musically inclined, you can compose your own MIDI tunes with Sequencer Plus™. Or simply plug in pre-recorded tunes from our MusiClips™MIDI library. To add those arresting drum rolls, laughter, boos, or even bird calls, select from the real-life sounds in Audio Tracks™. To splice your recording or add special effects, use our feature-rich editing tool called Recording Studio Professional™.

Choreograph the entire script—incorporating sound, graphics, titles and video images into one dynamic desktop presentation—with Ask*Me 2000™on DOS, or Curtain Call™on Windows. For screening on television or VCR tape, use our VideoLinx card.

Multimedia fans all agree— these stars perform great by themselves and even better when they play together. Fully compatible with most popular software programs. Each a lead player in its own field. And priced for just about everyone.

Brown-Wagh brings these stars to the theater nearest you. Get a sneak preview with our "screen test diskette" for only \$5. Or go for the whole show. In either case, call us or your local reseller.

That's the ticket.

Broûn, Vagh

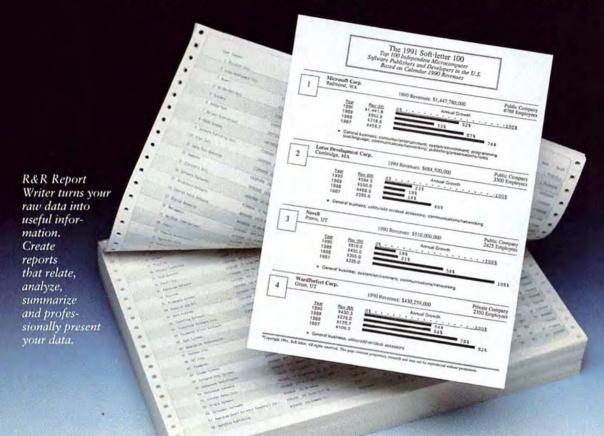
130-D Knowles Drive, Los Gatos, CA 95030 800-451-0900 (outside CA) • 408-378-3838 (inside CA) 408-378-3577 (fax)

All names of companies and products as they appear are the registered trademarks and/or trade names of the respective companies.

VideoLinX:

Circle 57 on reader service card

Turn your data into information.



You need R&R if you use: dBASE Paradox Fox Alpha Four Clipper 1-2-3 Quattro Pro

Data. It's the most valuable asset your business has. But are you using it effectively... to help you make decisi

effectively... to help you make decisions to grow and manage your business?

Now there's a way to get the most out of your data.

R&R Report Writer lets you take the data stored in your database files and turn it into comprehensive, easy-to-understand reports. Using these reports, you'll be better able to analyze trends in your business, make informed decisions and increase your overall effectiveness.

Unlike your database manager, R&R Report Writer lets you create sophisticated reports without having to write a











single line of code. In fact, you don't have to know that much about databases to generate even complex reports. With intuitive Lotus-like menus and instant online help, you'll be creating reports soon after opening the package. Best of all, R&R uses different fonts so you can present your data with professional-quality output every time.

Join more than 100,000 others who, like PC World, say R&R is "the undisputed reporting champ". For just \$249, you, too, can start turning data into information. See your dealer today.

Free Demo Disk!

Call today for our free demo disk. See how R&R Report Writer works with your database to create professional-quality reports in only minutes!

800-325-9035 Ext. 8411

R&R Report Writer

Concentric Data Systems, Inc.

110 Turnpike Road, Westborough, MA 01581 · Tel: 508-366-1122 · Fax: 508-366-2954

© 1991 Concentric Data Systems Inc. All product names are trademarks or registered trademarks of their respective owners.

UPDATE

New Versions of Your Favorite Products

IIP Plus



The IIP Plus improves on the IIP with a 16-MHz processor, faster parallel port, a 70-sheet standard tray, and quicker start-ups.

Mewlett-Packard is replacing its popular IIP personal printer with the IIP Plus. Essentially a PCL 4-equipped version of the newer PCL 5-equipped IIIP, the IIP Plus also has less standard memory—512K versus 1MB. Improvements include a 16-MHz processor on the controller instead of 10-MHz, a parallel port that HP claims is four times faster (but no serial port at all), a

70-sheet standard tray instead of a 50-sheet, and the ability to accept data and start processing a print job while the print engine is warming up. Last but not least, the IIP Plus lists for \$1249, about \$46 cheaper than the IIP's price. Hewlett-Packard Inquiries, 19310 Pruneridge Ave., Cupertino, CA 95014; 800/752-0900.

Reader service no. 840

Persugsion 2.0

Aldus's Persuasion 2.0 now costs \$99 if you trade up from Harvard Graphics, Lotus Freelance, PowerPoint, Applause II, Hollywood, or other eligible desktop presentation packages. To get the \$495 Persuasion 2.0 for this low price, see your reseller or contact the Aldus Fulfillment Center at 800/638-7058. Aldus Corp., 411 First Ave. S, Seattle, WA 98104-2871; 206/628-2320.

Reader service no. 842

Super PC-Kwik 4.1, PC-Kwik Power Pak 2.1

Super PC-Kwik 4.1 can speed your application by writing data to disk faster than ever before. As data stacks up in PC-Kwik's cache, the new PowerWrite algorithm writes it to disk in the most efficient possible order. The Power-Write feature is available in both the \$79.95 Super PC-Kwik 4.1 and the \$129.95 PC-Kwik Power Pak 2.1, which includes a memory manager, a

print spooler, and other utilities with the cache. Upgrades are \$19.95 for *PC-Kwik* users, \$29.95 for *PC-Kwik Power Pak* users, and \$39.95 for *PC-Kwik* users upgrading to the *Power Pak*. Multisoft, 15100 S.W. Koll Pkwy., Ste. L, Beaverton, OR 97006; 800/274-5945, 503/646-8267 (fax).

Reader service no. 841

OmniPage Professional 2.0, ReadRight

-WINDOWS - Caere's Omni-Page Professional and OCR Systems' ReadRight have been upgraded for improved scanning accuracy, the former under DOS and the latter under Windows 3.0. At \$995. OmniPage Professional 2.0 reads text at an accuracy rate of about 99.9 percent. It is also the first to support Hewlett-Packard's Accupage scanner utility and includes a WY-SIWYG text editor to help you at print time. The \$495 Read-Right also claims 99.9 percent accuracy. Its updates are free, those for OmniPage Professional 2.0 cost \$100 from 1.0. or \$150 for 386 owners. Caere Corp., 100 Cooper Ct., Los Gatos, CA 95030; 800/535-7226, 408/395-7000.

Reader service no. 843

OCR Systems, Inc., 1800 Byberry Rd. #1405, Huntingdon Valley, PA 19006; 800/ 233-4627, 215/938-7460.

Reader service no. 844

Stacker 2.0

Stac Electronics has upgraded its data compression software and coprocessor boards designed for 16-bit AT bus or Micro Channel PCs.

The company claims that version 2.0 of the Stacker automatic compression/decompression software is as much as 25 percent faster than past versions, while the boards speed compression/decompression by up to 30 percent. Either can more than double the storage available on your hard disk. Stacker 2.0 sells for \$149. The 8-bit board, 16-bit AT board, and MCA board sell for \$199, \$249, and \$299, respectively. Software upgrades are \$49. Stac Electronics, 5993 Avenida Encinas, Carlsbad, CA 92008; 800/522-7822, 619/431-7474.

Reader service no. 845

Takeover, Takeover Lite

The Takeover remote control/communications package has gained both speed and interface enhancements. The \$295 Takeover 2.0 features remote mouse support, faster screen refresh, and other graphics and performance enhancements. The \$179 Takeover Lite includes all the remote-control capabilities of the full package as well as basic data communication features-but it lacks the bundled Mirror III communications package. Lite's host and guest modules sell for \$99 each. Upgrades to Takeover 2.0 are \$75. SoftKlone Distributing Corp., 327 Office Plaza Dr. #100, Tallahassee, FL 32301; 800/634-8670, 904/ 877-9763 (fax).

Reader service no. 846

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

©



PROFESSIONAL LEVEL COMPUTERS

Custom built and integrated for you.

ACCOUNT EXECUTIVES

Trained professionals who will assist you in configuring your Professional Level Computer System. Your personal contact before, during and after your purchase.

Visa, MasterCard, AMEX.

Purchase Orders, C.O.D.,

Individual Financing

FLOPPY DRIVES

Chinon or TEAC

Company Leasing, Approved

SUPPORT

1-800, Toll-Free Technical support for the lifetime of your system. Trained technicians capable of troubleshooting, diagnosis and integration assistance. System Engineers also available.

WARRANTY

One year, on-site warranty through Texas Instruments, with 9- to 24-hour response time (the best in the industry!), highly trained on-site technicians, one year parts and labor, air shipment of replacement parts. Extended warranties also available.

GUARANTEE

30-Day Satisfaction Guarantee. No fine print. No penalties. No restocking fee. No shipping costs.

MOTHERBOARDS

286-16, 386SX-16, 386-SX20&25&33 Cache, 486-25&33 ISA Cache, 486-25&33 EISA Cache

ACCESSORIES

Mouse, Trackballs, FAX Cards, Modems, Keyboards

DIGITIZERS, PLOTTERS, SCANNERS

Summasketch, Kurta, Calcomp, Roland, HP, Houston Instruments, Mitsubishi

VIDEO CARDS

Diamond Speedstar (TSENG 4000), STB, Orchid, Artist, Vermont, Video 7, ATI, Cardinal

PRINTERS

Dot Matrix, Laser, Inkjet, Panasonic, Texas Instruments, Canon, NEC, QMS, Star

CONTROLLERS

Western Digital, Ultrastor, Adaptec, DPT, Always, IDE, ESDI, SCSI

Ç.

MONITORS

ACT, TWE, Viewsonic, Sony,
Seiko, Nanao, Mitsubishi, NEC

SOFTWARE

PAYMENT

Configured, installed, tested. Microsoft, DOS, Windows 3.0, Wordperfect, Lotus, Quarterdeck, Adobe, Corel, Aldus, Unix, Novell, SCO

NETWORKING

Novell, Unix, Xenix. Completely configured fileservers and workstations. Software loaded, hard drives compsurfed, network cards installed and tested, cabling prepared.

MEMORY

70ns or 80ns SIMM, SIP, DRAM 1MB - 64MB

HARD DRIVES

Seagate, Maxtor, Conner, Micropolis



THE POSSIBILITIES ARE ENDLESS



PROFESSIONAL LEVEL PERFORMANCE

Automated Computer Technology Corporation • 10849 Kinghurst, Houston, TX 77099 • (713) 568-1778

SUPERIOR SERVICE AND SUPPORT

Custom Performance Integrations...





ACT 386SX™-20 CACHE SYSTEM

- Intel 386SX-20MHz CPU
- 32K Cache Memory
- · 2MB RAM (exp. to 32MB)
- 1.2MB & 1.44MB Floppy Drives
- 89MB IDE Hard Drive (19ms)
- 2 Serial Ports/1 Parallel Port
- · AMI Bios
- · Enhanced 101 or 102 Keyboard
- · ACT SVGA Monitor (1024x768, .28mm d.p.)
- Super VGA Video Adapter w/512K
- Choice of Tower or Desktop Case
- Microsoft DOS 4.01
- · Free Delivery
- · Wide Variety of Custom Options

FREE Microsof Windows 3.0 and Serial Mouse

\$1,950



ACT 386[™]-33 CACHE SYSTEM

- Intel 80386-33MHz CPU
- 64K Cache Memory
- 4MB 80ns RAM
- 1.2MB & 1.44MB Floppy Drives
 Microsoft DOS 4.01
- 210MB IDE Hard Drive (15ms)
- 2 Serial Ports/1 Parallel Port
- AMI Bios
- ACT SVGA Monitor (1024x768, .28mm d.p.)
- Super VGA Video Adapter w/1MB
- · Choice of Tower or Desktop Case
- · Microsoft Windows 3.0
- · Microsoft Serial Mouse
- Free Delivery
- Enhanced 101 or 102 Keyboard
 Wide Variety of Custom Options

"ACT's 33MHz mini-tower is a class act all the way around. The ACT 386-33FC is a wellmade machine with easy drive access, good performance, and impressive attention to con-



struction detail. This computer is easy to recommend. December 25, 1990

\$2,795



ACT 486[™]-33 CACHE SYSTEM

- Intel 80486-33MHz CPU
- Cache: 128K (ISA) 256K (EISA)
- 4MB System RAM
- 1.2MB & 1.44MB Floppy Drives
- 210MB IDE Hard Drive (15ms)
- · 2 Serial Ports/1 Parallel Port
- · 8 ISA Slots or 8 EISA Slots
- Enhanced 101 or 102 Keyboard
- ACT SVGA Monitor (1024x768, .28mm d.p.)
- Super VGA Video Adapter w/1MB
- Choice of Tower or Desktop Case
- Microsoft DOS 4.01
- Microsoft Windows 3.0
- · Microsoft Serial Mouse
- · Free Delivery
- · Wide Variety of Custom Options

\$3,395

ISA 128K Cache

\$4,295

EISA 256K Cache Up to 64 MB



386SX™ NOTEBOOK LAPTOP

- Intel 386SX CPU
- · 6.9 pounds including battery
- 1MB System RAM (exp. to 5MB)
- · 1.44MB Floppy Drive
- · 20MB, 40MB, 60MB Conner HD Options
- · Backlit VGA Display w/external port
- Microsoft DOS 4.01, Microsoft Windows 3.0
- · Logitech Serial Mouse
- · Free Carrying Case and Delivery

SX-16\$2,295

20MB Hard Drive

SX-20 \$2,495

40MB Hard Drive



Automated Computer Technology Corporation

10849 Kinghurst, Houston, Texas 77099 Telephone (713) 568-1778 • FAX (713) 568-1779

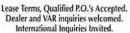
ACT Now Toll-Free 1-800-521-9237











operty of other companies. Prices and specifications are subject to change without notice. A.C.T. cannot be held are all trademarks of their respective corporations. Texas Instruments on-site service is available in most U.S. © 1991 Automated Computer Technology Corporation. All rights reserved. Other product names and trademarks used for comparison may be the property of responsible for errors in photography or typography. The equipment above is FCC class A or Class B approved, NOVELL, UNIX, XENIX, OS/2 and TI are all t and Canada locations. The numbers 386 and 486 are trademarks of Intel Corporation. MANLOVE 4402

ZyXEL Modems Priced From

Model U -1496B

Now you can communicate much faster—for much less money than you may have ever thought possible.

The new ZyXEL family of 14.4 Kbps high-speed universal modems give you more technology for a lower price than any other modem on the market.

Order the ZyXEL U-1496, and you'll get sophisticated features including:

- An easy-to-read 20 x 2 LCD display;
- Menu control;
- Line condition monitoring;
- · Support for 2 or 4-wire leased lines.

For a little less money, you can have the standalone Model U-1496E, shown below, with LED indicators and voice/data and answer/originate switches.



ZyXEL Model U-1496E

And for the highest possible performance at the lowest possible price, ZyXEL U-1496B PC Internal Card version is priced for all applications.

Low-cost, high-speed.

ZyXEL modems let you talk fast—with wide compatibility. How fast? Capabilities include:

- · DTE speeds up to 57.6 Kbps with CCITT V.42bis and MNP®5 data compression;
- · High-speed compatibility with V.32bis and V.32 and low-speed compatibility with V.22bis at

Model	U-1496	U-1496E	U-14968
Physical	External	External	internal
Full 40 character LCD Menu Tree			
Speed and Compatibility			
V.32bis at 14.4, 12.0, 7.2 Kbps		•	
V.32 at 9.6, 4.8 Kbps	•	•	
V.22bis/V.22/BELL 212A at 2.4, 1.2 Kbps	•	•	
V.21/BELL 103 at 300 bps			
V.33 at 14.4, 12.0 Kbps	•		
V.29 at 9.6, 7.2, 4.8 Kbps	•		
V.27ter at 4.8, 2.4 Kbps	•		
G3 FAX	•	•	•
EIA Class 2 FAX Standard			
Dynamic Online Fall back/forward		•	
Other Features			
V.42bis/V.42; MNP5/MNP4	•		•
Max. Throughput Possible(K); DTE	76.8	57.6	57.6
2-Wire Dial Up and Leased Line		•	•
4-Wire Leased and Dial Backup	•		
Line condition monitoring	•		
Read/Write/Reset Remote Configuration	•	•	•
Complete Diagnostic Capability	•	•	•
Synchronous Transmission Capability	•	•	
Password Protection and Call Back	•	•	•
Also Included			
Warranty, Parts and Labor (years)	5	5	5
Money Back (days)	30	30	30
	•	Standard	feature
		Can be u	pgraded
Special Introductory Price	\$650	\$469	5449

Talk

value.

"Subject to terms and conditions. Prices and model specifications are subject to change without notice. MNP is a registered trademark of Microcom. Inc. ZyXEL and U-MODEM are trademarks at ZyXEL Communications Corporation

List Price

2.4Kbps and V.22/BELL 212A at1.2Kbps;

- Industry standard V.42 and MNP4 error correction;
- G3 FAX send and receive capability, with PC FAX software.

The savings don't stop.

When you order from Zero One NetWorking, you'll also receive:

- A full 5-year parts and labor warranty;
- A 30-day money-back, no questions asked guarantee;*
- Overnight shipping;
- Complete customer service and technical support.



Call for Special Dealer Kit Savings

Talk to us today 800-255-4101





ZERO ONE NetWorking 4920 E. La Palma Ave., Anaheim CA. 92807 • Tel: 714-693-0333 Fax: 714-693-0705

The best way to improve your writing just got better!

Introducing RightWriter® for Windows®!

In today's competitive environment, good writing is good business. Good writing means profits for your organization, customer satisfaction, and career advancement. Now, with the new Right-Writer for Windows, there's no better way to improve your writing.

The most powerful way to improve your writing!

RightWriter for Windows is a powerful expert system that offers the following features:

- Applies over 6,000 rules of good writing
- Checks your grammar, style, word usage, punctuation, and more
- Rates your documents for readability and strength
- Offers options that allow you to customize your analyses and create an unlimited number of writing styles

The fastest way to improve your writing!

RightWriter is the preferred grammar and style checker because it's so versatile and easy to use! The new Windows version makes it the fastest way to write better. Here's how:

- Proofreads your documents just like a spell checker
- Impacts your writing with a click of the mouse
- Works with major Windows word processors
- Checks text from any Windows program through the Windows Clipboard

The best way to improve your writing!

Independent tests confirm that RightWriter catches significantly more errors, with a higher accuracy rate, than competing products. In addition, the industry recognizes RightWriter as the best grammar and style checker.



Write better! Write faster! Right now— Guaranteed!

RightWriter for Windows will improve your writing in 30 days—or your money back. Put RightWriter to work now! See your Local Dealer or Call Today!

1-800-992-0244

ext. RW50

DOS, Macintosh®, UNIX®, DeskMate®, and networked versions also available. See your local dealer or call Que Software at 800-992-0244 or 317-573-2500.



Right-Writer is a registered trademark of Que Software, a division of Macmillan Computer Publishing, Other products providing are trademarks or registered trademarks of their respective companies. Constraint 1991 Class Software

Circle 170 on reader service card

Attention All Your Windows

Introducing The First And Only dBASE

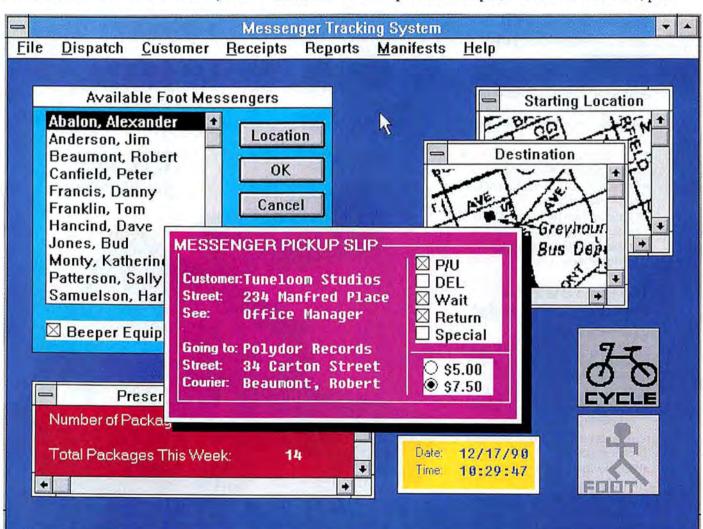
dBASE for Windows is here. Today.

It goes by the name of dBFast™ and it's the high-performance database and dBASE/X-Base language that is the fastest, smartest and easiest way for

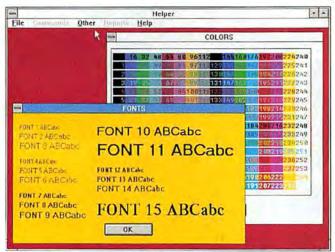


millions of users and developers to join the Windows revolution.

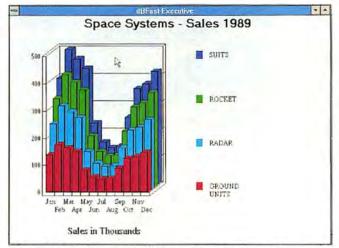
Graphical, colorful dBFast will bring new life to all of your existing dBASE programs. Liven them up with multiple, moveable windows, pull-



Database And Language For Windows.



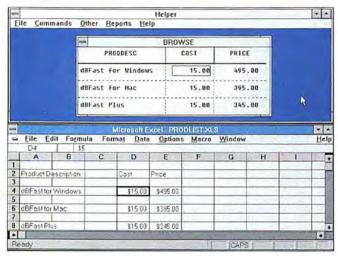
Your applications will really come to life with multiple colors and fonts.



dBFast lets you fully exploit the power of Windows.

down menus, check boxes, dialog boxes, radio buttons, push buttons and bitmap pictures.

dBFast also helps you create new dBASE programs quickly and easily. Unlike other Windows development systems that force you to learn a



With full DDE and DLL support, dBFast makes it easy for your applications to communicate with other Windows applications.

new language, dBFast allows dBASE, Fox and

Clipper developers to use the language they already know with more than 200 extensions and an interactive editor, compiler and linker. And full industry standard DDE and DLL protocols allow your

programs to Demo Disk

enough?

dBFast

communicate with other Windows applications.

So call 1-800-645-3003 and

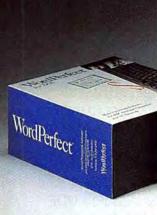
we'll rush you a free

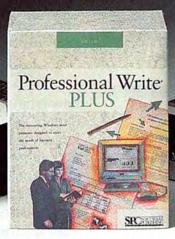
ISSOCIATES Software superior by design.

Demo Disk. Call right now. After all. haven't you waited long

D 1991 Computer Associates International, Inc., 711 Stewart Avenue, Garden City, NY 11530-4787. All trade names referenced are trademarks or registered trademarks of their respective companies. dBASE is a registered trademark of Ashton-Tate Corporation.

In this year's word processing we laid some old assumptions to rest.







In the recent PC Week Labs shootout, Professional Write PLUS for Windows not only stood up to the old standards. It walked all over them.

Judged to be superior in embedding graphics, updating data, and laying out columns, this **SHOOT-OUT** Software Publishing Corporation package lets you create a more compelling document faster.

But our unique communications features are what really got the judges talking. We won bonus points for our integrated E-mail. And we offer the ability to attach electronic "post-it-like" notes to documents.

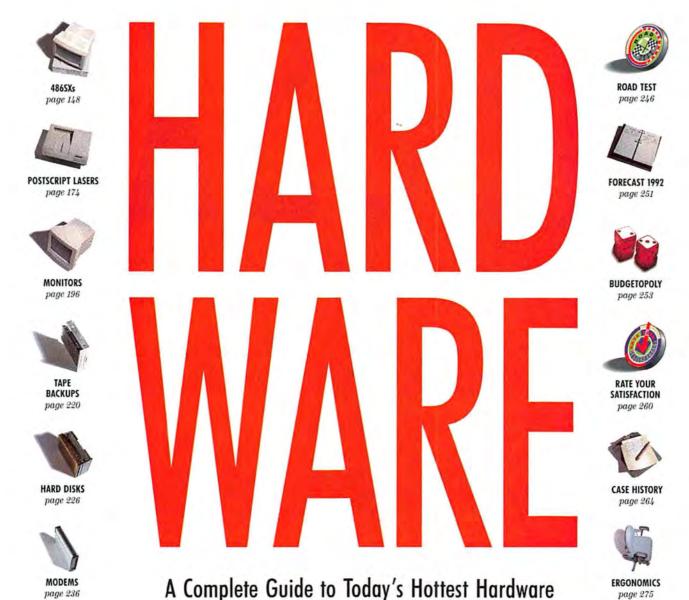
So, you can continue to work under old assumptions about what a word processor should do. Or you can work with Professional Write PLUS. And get on with the future.



We assume you'll want to judge for yourself. For a free demo disk, call 1-800-336-8360, Operator 569.

PC Week Shoot-Out for Document Processing, May 20, 1991. Products shown are WordPerfect* 5.1, and Microsoft Word for Windows 1.1. Professional Write PLUS is a trademark of Software Publishing Corporation. Windows is a trademark of Microsoft Corporation. © 1991 Software Publishing Corporation. All rights reserved.

COVER STORY SPECIAL HARDWARE ISSUE



t's all here—all the hardware you need to keep your office humming. You'll find affordable 486SX systems that spin *Windows* like a top, and high-speed modems that save you a bundle downloading files. Get the scoop on hard disks as big as 125MB and capacious QIC-80 tape backups that keep you from having to reinvent your business when your hard disk fails. Want to whip up stunning documents? Avoid font

mishaps with the fast, low-cost PostScript printers reviewed here. Finally, a dozen new big-screen monitors offer a better view of *Windows* than ever before, at painless prices. If you're not ready to buy, Amy Wohl's exciting predictions for the coming year's products and "Budgetopoly," a game that leads you through the steps involved in purchasing hardware, will give you further reason to procrastinate. Happy budgeting!

With the latest Intel engines, these 11 hot performers take the sting out of 486 prices. Are they the new business workstations of choice?

ever before have computer buyers faced so many choices, and never have there been so many great machines at great prices. The appearance of Intel's new 486SX chip (and AMD's 386/40) make the game more exciting, but you have to know what you're doing to make the right deals. Currently there are 14 different 32-bit platforms based on chips ranging from the 16-MHz 386SX to the 50-MHz 486DX. All are capable of running the next generation of 32-bit applications—at vastly different speeds and prices.

As long as you stay in the world of Intel processors, the odds are easy to figure: The faster the chip, the higher the price. Machines based on Intel's 486SX outperform 33-MHz 386DX systems—slightly—and generally sell for \$100 to \$500 more. However, AMD's introduction of the 40-MHz 386DX has dropped a wild card into the game. A speedy 386/40 system, which outperforms both the 386/33 and the 486SX, can be had for less than either if you're willing to buy from a smaller vendor. (For more price/performance comparisons of platforms, see "33-Something: Still Hot After All These Years.")

In any case, if you want that last tweak of speed without jumping to an expensive 486DX, and you prefer to buy an Intel CPU from an established company, the 486SX chip is very good news—especially if you're willing to shop carefully. Like its older sibling, the 486DX, the SX delivers the fastest possible performance. The speed comes from its ability to execute frequently used instructions in a single clock cycle and its built-in 8K memory cache (see "Inside the 486SX"). In fact, most users will find that their new 486SXs run programs such

as *Windows* so fast that trips to the coffee machine while the PC switches from *Word* to *Excel* are no longer necessary. These systems are even fast enough to make ideal servers for a small network.

The only bad news is that the 486SX lacks a working math coprocessor. Of course if you use a word processor or a data base or plan to have your 486SX run a network operating system, you don't need one. Even spreadsheets won't benefit from a coprocessor unless called upon to do financial and statistical calculations. However, if you rotate fonts with a program such as *Arts & Letters* or use a PostScript interpreter such as *Go Script*, you'll probably want a math chip—and if you use CAD/CAM applications you'll *need* one. That could mean a top-of-the-line 486DX system or, if you're on a tight budget, a fast 386DX with a math chip installed. You can add a math coprocessor to most 486SX systems, but it will cost you \$600. A full-fledged 486DX/25 costs only a couple of hundred more, and you can probably get a 386 (33 MHz or 40 MHz) with a coprocessor for a lot less.

If you're not sure whether the 486SX chip will be powerful enough, seven of the machines in this roundup enable you to upgrade to a faster CPU by swapping out a daughterboard or plugging in a new chip on the motherboard. Some of these machines include a CPU upgrade socket that should support "double-speed" chips that Intel will release sometime in the first half of 1992. This means that you don't need to invest a bundle now in order to

protect your options later.

SETH NOVOGRODSKY



Take Your Best Shot

Our tests of 20-MHz 486SX systems show no significant differences in performance on spreadsheets but large differences on data bases and other applications that frequently read from or write to the disk drive. How come? Look to the disk drives and controllers, which can increase price as well as performance. Of course if your applications include a lot of disk-intensive programs like a data base, it will be worth it. The ALR BusinessVEISA, with its high-performance caching ESDI disk controller, finishes the dBASE sort test in 6:55 and costs \$5600. The Tangent 420S

takes about 2½ minutes longer and costs \$2539, leaving you \$3000 to spend on a faster disk system, a second 486SX PC, or a Concorde flight to Paris—whichever you prefer.

For sheer speed, the ALR BusinessVEISA takes the gold. If saving money is your top priority, the Tri-Star Flash Cache is the lowball winner at a price even a miser could love. In the market for a server? The Everex Step 486SX/20 combines a tower case with above-average performance, outstanding expandability, and fine support. But for the best balance of price, performance, expandability, and service we

have no hesitation about recommending our Best Buy, AST's Premium II 486SX/20. Chances are, one of the machines in this roundup will meet your needs. If not, don't worry—many more are on the way.

Seth Novogrodsky is editor of the Berkeley Computing Bulletin. Michael Goodwin is an associate editor for PC World, and Karl Koessel is the technical editor.

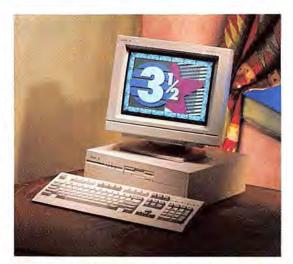
For more information about all products in this article, circle reader service no. 907.

AcerPower 486SX

PROS: Fast, huge RAM capacity, two-year warranty, Windows included CONS: No central support

It's not easy to find high speed and reasonable price in one machine, but that's what the \$3464 AcerPower delivers. This speedster took second place in our benchmarks, and you can add a humongous 98MB of fast RAM. Also, if you outgrow the 486SX chip you can simply plug in a 25-or 33-MHz 486DX.

Ease of use is tops on this ISA machine, with its small footprint, front-mounted switches, and responsive keyboard. Better yet, it comes with a two-year warranty. However, Acer doesn't offer central support, and it doesn't require its dealers to maintain a dedicated support staff. Another drawback is that you can install only one 5½-inch drive—and if you do, it will fill up two bays. Still, if high speed, reasonable price, and a free copy of *Windows* sound good to you, you'll agree that the Acer-Power 486SX is one of the most appealing systems around.



The AcerPower 486SX flies like a racehorse and gives you an easy ride with its front-panel reset and snappy keyboard.



If the ALR BusinessVEISA 486ASX's \$5600 price doesn't scare you, its velocity might—this is the fastest 486SX we tested.

ALR BusinessVEISA 486ASX

PROS: Fastest in roundup, EISA bus, fine service and support **CONS:** Expensive

If you live for speed, ALR has your number. This EISA system took top performance honors on both disk-intensive and CPU-intensive applications, but there's a catch. The system gains much of its performance edge from a high-speed (and high-priced) caching ESDI disk controller, which brings the estimated street price to \$5600—one of the highest in the roundup. What's more, not many dealers were carrying this specially configured system as we went to press.

The BusinessVEISA's CPU is mounted on a daughterboard that you can swap out to install a faster CPU. And if you need help making that swap (or for any other reason), you'll be happy with ALR's reliable service and support. So if you need the fastest system on the block, and don't mind paying extra for it, the BusinessVEISA could be your dream come true.

Buying Smart

Buying a fast new machine that loads your applications in half the time is always a thrill, but the excitement wears off. At that point you'll be glad you paid attention to the mundane features that make the difference between agony and ecstasy: switches that are easy to reach, a keyboard that suits your typing style, a system that runs all your software without application errors, plenty of slots, and a friendly voice at the other end of the tech support line no matter when you call.



PERFORMANCE

Hot performance is a given with these 486SX

machines, but they still differ significantly. If you use a data base program such as dBASE, you'll benefit from a speedy hard drive and controller. Likewise, if you're doing desktop publishing or graphics-intensive CAD/CAM work, think about buying a fast video card with an onboard graphics coprocessor. Our top gun overall was ALR's premiumpriced BusinessVEISA—due primarily to its caching ESDI disk controller.



PRICE

We base our cost comparisons on street price,

and to make sure everyone is competing on a level playing field, we price every system in the same standard configuration: 4MB RAM, a 100MB to 200MB hard disk, color VGA monitor, single floppy, mouse, and DOS. (A few exceptions are noted in text.) For every machine (except those sold directly), our research staff calls at least three PC dealers in six major cities across the country and gets multiple price quotes. Results for each system are then

averaged. The champ of cheap: Tri-Star's \$2257 Flash Cache 486/20sx.



EXPANDABILITY

If you want to hook your computer to a network

as a workstation, you should be able to access the file server. That means you can probably get by with one internal and two externally accessible bays, which gives you room for a hard drive, a floppy drive, and a tape backup or CD ROM. For a stand-alone PC or a file server, you'll probably want at least one more bay for an additional hard drive.

Four free expansion slots are probably plenty for most users, but five are better. The ISA-based Everex Step 4865X/20 boasts the best slot-and-drive capacity here.

All these 486SX machines allow you to add a 487SX math coprocessor for around \$600, and most allow you to upgrade the CPU simply by plugging in a faster chip or swapping out a daughterboard. Most should also support Intel's "double-speed" chips due in the first half of 1992, which boost system performance by running internally at twice the system's speed. Given the pace of technological advances, an upgradable CPU is cheap insurance against obsolescence.



SERVICE AND SUPPORT

At a minimum, all machines should come with

a one-year warranty and a telephone support line. Some manufacturers go well beyond that.

We test technical support by calling central support numbers, asking three questions of varying difficulty, and rating the responses on promptness, courtesy, and accuracy. Then we factor in any support extras like free on-site service, toll-free phone support, fax lines, and so on. We rate dealer support by looking at the vendor's policies on dealer training, inventory, and support staff. American Mitac and Tri-Star tie for top service and support.



FAST RAM

Multitasking with Windows and OS/2 de-

mands large amounts of RAM, and fast RAM (which runs at the same speed as the CPU) gives you the best performance. All these 486SX machines can accommodate at least 32MB of fast RAM, and since only UNIX or NetWare 386 and a large network currently take advantage of anything over 16MB, they all win four-star ratings. But if you really want to plan for the future, the greater the capacity for RAM expansion, the better. The Reply's 128MB ceiling is high enough to make air-line pilots nervous.



DESIGN AND CONSTRUCTION

Ease of use is subjective,

but there are some universal dos and don'ts. Be sure the keyboard is comfortable and the monitor easy on your eyes. If noise is a problem for you, listen before you buy. The power switch, reset button, and floppy drives should all be easily accessible. Getting under the hood shouldn't take a box full of tools. To make sure your system will work with the usual software and peripherals, we run these systems through tough compatibility tests. Dell's PowerLine 420DE took top design honors and Reply's Model 32 486SX/20 won a close second.

AST Premium II 486SX/20

PROS: Fast, easy-open case, strong service and support

CONS: Clickless keyboard



The \$3841 AST Premium II gives you everything a demanding user needs and doesn't cost an arm and a leg. Fleet and reasonably priced, it boasts a small footprint, thoughtful ergonomics, plenty of bays and slots, and a

210MB drive. For easy upgrades, the Premium II mounts its CPU on a daughterboard, which plugs into one of three special 32-bit slots.

When the time comes to go under the hood, you won't have to use a screwdriver to open the Premium II's case. And should you need the manual, you'll find it well organized and peppered with diagrams. The Premium II also provides a fine support package, including a toll-free tech support line and optional on-site service. In fact, aside from a more responsive keyboard, it's hard to think of any way to improve this impressive Best Buy.



Balance is everything when buying a system. AST's Premium II is neither the fastest nor the cheapest, but it is the Best Buy.



Expandable and ergonomically exquisite, the Dell PowerLine might have earned a Best Buy if it cost less.

Dell PowerLine 420DE

PROS: Fast, EISA bus, easy-open case, superb service policies

CONS: Problematic phone support

Dell's EISA-based PowerLine 420DE is impressively fast—placing second in both *dBASE* and *1-2-3* tests—and comes with a generous assortment of slots and bays and an upgradable CPU. Its outstanding ergonomics include a "SmartVu" LED diagnostic display that could save you a lot of pain if something goes wrong.

Dell has a reputation for excellent service and support. It gives you a year of on-site service, seven-day-a-week phone support, and a four-day repair turnaround. This time, though, when we made our test calls we found a disturbing slump in Dell's usually excellent support quality: Once we were put on hold for 10 minutes; twice we had to leave a message; and once it took a technician 18 business hours to call us back. In any case, the PowerLine 420DE's speed, expansion capacity, EISA bus, and ease of use make it one of the best deals here.

Everex Step 486SX/20

PROS: Excellent drive and slot capacity, Windows included

CONS: Large size

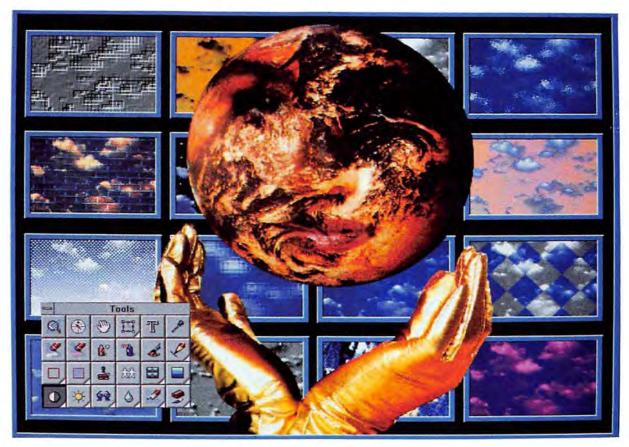
If you're looking for a low-cost file server, the \$3454 Everex Step 486SX/20 tower fits the bill. With a 250-watt power supply and six drive bays, it gives you tremendous flexibility in choosing storage options, and upgrading the CPU is as easy as snapping in a new CPU board. Nor is the Step locked in as a server: You can also buy it in a desktop case.

The bays are easy to reach near the top of the chassis, and the power switch and reset button are convenient, too. LED diagnostics make troubleshooting easier, and tech support is available 12 hours a day, though you'll have to pay for the long-distance call. If you *still* can't solve a problem, the system comes with a one-year on-site service contract. The Step is a smart choice for anyone who needs plenty of elbowroom for expansion boards and data storage, which includes anyone with a LAN server in his or her buving plans.



Everex's mighty tower is a Step in the right direction. With its super drive capacity, it makes sense as a network server.

Publisher's Printerush Image Processing



Produce photographic quality black & white, gray scale, and 24 bit color images.

MORE THAN JUST A PAINT PROGRAM—Publisher's
Paintbrush® brings the image processing tools of a professional photo lab into an easy to use Windows™ 3.0 application. Give your desktop publishing, business presentation, and graphic design projects stunning visual impact.

"Publisher's Paintbrush 2.0 may be the only graphics editor and paint tool you'll ever need." PC World May 1991

Powerful image processing filters automate color correction and image enhancement. Use them to sharpen resolution, adjust brightness and contrast, blend, layer, and equalize scanned images. Add creative flair with 24 custom filters that include motion blur, embossing and texture effects. Multi-level

zooms let you move from precise retouching to editing larger than screen size images. Manipulate multiple images at the same time. Control your flatbed or hand scanner from within Publisher's Paintbrush. A unique prescan feature saves you time and memory. Precise closed loop scanner and printer calibration ensures realistic output. Extensive file format support includes PCX, TIF, GIF, TGA, BMP, EPS', and more.

"If you've looked longingly at the Mac's bevy of 24 bit color editors...your wait is over." PC Magazine August 1991

True color image processing for Windows is shipping now. Available TODAY at your favorite software dealer. Call now for more information!

1-800-444-4780



© 1991 ZSoft Corporation

*EPS file support is write only. System Requirements. Microsoft Windows™ 3.0 or higher, Windows-capable computer with a hard disk display adapter and drawing device. Publisher's Painthrush is a registered trademark of ZSoft Corporation. Windows is a trademark of Microsoft Corporation.

ZSoft

To update, send \$75 (add \$4.90 shipping/handling) and your original Publisher's Paintbrush program disk to: Z500 tlpdate, Dept. 27., 450 Franklin RB, Jase 100, Marrisk A. 63 0067, Sportly 525 for 35° disk. GA residents add (3%) sales tax. Canadian customers add \$15.90 for air shipping. Outside N. América, add \$15.90 for surface shipping, \$24.90 via air. Payment in U.S. burds by check, money order, VISA, MC or AX. Ulpgrades from all ZSoft PAINT programs available, call for deals. (404) 428-0008.

esign CAD 2D. Like Leonardo da Vinci's concept for a rotary blade aircraft, it was ahead of it s time. Not only in technology, but also in cost and value.

DesignCAD 2D is only \$349, and it has more and better features than the other CAD programs that cost \$3,000!

And, if you're ready for a three dimensional CAD program, there is the state-of-the-art DesignCAD 3D . . . for only \$399!

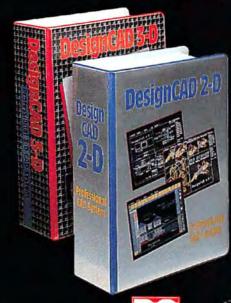
So, how come theirs cost several thousand dollars and ours costs a couple hundred? Go figure. (Why do you think the Mona Lisa is smiling like that?)

Your product designed with DesignCAD? Let us know, and maybe we'll put it in one of our ads.

For a free demo disk and 16 page color brochure,



European Office: 102 Rue La Fontaine F75016 Paris, France Phone 33-1-452-02791 FAX 33-1-452-06539









FEATURES EVALUATION

Look to the Future With a 486SX

This first batch of 486 systems shows a clear move toward upgradable CPUs: Just switch a chip or slide in a board and you'll have a more powerful 486. Another trend is more 32-bit slots and Windows bundles.

Yes No	80 E	養馬	AJODE POLIT	Step	Tem Ever	Moder	AT OF Milas	Mode	And Song	186	
Yes No	1 20		F 7	B 5	1 8 6	6190	3 8 5	613	420S	486/20sx	
	2	assist 120		Shep agoski zo	1 85	1 7		480		1	Hash
\		1865N TO BOOK OF THE SA		9/3	Tempo 4865M	Model 90 XP	£ \	Model 32 480	2 \		Flash Cache
andard features	1				/		* /	\	0	/	-
Street price1	\$3464	\$5600 ²	\$3841 ³	\$4359	\$3454	\$3195	\$6647*	\$3737	\$4055	\$2539	52
External memory cache	n/a	64K	n/a	n/a	256K	128K	n/a	256K	n/a	128K	6
EISA bus	0		0	•	0	0	0		0	0	(
Windows included		0	0	0			0	0	0		
pandability											
Free 32-bit slots	0	3	25	6	0	0	3	4	5	0	
Free 16-bit slots	4	1	2	0	5	5	0	0	0	5	
Free 8-bit slots	0	0	1	0	1	1	0	0	0	0	
Accessible/internal drive bays	4/0	3/1	3/2	3/2	4/2	3/1	3/1	3/1	3/2	3/1	3
Largest hard disk option	338MB	1.26GB	210MB	650MB	1.6GB	360MB	1.2GB	660MB	1.2GB	1.2GB	1.2
Upgradable CPU	•		•	•		0	•	0	•	0	(
Fast-RAM capacity	98MB	49MB	80MB	48MB	64MB	32MB	32MB	64MB	128MB	64MB	32
Accepts standard SIMMs	•	•		•	•	•	•	•		•	
esign and construction								To the	7		
Switchless setup	•				•		•				
Setup utility in ROM	•				•	•	0				
Compact footprint	•				0	0	0	•	•		-
Tilt-and-swivel monitor	•			•	•	•	•		•		
Front panel on/off switch	•	•		•	•	0	•		•	0	
Parallel/serial/mouse ports	1/2/1	1/1/1	1/2/1	1/2/1	1/2/0	1/2/0	1/2/1	1/2/1	3/2/1	1/2/0	1/
rvice and support											
Warranty (months)	24	12	12	12	12	12	12	12	12	12	2
On-site service available	06	06	6			•7	9 ⁶		0		
Turnaround policy	5 days	72 hours	1-3days ⁸	96 hours	48 hours	48 hours	0	72 hours	72 hours	48 hours	72 h
Free unlimited support	0	•		•			0	•	•		
Vendor support											
Central support/toll-free	010	0/0	0/8	0/0	0/0	0/0	0/0	0/0	0/0	0/0	
Daily support (hours)	0	9	11	14	12	12	0	8	11.5	8.5	1
Weekend support	0	0		•	0	0	0	0	0	0	
Electronic BBS/fax	0/0	0/0	0/0	0/0	0/0	0/0	010	0/0	0/0	0/0	
Vendor-to-dealer support											
Dedicated support staff required	0	0	0	0	0	0	•	0	0	0	(
Support staff training required	•	0		0	0	0		0	0	0	(
Dedicated support line for dealers	•	•		0	•			0	0	•	(
Inventory and parts requirement			0	0	0	0		0	0	0	(

¹ Except as noted, price based on 4MB RAM, 100MB to 200MB hard drive, 1.2MB 5½-inch or 1.44MB 3½-inch floppy drive, VGA and color monitor, one parallel and two serial ports or one serial and one mouse port, 101-key keyboard, mouse, and DOS 5.0. If vendor doesn't offer a mouse, we add \$99 to the street price to represent the cost of a basic Microsoft Mouse.

² Estimated street price.

³ With 210MB drive.

⁴ With 80MB hard drive and XGA graphics.

⁵ Cupid slots.

⁶ Extra-cost option.

⁷ Three months only.

⁸Through service center; 7–10 days through AST.

Everex Tempo 486SX/20

PROS: Inexpensive, good support, Windows included **CONS:** Power switch hard to reach, no CPU upgrade

The \$3195 Everex Tempo has a lot in common with its bigger (and more expensive) brother, including respectable performance scores, especially on *Windows*. The main differences are a smaller (but by no means small) 32MB fast-RAM limit, no CPU upgrade path, no diagnostic display, two fewer drive bays, and only three months of free on-site service (compared to the Step's full year).

Everex has included a sliding panel to protect the reset and speaker shut-off buttons, and the documentation is well written with lots of useful diagrams. You can even choose between a standard AT case or a smaller baby AT chassis. Our only complaint is the hard-to-reach power switch in the back right-hand corner of the machine. If you can live with a smaller complement of drives and without a CPU upgrade path, the \$250 savings and faster performance make this a tempting choice.



Everex's Tempo 486SX/20 isn't as expandable as the Step, but it's cheaper and faster and offers similar great service policies.



IBM's Model 90 XP 486 SX is superbly designed and has XGA graphics. Sadly, it runs like a 386 and is priced like a 486DX.

IBM PS/2 Model 90 XP 486 SX

PROS: XGA graphics, SCSI port, easy-open case

CONS: Slow, expensive

IBM's PS/2 Model 90 XP 486 SX was one of the first 486SX machines—and one of the most expensive. At \$6647 (with an 80MB hard drive), it's still quite pricey and one of the slowest in this roundup. The Model 90 clocked in below average on all our tests except 1-2-3 and Windows.

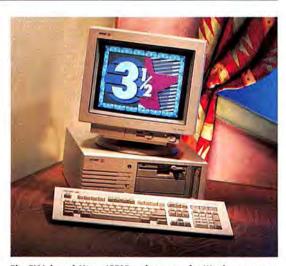
Nonetheless, the Model 90 delivers some significant benefits. Its Micro Channel bus allows easy configuration of peripherals, the SCSI port lets you attach a CD ROM drive or a chain of multiple hard drives, the easy-open case is a pleasure, and the keyboard has that unmistakable IBM feel. Furthermore, the XGA graphics make presentations look terrific. IBM doesn't offer direct technical support, though it does require its dealers to meet stringent support standards. Still, given the Model 90's high price and modest disk system, you'll find better values elsewhere in this roundup.

Mitac 4270E

PROS: Good price, excellent support, good Windows performance, EISA bus **CONS:** No CPU upgrade, only four free slots

Of the three EISA machines in this roundup, the Mitac 4270E boasts the lowest price: \$3737. And while its overall performance was only average, the 4270E raced into first place on our *Windows* benchmark. Design and engineering are impressive too: Both the reset button and the power switch are at the front of the machine, and the keyboard is first-rate. In fact, this impressive system has only two real drawbacks—lack of a CPU upgrade path and a slightly stingy free-slot count.

The 4270E comes with a free one-year on-site service contract and a toll-free number for tech support. Moreover, we were impressed with the techies' friendly, helpful attitude. If you need a good EISA machine with superior support and a nice price, this is it, especially if you spend a lot of time in *Windows*.



The EISA-based Mitac 4270E makes sense for Windows users looking for service and support plus friendly design.

Open new windows with TI microLaser™ printers.



And get powerful fonts and graphics, ease of use and more speed than ever.

By now you've heard how fast and easy Microsoft® Windows™ makes it to tap all that PC power you've got on your desk.

Well now there's an affordable, easy way to put that power on paper — microLaser from Texas Instruments.

Right out of the box, microLaser comes with what you need to print the dazzling pages of text and graphics you've dreamed of.

Just plug it in and go. POSTSCRIPT

That's because microLaser PS models come with PostScript® software from Adobe® and the memory it takes to use it. Plus you get your choice of either 17 or 35 scalable fonts, starting at just \$1,399*.

New model. More speed. Same price.

When it comes to print speed, the new microLaser Plus zips along at 9 ppm. If you need a shared printer solution, turn to the 16 ppm microLaser XL.

If all that isn't enough, just look at what else you get with microLaser. It's the smallest printer in its class. It handles more paper and envelopes in more ways. And it supports more than 4,000 software packages, including your Windows applications.

So when you add it all up, you'll understand why the power of your ideas needs the power, convenience and economy of microLaser. Let microLaser open new windows for you.

For the name of the nearest dealer, call 1-800-527-3500.



*TI suggested retail price. (Dealer prices may vary.) microLaser is a trademark of Texas Instruments Incorporated. Microsoft is a registered trademark and Windows is a trademark of Microsoft Corporation. Adobe, PostScript and the PostScript logo are registered trademarks of Adobe Systems, Inc. © 1991 TI 71860



Our new 40 to 120MB portable hard drives are on the move.

Now, wherever you go, take advantage of these great Mobile Disk features.

Snap on a hard drive in three minutes. You don't need tools. You don't have to open the computer. Simply plug Mobile Disk into any portable or PC parallel printer port and plug your printer into Mobile Disk. The software configures itself, and you're ready to go.

Small and sturdy. Mobile Disk is so durable and light, you can carry it all day and hardly notice it's there.

Carry all your data with you. You'll always have the right files, programs, and fonts at the right time. Take your files home,

to your portable, or down the hall. Why carry files on floppies, when you can take your whole work environment with you?

Grows with you. Add 40, 80, or 120 megabytes of data storage as you need it. Connect up to four drives for maximum storage. It's quick and easy.

Easy backup. Copy critical files to Mobile Disk, or back up an internal hard drive without learning new software. Protect your data from fire or damage. Lock it up, safely.



For a limited time, you can order Mobile Disk 40 for just \$399. Call today to order, or for more information:

1-800-821-2151

SYSGEN

Sysgen inc 556 Gdraftar Drive, Milptas, CA 95035
Sysgen is a registered trademark, and Mobile Disk is a trademark of Sysgen, Inc.
Promotoral other ends December 31, 1991 3399 price includes drive, cable, power supply, and documentation. All Sysgen products are covered by a 12 month warranty.

20-MHz/25-MHz 486SXs: Best of the Rest

The 486SXs just keep on coming. Here's an up-to-the-minute listing of the systems that arrived too late for review—including a comparative rundown of vital statistics.

Name	List price ¹	Fast- RAM capacity	32-bit slots free	16-bit slots free	8-bit slots free	Drive bays	Compact footprint	Warranty (months)	On-site
ALR BusinessStation 486ASX Model 200-DMA	\$4667	33MB	2	/1	0	3	Y	12	Y
ALR MPS 486ASX Model 200-5	\$6192	17MB	2	3	0	5	N	12	Y
ALR PowerFlex 486ASX	\$4716	5MB	0	6	1	4	N	12	Y
BLK 486SX/20	\$2745	32MB	0	4	2	5	N	12	Υ
Copam 486SXB/20	\$3459	16MB	0	5	0	4	Υ	12	Y
Eltech Model 4200	\$2179	32MB	0	5	0	5	Y	12	Y
Hewlett-Packard	\$6767	64MB	4	0	0	4	N	12	Y
Hyundai 486SX/20	\$4090	64MB	0	6	0	3	Y	18	Y
Memorex Telex Model 7480	\$6520	64MB	4	0	0	4	N	12	Y
NCR 3335 ²	\$6043	128MB	4	0	0	3	Y	12	Y
NEC PowerMale 486SX/20e	3	64MB	5	0	0	5	N	12	N
Northgate 486SX/20MHz	\$2899	32MB	0	4	2	5	N	12	Y
Packard Bell 486SX	\$3394	32MB	0	4	0	4	3	12	Y
Samsung DeskMaster 486S/20	\$3244	32MB	0	4	0	5	Y	12	Y
Swan Technologies 486SX	\$2695	32MB	1	4	1	4	Y	24	Y
Twinhead Superset 600/420C Model 1050V	\$3759	32MB	0	4	0	4	Y	12	Y
Zenith Z-486SX/20	\$5799	32MB	3	0	0	3	Υ	12	Y
Zeos 486SX-20	\$2695	32MB	0	6	1	7	N	12	Y

Price based on 4MB-SMB RAM, 100MB or larger hard disk, at least one 1.2MB (or 1.44MB 31%-inch) floppy drive, VGA card and color VGA monitor, at least one parallel and two serial parts or one serial part and one mouse port, 101-key keyboard, mouse, and DOS 3.3 or later version. If the vendor doesn't offer a mouse, we added \$125 to the list price.

2 S-MHz system.

3 This information not available at press time.

WHERE TO BUY

Advanced Logic Research

9401 Jeronimo Irvine, CA 92718 800/444-4257. 714/581-6770

Reader service no. 758

Austin Computer

10300 Metric Blvd. Austin, TX 78758 512/339-7932 Reader service no. 808

Blackship Computer

2031 O'Toole Ave. San Jose, CA 95131 510/770-9300

Reader service no. 809

Copam USA

45875 Northport Loop E Fremont, CA 94538 510/623-8911 Reader service no. 810 **Eltech Research** 47266 Benicia St.

Fremont, CA 94538 415/438-0990

Reader service no. 811

Hewlett-Packard Customer Information

Center 19310 Pruneridge Ave. Cupertino, CA 95014 800/752-0900

Reader service no. 812

Hyundai Electronics America

Information Systems Division 166 Baypointe Pkwy. San Jose, CA 95134 408/473-9200 Reader service no. 813

Memorex Telex 6929 N. Lokewood

Ave.

Tulso, OK 74117 800/331-2623

Reader service no. 814

NCR Corp.

1700 S. Patterson Blvd. Dayton, OH 45479 800/225-5627, 800/637-2600

Reader service no. 815

NEC Technologies

Consumer Products Division 1414 Massachusetts Ave. Boxborough, MA 01719 800/632-4636 Reader service no. 816

Northgate **Computer Systems** 7075 Flying Cloud Dr. Eden Prairie, MN 55344

800/548-1993, 612/943-8338

Reader service no. 817

Packard Bell

9425 Canoga Ave. Chatsworth, CA 91311 818/773-4400, 818/773-9516

Reader service no. 818

Samsung Information Systems America

3655 N. First St. San Jose, CA 95134 800/624-8999 ext. 851

Reader service no. 819

Swan Technologies

3075 Research Dr. State College, PA 16801 814/238-1820 Reader service no. 820 Twinhead Corp.

1537 Centre Pointe Dr. Milpitas, CA 95035 800/545-8946

Reader service no. 821

Zenith Data Systems

2150 E. Lake Cook Rd. Buffalo Grove, IL 60089 800/553-0331

Reader service no. 822

Zeos Int'l

530 5th Ave. NW St. Paul, MN 55112 800/423-5891

Reader service no. 823

For more information about all products in this sidebar, circle reader service no. 909.



Reply's small-footprint PS/2 clone has a nice design and surprisingly generous expandability, but it's slow for the money.

Reply Model 32 486SX/20

PROS: Excellent design, plenty of free slots and bays, huge RAM capacity **CONS:** Slow disk performance despite high price

If a PS/2 looks good to you but you can't afford IBM's Model 90, take a look at Reply's \$4055 Micro Channel Model 32. The Reply's PS/2 compatibility is impressive; even the keyboard is indistinguishable from IBM's. Unfortunately the Model 32 lacks the IBM's XGA graphics and SCSI port, and it came in dead last overall in performance.

Its design is excellent, however: It has front-mounted power and reset buttons, a fine keyboard, and an easy-open chassis. And while the Model 32 boasts the smallest case in the roundup (only $5\frac{1}{2}$ inches high), it's surprisingly expandable and a snap to upgrade. Reply's dealers do not necessarily maintain a dedicated support staff, but you can get support directly from the company. So if you need a Micro Channel 486SX, and top speed is not a priority, the Reply can do the job for about \$2600 less than Big Blue.

Tangent 420S

PROS: Inexpensive, excellent support, Windows included CONS: Compatibility problems

You can take a Tangent 420S home for \$2539 and get a free copy of *Windows*. Still, the system's minuses outweigh its pluses: The power switch is hard to reach, and we ran into compatibility problems. For instance, we couldn't disable the COM1 port when we tried to install an internal modem (we finally had to remove the board). Nor was the documentation of much use. Finally, although typing "touch" is a personal matter, the keyboard was too mushy for our taste.

The Tangent is reasonably generous with slots and bays, and you get a year of free on-site service plus superb toll-free technical support—but that's just not enough to balance the books. Despite a power switch that's an arm's length away, the inability to disable COM1, and a soft keyboard, the Tangent is a real bargain—but not the best bargain in this roundup.



Hampered by design and compatibility problems, the Tangent's overall rank is bolstered by dynamite support and low price.



A fully configured 486 for only \$2257? You read it here first: The Tri-Star performs well and it's a bargain hunter's dream.

Tri-Star Flash Cache 486/20sx

PROS: Lowest price in roundup, excellent support

CONS: Inconsistent documentation

Tri-Star's Flash Cache 486/20sx boasts a rock-bottom price—only \$2257 including *Windows*—an outstanding capacity for boards and drives, a huge hard disk option, and an impressive service-and-support package. That's almost enough to put this small-footprint ISA system on the trail to a Best Buy, but its less than optimum performance on data bases shoots it from the saddle.

The keyboard is too mushy, the case could be easier to open, and the manual includes some mistakes. But the super support package includes a two-year warranty and a free one-year on-site service contract. Tri-Star also provides top-notch toll-free technical support 14 hours a day, and responses to our questions were first-rate. Despite its relatively slow performance on data bases, the pluses on this machine are so compelling that we're inclined to say: Go for it! ●



And when it comes to memory management, PC Magazine picked NETROOM over QEMM and all the rest.

Why? Because NET-ROOM gives you up to 576K more memory by relocating LANs, device drivers, and TSRs, not only into High-DOS <u>bet</u>-

ween 640K and 1Mb, but also into expanded or extended memory above 1Mb.

And, NETROOM is the only memory manager that runs on all PCs - 8088 through 80486. Not just with LANs, but even on stand-alone PCs!

That's why PC Magazine said "...it's a real winner...considering NETROOM's price and capabilities, you will find that there is no second choice."

Features:	NET- ROOM	QEMM	386 MAX
Windows 3.0 support	V	1	1
Special DOS 5 support	V		
Converts Ext. to Exp.*	V	~	1
Relocates to High-DOS	V	V	1
Relocates to LIM 3.2 Frame	V	1000	
Relocates to Expanded	V		
Relocates to Extended	V	200	
Works on 386/486	V	V	1
Works on 8088/286	V	No.	
Memory Analysis Utility	V		(A)

You'd think we'd leave good enough alone. But we made NETROOM even better. With special DOS 5 support like 286 expanded memory support, installation support through on-screen hot-key help, and more. Plus, with NETROOM

you get the essential memory analysis utility DISCOVER, a diagnostic tool that unveils the hidden potential of your PC!

QEMM users, don't despair. Just send us the title page from QEMM, or any memory manager manual, and you'll save 50% off the regular price of NETROOM.

But hurry, this is a limited time offer – and as you probably know, everyone loves a winner!

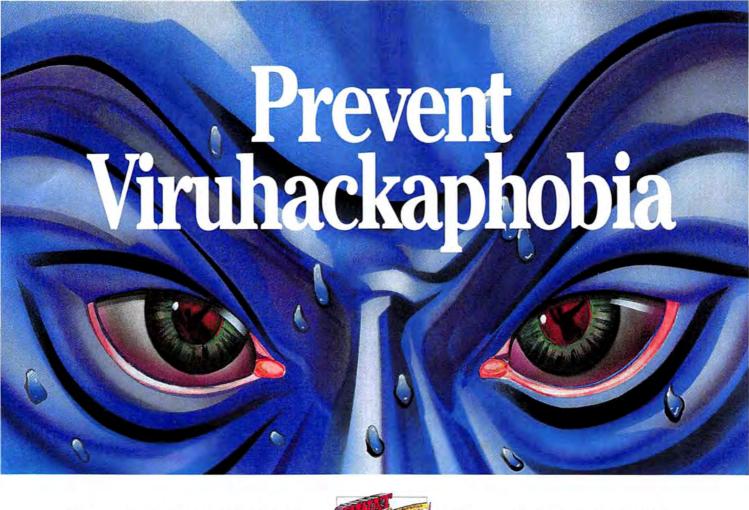
Call toll-free fax (718) 392-4212, or mail coupon to: HELIX SOFTWARE CO. – SPECIAL OFFER 47-09 30th St., L.I.C., N.Y. 11101 (718) 392-3100

1 1 user \$99 +\$5	se send me NETI	179+\$5 s&l
I'd li	ke to save 50% a	nd trade up
NETROOM (1 u	ser). I've enclose	the title pa
	nanager and \$49.5	
☐ Check ☐ M	C □ Visa Exp)
Acct. #		
Name		
Address		
City	State	Zip
Phone ().		



To support all of NETROOM's features on 8088/286 PCs you w

1991 Helix Software Co., Inc. NETROOM, DISCOVER, QEMM, and 386MAX are registered trademarks of their respective corpor



What was once laughed off as "pranksterism" has become a plague. The combined threat of viruses wreaking havoc on your company's PCs and probing hackers gaining access to sensitive data, can create Viruhackaphobia among even the most mild mannered PC managers. Relax... XTree Company has the cure. In fact, we wrote the book on it.

Destroy The Fearsome Beasts In Your PC With ViruSafe™

According to industry experts, "one out of every ten businesses has experienced a virus infection." While most anti-virus products simply scan for known virus signatures, ViruSafe actually looks for the signs of viruses attempting to replicate. Once a virus is spotted, ViruSafe wipes it out, whether it is known or unknown. By isolating the unknown virus in memory, ViruSafe studies it and learns its signature immediately, letting you automatically update the virus signature database. Then you can use ViruSafe to scan other disks or systems right away before an infection can spread, without waiting for a new signature from the software publisher. So, if you use a standalone PC, fear not. It's over for the beastly virus.

Prevent Mass Viruhackaphobia With ViruSafe/LAN™

ViruSafe/LAN has all the same great features of ViruSafe but adds new



warning systems for the network administrator. Also included are reporting features that keep the administrator up to date on the status of the virus check. And ViruSafe/LAN runs automatically, manually, or on a time scheduled basis. With ViruSafe/LAN, the fear of mass destruction is history.

Introducing AllSafe,[™] The End Of All Dastardly Doers

Just as evil and destructive as the viruses are those characters that attempt to invade your computer files without authorization. When you need a *complete* solution - protection against both viruses *and* unauthorized entry - choose AllSafe, with the superior virus protection of ViruSafe teamed with access control and security reporting. Flexible password options let you share or limit access to as much of your hard disk as you wish. You're in total control. AllSafe means the end of VIRUHACKAPHOBIA. And like all XTree Company products, they're easy to install and use. For more information, call **1-800-843-6888 ext. 537**. In Canada **416-866-8592**. Outside the U.S. **805-541-0604**.



Trademarks/Owner ViruSale, ViruSale/LAN and AtSale are trademarks of XTree Company/Executive Systems, Inc. ViruSale was developed by Diashim Microcomputers, Ltd. (1991 Executive Systems for, All rights reserved Specification subject to change without notice

WORLD TEST REPORT

Straight A's for Acer, ALR, and AST

Despite the modest 20-MHz clock rate, most of these 486SXs zip through business applications at top speedeven a bit faster than a flying 386 33 MHz.

WordPerfect					
ALR BusinessVEISA	1			42	
AcerPower 486SX				46	
Dell 420DE				50	
AST Premium II	BE	ST B	UY	51	
Everex Tempo	79			51	
Everex Step 486SX		400	- H &	52	
Mitac 4270E			di T	5	3
Tri-Star Flash Cache		G LE	110		55
IBM PS/2 90 XP		W.	no di	1	56
Tangent 420s	L.	1			56
Reply Model 32				-01/17	59
seconds	0	1-	29.5	-1	59

dbase IV				
ALR BusinessVEISA		355		
Dell 420DE		3	136	
AST Premium II	BEST BUY		438	
Everex Step 486SX	N'ES		451	
Everex Tempo			456	
Tri-Star Flash Cache		U-ST	467	
Mitac 4270E	The last of		48	3
IBM PS/2 90 XP	Mr. Two		50	1
AcerPower 486SX	Was also	4	7	20
Tangent 420s	5 5	150	3	553
Reply Model 32	The second			562
seconds	0	281	+	562

Windows 3.0	
Mitac 4270E	85
IBM PS/2 90 XP	91
ALR BusinessVEISA	92
Everex Tempo	94
AcerPower 486SX	95
Dell 420DE	96
AST Premium II	BEST BUY 97
Everex Step 486SX	97
Tri-Star Flash Cache	103
Tangent 420s	110
Reply Model 32	157
seconds	0 78.5 157

Methodology
We tested all the computers with 4MB RAM except the ALR BusinessVEISA, which had 5MB RAM. The systems' hard disk size ranged from 105MB to 210MB. We used the vendor's version of DOS.

WordPerfect

We reformat three WordPerfect 5.1 documents that vary in size from 5K to 55K. The files are text with some boldface and underlining; one document includes a TIFF image.

dBASE IV

With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

Windows 3.0

Timing begins and ends at the DOS prompt. We launch Windows along with a macro that loads Microsoft Excel with a financial worksheet and initiates a recalc. Then the macro loads Ami Pro along with a 50K document that contains a 500K TIFF image. Finally, the macro launches Micrografx Designer, opens a drawing, displays it on screen, and exits to DOS.

1-2-3

We load the application, followed by three separate worksheets (arithmetic, financial, and

1-2-3

ALR BusinessVEISA	W	579
Dell 420DE	PT-V-	579
Everex Tempo		579
Tri-Star Flash Cache		579
AST Premium II	BEST BUY	580
Everex Step 486SX		581
AcerPower 486SX		584
Mitac 4270E	En Jall Carl	586
IBM PS/2 90 XP	7 - 1 N	596
Tangent 420s	30 (30)	597
Reply Model 32	AND THE RES	602
seconds	0 301	603

scientific). We make various changes and run recalcs on each. Finally, we use the MAPS add-in from Management Advisory Services of Seattle to run a number of financial forecasts.

Starting with an orders table, we compare each record with an available stock table. The applica-

Paradox

ALR BusinessVEISA	314
AcerPower 486SX	358
AST Premium II	BEST BUY 525
Dell 420DE	594
Everex Tempo	605
Everex Step 486SX	609
Mitoc 4270E	617
Tri-Star Flash Cache	646
Tangent 420s	674
Reply Model 32	781
IBM PS/2 90 XP	842
seconds (421 84

tion finds the current price for the items and inserts the resulting record into an invoice table.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

WHERE TO BUY

AcerPower 486SX

Acer America 401 Charcot Ave. San Jose, CA 95131 800/733-2237 LIST PRICE: with 2MB RAM, 1.44MB floppy, one parallel and two serial ports, VGA, 101key keyboard, PS/2

mouse, DOS 5.0, Windows 3.0 \$2495; with 125MB hard disk \$2995; with 4MB RAM, 1.44MB floppy, one parallel and two serial ports, VGA, 101key keyboard \$3395; with 125MB hard disk \$3995 ACCESSORIES: 4MB RAM \$640, 1.2MB

floppy \$117, 200MB IDE hard disk \$1195, 14-inch 1024-by-768 noninterlaced color VGA display \$799 Reader service no. 757

ALR BusinessVEISA 486ASX

Advanced Logic Research, Inc.

9401 Jeronimo Irvine, CA 92718 800/444-4257 LIST PRICE: Model 101 with 1MB RAM, 1.2MB floppy, one parallel, one mouse, and one serial port, IDE, 101key keyboard \$2795; Model 150 with 5MB RAM, 1.2MB floppy, 150MB ESDI hard disk,

one parallel, one mouse, and one serial port, VGA, 101-key keyboard \$6195 ACCESSORIES: 1MB RAM \$149, 4MB RAM \$449; second floppy \$175; 200MB IDE hard disk \$1295; 800 by 600 VGA adapter \$199; 14-inch 800-

Inside the 486SX

Michael Goodwin and Karl Koessel

All the chips in Intel's 486 family from the imperial 50-MHz 486DX to the proletarian 16-MHz 486SX share an advanced architecture designed to deliver the best possible performance at any clock speed.

All 486 chips include a small but effective memory cache. When the CPU finds what it needs in the cache, it need not perform a slower access to main memory.

Another advantage 486s have over 386s is an internal "clock doubler" that enables them to work with a slower system clock. The 386 chip needs a clock clicking away at twice the rated chip speed, which creates a problem because fast clocks emit

more high-frequency RFI. Moreover, the 386 may take several clock ticks to execute instructions. The 486 chips execute most instructions in just a single tick.

So Where's the Catch?
Faced with a powerful threat from
AMD's low-cost 386/40, Intel wanted
to price the new 486SX chip so low
that vendors could sell 486SX machines for hundreds of dollars less
than 33-MHz 386 PCs and for thousands less than 25-MHz 486DX systems. (See "33-Something: Still Hot
After All These Years" for some realworld price comparisons.) But if the
486SX shares the 486DX's radical

architecture, how can Intel sell it so cheaply?

The answer is that the math coprocessor has been disabled. All the circuitry is there, but because it's not going to be used, Intel doesn't need to test it—and most of the 486DX's high cost comes from testing that coprocessor. For one thing, floatingpoint math tests are time-consuming. For another, chip defects that are confined to the floating-point circuitry will never be noticed.

So eliminating the floating-point tests saves money two ways: It speeds testing, and it also reduces failure rates.

WHERE TO BUY

by-600 color VGA display \$699 Reader service no. 758

AST Premium II 486SX/20

AST Research, Inc. P.O. Box 19658 16215 Alton Pkwy. Irvine, CA 92713-9658 800/876-4278 LIST PRICE: with 4MB RAM, 1.44MB floppy, one parallel, one mouse, and two serial ports, VGA, 101-key keyboard \$2995; with 80MB hard disk \$3495; with 210MB hard disk \$3995 ACCESSORIES: 1MB RAM \$100; second floppy \$150; 210MB hard disk \$1375; 1200-by-768 interlaced color VGA display \$695 Reader service no. 759

Dell PowerLine 420DE

Dell Computer 9505 Arboretum Blvd. Austin, TX 78759-7299 800/289-3355 LIST PRICE: with 4MB RAM, 1.2MB or 1.44MB floppy, 100MB hard disk, one parallel and two serial ports, monochrome VGA display and adapter, 101-key keyboard \$3699; with 8MB RAM and 200MB hard disk \$4399 ACCESSORIES: 1MB RAM \$100; second floppy \$99; 320MB IDE hard disk \$1399, 330MB ESDI hard disk with controller \$1699; 1024-by-768 256color VGA adapter \$199; 14-inch 800by-600 color VGA display \$399; 1024by-768 interlaced

color VGA display

\$499, 1024-by-768 noninterlaced color VGA display \$599; mouse \$59.95; DOS 5.0 \$89.95 Reader service no. 800

Everex Step 4865X/20, Tempo 4865X/20

Everex Systems 48431 Milmont Dr. Fremont, CA 94538 800/992-3839 LIST PRICE: Step 486SX/20 with 1MB RAM, 1.2MB floppy, one parallel and two serial ports, IDE, 101key keyboard, mouse, DOS 5.0, Windows 3.0 \$2999; with 4MB RAM and 100MB hard disk \$3988; Tempo 486SX/20 with 1MB RAM, 1.2MB floppy, one parallel and two serial ports, IDE, VGA, 101-key keyboard, mouse, DOS 5.0,

Windows 3.0 \$2599; with 4MB RAM and 100MB hard disk \$3573; with 8MB RAM and 200MB hard disk \$4373 ACCESSORIES: 1.44MB floppy \$105; 40MB hard disk \$389, 338MB hard disk

\$1999; color VGA display \$599; 60MB tape backup \$359 Reader service no. 801

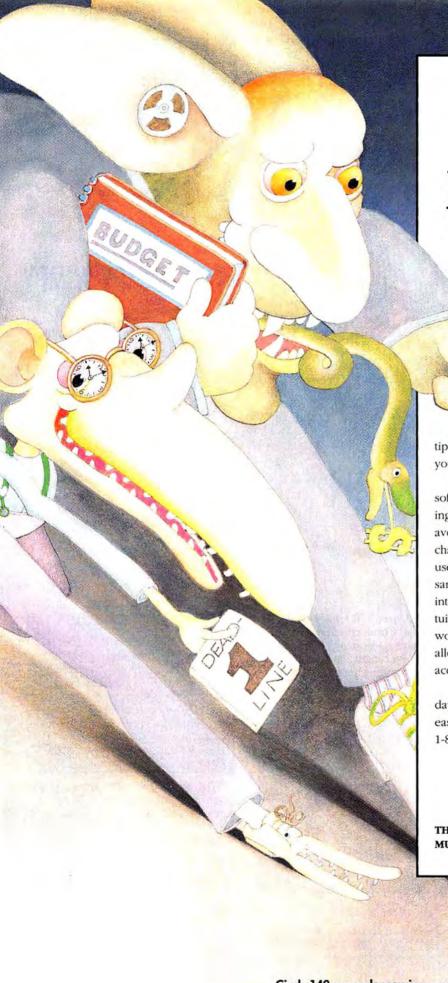
IBM PS/2 Model 90 XP 486 SX

IBM
1133 Westchester Ave.
White Plains, NY
10604
800/426-9292
LIST PRICE: Model
OG5 with 4MB RAM,
1.44MB floppy, one
parallel and two serial
ports, 80MB hard disk,
color XGA display and
adapter, 101-key
keyboard \$8345;
Model OG9 with

160MB hard disk \$8945 ACCESSORIES: 1.2MB external floppy \$509, second 1.44MB floppy \$263; mouse \$101; DOS 5.0 \$165 Reader service no. 802

Mitac 4270E

American Mitac 410 E. Plumeria Dr. San Jose, CA 95134 800/648-2287 LIST PRICE: with 1MB RAM, 1.2MB floppy, one parallel and two serial ports, IDE, VGA, 101-key keyboard, mouse, DOS 4.01 \$2395; with 4MB RAM and 100MB hard disk \$3360; with 8MB RAM and 200MB hard disk \$4080 ACCESSORIES: 1MB RAM \$80; 1.44MB floppy \$95, second 1.2MB floppy \$95; 100MB hard disk



Haunted By Project Management Nightmares?

Screaming users. Missed deadlines.

Escalating budgets. Incompatible hardware. Resource conflicts.

Fuming VPs. It's the stuff nightmares are made of.

Coordinating projects with thousands of tasks and dozens of users across mul-

tiple platforms can turn into a bad dream — unless you have Artemis Prestige.

Artemis Prestige is the only project management software that runs on virtually all platforms, including PCs, LANs, UNIX, and VAX workstations, so you avoid both compatibility problems and the purchase of new hardware. Plus, it allows multiple users to access information from activities in the same project — all at the same time — without interfering with each other. Online help and an intuitive interface also make it simple to use. You won't have to worry about security either. Prestige allows you to protect sensitive data by restricting access to designated users.

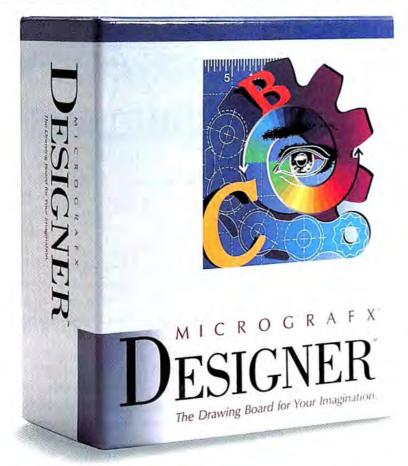
If your worst nightmares are coming true everyday, try Artemis Prestige. It'll make your job so easy it's scary. For a free demo disk, call today: 1-800-4-PRO-MGT.

Artemis

THE ONLY TRUE MULTI-USER, MULTI-PLATFORM, MULTI-PROJECT MANAGEMENT SOFTWARE.

Lucas Management Systems

HEFTY HEFTY HEFTY



WIMPY WIMPY WIMPY



ant to play around? Get Corel Draw. But if your work depends on precision drawing, you should realize just how much more you can accomplish with Micrografx Designer."

Important things. Like putting up to 64 layers in your drawings. "Snapping" objects to align them perfectly. And editing drawings on the full screen, in color, instead of a wimpy black-and-white box.

"Designer is the power user's choice."

PC Magazine
"Editor's Choice"

Then there's Designer's poster-size 132" by 132" drawing area. Corel's is a mere 17" by 17" – leaving you to strip pieces together for larger drawings.

And don't forget clip art. Designer is

packed with over 1,700 ready-made illustrations. Corel, only 750.

If you have questions about using Designer, you can turn to help screens or our 24-hour telephone support. But you won't find any help screens in Corel Draw. And don't bother to call them after hours.

Features	Designer	Corel Draw
Drawing layers	64	1
Dimensioning	Yes	No
Object snap	Yes	No
Maximum drawing size	132"×132"	17"×17"
Edit in full color	Yes	No
Clip art images	Over 1,700	750
Named symbols	Yes	No
PageMaker 4.0 filter	Yes	No
On line help screens	Yes	No
24 hour support	Yes	No

The experts' verdict: "No contest."

Software Digest gave Designer five stars to Corel's three, concluding: "Designer provides the best overall free-form graphics package. It offers state-of-the-art features, good performance, and unmatched ease of learning and use in a sophisticated package."

Why waste your time with a wimpy product when you can really flex your muscles with Designer? Call us today for a *free* working model, or for the location of the dealer nearest you.

MICROGRAFX'
1-800-487-2116

Micrografx, Inc. 1303 Arapaho, Richardson, TX 75081 (214) 234-1769. Micrografx has offices in Los Angeles, Paris, London, Munich, Sydney and Copenhagen. Copyright © 1991, Micrografx, Inc. All rights reserved. Micrografx is a registered trademark and Micrografx Designer is a trademark of Micrografx, Inc. All other products are trademarks of their respective owners.

Designer system requirements: 286 (386 recommended) IBM PC or compatible, or PS/2. 1 MB RAM (2 MB RAM recommended). 20 MB (or larger) hard disk. Windows 3.0. DOS 3.1 (or higher). Mouse or digitizing pad. Windows-compatible monitor.

EXECUTIVE SUMMARY

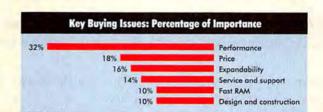
Intel's New Chip Finds a Good Home With AST

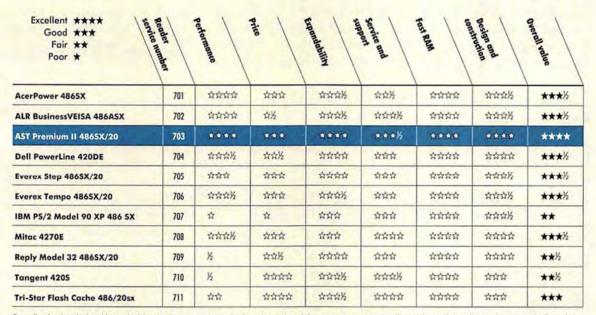
The AST Premium II 486SX/20 is the cream of the first crop of 486SX systems.



A surprising number of impressive deals emerged from this first batch of 486SX systems, but the Best Buy goes to the speedy, superbly designed **AST Premium**II 486SX/20. But AST isn't the only vendor

to put serious thought into its system. Other very good values are available from Acer, ALR, Dell, Everex, and Mitac.





Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

\$725, 200MB hard disk \$1125; low radiation color VGA display \$450 Reader service no. 803

Reply Model 32 4865X/20

Reply Corp.
4435 Fortran Dr.
San Jose, CA 95134
800/955-5295
LIST PRICE: with 4MB
RAM, 1.44MB floppy,
three parallel, one
mouse, and two serial
ports, IDE, VGA, 101key keyboard \$2922;

with 120MB hard disk \$3572; with 8MB RAM and 200MB hard disk \$4274 ACCESSORIES: 2MB RAM \$189: 160MB hard disk \$1232, 320MB SCSI hard disk \$3245; 14-inch 640by-480 color VGA display \$389, 14-inch 1024-by-768 noninterlaced color XGA display \$649; DOS 5.0 \$102 Reader service no. 804

Tangent Computer 197 Airport Blvd. Burlingame, CA 94010 800/223-6677 LIST PRICE: with 1MB RAM, 1.2MB floppy, one parallel and two

Tangent 4205

RAM, 1.2MB floppy, one parallel and two serial ports, IDE, 101key keyboard \$1229; with 4MB RAM and 100MB hard disk, 1024-by-768 noninterlaced color VGA display with adapter, DOS 5.0 \$2495; with 8MB RAM, and 200MB hard disk \$3095 ACCESSORIES: 1MB RAM \$79; second floppy \$89; mouse plus Windows 3.0 \$89 Reader service no. 805

Tri-Star Flash Cache 486/20sx

Tri-Star Computer 120 S. Weber Dr. Chandler, AZ 85226 800/678-2799 LIST PRICE: with 4MB RAM, 1.2MB and 1.44MB floppies, one parallel and two serial ports, 130MB IDE hard disk, 1024-by-768 noninterlaced color VGA display with adapter, 101-key keyboard, mouse, Windows 3.0, DOS 5.0. Windows \$2495: with 4MB RAM and 80MB hard disk \$2396; with 8MB RAM and 213MB hard disk \$2990 ACCESSORIES: 1MB **RAM \$60** Reader service no. 806

33-SOMETHING: STILL HOT AFTER ALL THESE YEARS

Is the fast, reliable 33-MHz 386 still an option? You bet your math chip! At current prices, these amazingly affordable thoroughbreds are your best system buy.

fter weeks of careful research, you've finally decided that the powerful 33-MHz 386 offers the best price/performance value for your business. You're closing in on a vendor and model, and WHAM! Suddenly there's yet another product line based on yet another chip and clock

Does it still make sense to buy a 33-MHz 386? Or should you be looking at a system based on a 20-MHz 486SX, a full-fledged 25-MHz 486, or AMD's 40-MHz 386? Which is faster? How much faster? And how do performance gains compare with the higher prices of the faster chips?

For starters we ran nine of the leading 33-MHz 386s through a gamut of business applications-CompuAdd's 333T Low Profile took top honors on both CPU- and disk-intensive tests. Then we ran the same tests on representative systems based on competing processors: a 20-MHz 486SX, a 25-MHz 486DX, and a 40-MHz 386DX. Here's what we discovered.

All else being equal, on CPU-intensive applications like 1-2-3 you can ex-

MICHAEL GOODWIN

The 33-MHz Alternative

On the street you can find these speedsters for considerably less than the prices listed here. The bargain-priced CompuAdd 333T Low Profile copped the top spot for its speed on CPU- and disk-intensive applications.

Model	List price1	Hard disk size	Fast-RAM capacity	Free 32-bit slots	Free 16-bit slots	Free 8-bit slots	Drive bays	Warranty (months)	On-site service
Acer 1100/33	\$4778	200MB	8MB	6	1	1	5	24	Y
CompuAdd 333T Low Profile	\$2715	120MB	32MB	0	4	1	4	12	Y
Everex Step 386/33	\$4185	105MB	64MB	1	5	1	5	12	Y
Gateway 2000 33-MHz 386 Cache	\$2695	200MB	16MB	0	6	0	3	12	Y
Leading Edge Model D3/33	\$3477	130MB	16MB	0	5	1	5	202	γ2
Mitac MPC4000G	\$3285	100MB	24MB	1	7	0	6	12	Υ
Northgate Elegance SP 386/33	\$3299	100MB	32MB ³	0	6	0	5	12	Υ
Tandon 386/33	\$3678	110MB	16MB	0	4	1	5	12	Υ
Zeos 386-33	\$2595	130MB	32MB	0	6	1	7	124	Y

1With 4MB RAM, 100 to 200MB hard disk, one or two 1.2MB (or 1.44MB) floppy drives, VGA and VGA color monitor, keyboard, mouse, and DOS 3.31 or later. 25k-month on-site service warranty or 20-month parts-and-labor warranty.

²Six-month on-site service warranty or 20-ma ³64MB available in tower version *Includes five-year warranty on the keyboard

WHERE TO BUY

Acer 1100/33 Acer America Corp.

401 Charcot Ave. San Jose, CA 95131 408/922-0333.

408/922-0176 (fax) Reader service no. 875

CompuAdd 333T

CompuAdd Corp. 12303 Technology Blvd. Austin, TX 78727 800/333-2429, 512/331-2765 (fax) Reader service no. 876

Everex Step 386/33

Everex Systems 48431 Milmont Dr. Fremont, CA 94538 800/821-0806

Reader service no. 877

Gateway 2000

33-MHz 386 Cache Gateway 2000 610 Gateway Dr. N. Sioux City, SD 57049 800/523-2000

Reader service no. 878

Leading Edge Model D3/33

Leading Edge Products, Inc. 117 Flanders Rd. Westborough, MA 01581 508/836-4800, 508/836-4504 (fax)

Reader service no. 879

Mitac MPC4000G

American Mitac Corp. 410 E. Plumeria Dr. San Jose, CA 95134

408/432-1160, 408/432-8519 (fax)

Reader service no. 880

Northgate Elegance SP 386/33

Northgate Computer Corp. 7075 Flying Cloud Dr. Eden Proirie, MN 55344 800/548-1993

Reader service no. 881

Tandon 386/33

Tandon Corp. 405 Science Dr. Moorpark, CA 93021 800/800-8850

Reader service no. 882

Zeos 386-33 Zeos Int'l, Ltd. 530 5th Ave. NW St. Paul. MN 55112 800/423-5891. 612/633-6131 (fex) Reader service no. 883

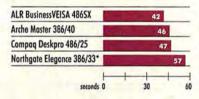
PC WORLD TEST REPORT

Everex and CompuAdd Are Fleetest 386/33s

Among these 33-MHz 386 systems (all with math coprocessors installed), CompuAdd and Everex turned in the hottest overall performance figures. To help you judge how these 33s compare with similarly priced platforms based on other 32-bit CPUs, we've also provided (at the bottom of each column) scores for a 486/25; a 386/40; a 486SX; and a 386/33 without a coprocessor.

WordPerfect

49
53
56
56
56
57
58
58
60



dBASE IV

Everex Step 386/33	342	
CompuAdd 333T	353	
Gateway 2000 386/33	374	
Tandon 386/33	388	
Zeos 386-33	409	
Northgate Elegance 386/33	411	
Mitac MPC4000G	421	
Acer 1100/33	490	
Leading Edge D3/33	490	

Compaq Deskpro 486/25	328	
ALR BusinessVEISA 486SX	355	
Arche Master 386/40	39	9
Northgate Elegance 386/33*		464
1	1	1
seconds 0	245	490

Windows

Everex Step 386/33	76
CompuAdd 333T	83
Gateway 2000 386/33	84
Northgate Elegance 386/33	84
Tandon 386/33	84
Zeos 386-33	85
Acer 1100/33	90
Mitac MPC4000G	90
Leading Edge D3/33	97

Compaq Deskpro 486/25	71	
Arche Master 386/40	80	
ALR BusinessVEISA 486SX	92	
Northgate Elegance 386/33*	95	
-		
seconds 0	48.5 97	

Methodology
We tested all the computers with 4MB RAM except the ALR BusinessVEISA, which had 5MB RAM. The systems' hard disk sizes ranged from 105MB to 210MB. We used the vendor's version of DOS. Except as noted, all systems were configured with a math coprocessor.

We reformat three WordPerfect 5.1 documents that vary in size from 5K to 55K. The files are text with some boldface and underlining; one document includes a TIFF image.

With the caching feature enabled, we complete an unindexed search for a single record in a 100,000-record parts table. Then we index the table, run the transaction processing module, and post 600 records.

Timing begins and ends at the DOS prompt. We launch Windows along with a macro that loads Microsoft Excel with a financial worksheet and initiates a recalc. Then the macro loads Lotus's Ami Pro along with a 50K document that contains a 500K TIFF image. Finally, the macro launches Micrografx Designer, opens a drawing, displays it on screen, and exits to DOS.

1-2-3

We load the application, followed by three separate worksheets (arithmetic, financial, and scientific). We perform various changes and run recalcs on each. Finally, we use the MAPS add-in

1-2-2

1-2-0	
Everex Step 386/33	328
CompuAdd 333T	332
Mitac MPC4000G	332
Tandon 386/33	336
Northgate Elegance 386/33	337
Gateway 2000 386/33	338
Acer 1100/33	341
Leading Edge D3/33	345
Zeos 386-33	358

Compaq Deskpro 486/25	230	
Arche Master 386/40	275	
ALR BusinessVEISA 486SX		579
Northgate Elegance 386/33*		626
seconds 0	313	62

from Management Advisory Services of Seattle to run a number of financial forecasts.

Starting with an orders table, we compare each record with an available stock table. The application finds the current price for the items and inserts the resulting record into an invoice table.

Paradox

CompuAdd 333T	487
Gateway 2000 386/33	520
Everex Step 386/33	571
Tandon 386/33	579
Northgate Elegance 386/33	593
Acer 1100/33	603
Leading Edge D3/33	617
Mitac MPC4000G	622
Zeos 386-33	78

Arche Master 386/40	266
ALR BusinessVEISA 486SX	314
Compaq Deskpro 486/25	552
Northgate Elegance 386/33*	631
+	1 1 1
seconds 0	367 73

Data based on tests designed and conducted by the PC World Test Center. All

^{*} Without coprocessor

pect the 486DX/25 to come in first, followed closely by the 386/40, and then (a good deal slower, but in a tight finish) the 486SX/20 and the 386DX/33. (If the 386/33 has a coprocessor, it will probably edge past the 486SX on this mathintensive benchmark; otherwise the 486SX usually sneaks into the lead.)

For instance, it took Compaq's 486/25 3 minutes and 50 seconds to complete the 1-2-3 benchmark. Arche's 386/40 (with a coprocessor) was nearly as fast at 4 minutes and 35 seconds. ALR's BusinessVEISA (the quickest 486SX we tested, without a coprocessor) took almost 10 minutes, while Northgate's 386/33 (also tested without a coprocessor) finished last at 10 minutes, 26 seconds.

The rankings are the same for diskintensive applications such as dBASE, but because a math coprocessor has no effect on these applications the scores are a lot closer. Once again, the top winners were Compaq's 486/25 (which completed the *dBASE* test in 5 minutes, 28 seconds) and Arche's 386/40 (roughly a minute slower). But this time ALR's BusinessVEISA 486SX stayed close, coming in at a hair under 7 minutes. Northgate's 386/33 finished last at slightly under 8 minutes. *Windows* tests showed a similar pattern, but oddly enough ALR's 486SX aced the *Word-Perfect* benchmark, taking first place over the 486/25 and 386/40.

Paying the Cost to Be the Boss

So much for raw power—how about price? As you might expect, a high-performance 486DX/25 will cost a good deal more than any of the other models. After that, price, speed, and expectation diverge. Theoretically, a 20-MHz 486SX machine should be cheaper than its 33-MHz 386 counterpart because the 486SX processor costs only a bit more and the 20-MHz machine can use

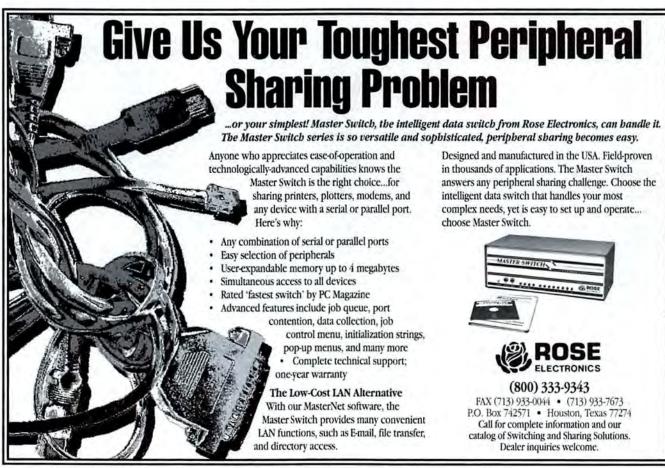
slower support chips. Theory, however, doesn't always conform to practice: Most companies that make both machines list the 386/33 for \$100 to \$500 less than the 486SX.

To make matters more confusing, you probably can get a 386/40, which runs almost as fast as a 486/25, for a *lot* less than a 486SX.

Calculating price-performance ratings is not a trivial task—especially with prices so volatile. As 486-based machines become more popular, prices for 386-based systems will continue to drop. But it's only a matter of time before 486SX system prices follow suit. If you can afford to be patient, buying a 486SX could be a smart move. If you're buying now, these fast, surprisingly affordable 386/33s are a bargain hunter's delight.

■

Michael Goodwin is an associate editor for PC World.



PC Magazine caught us speeding.

"PacificPage XL beats HP on LaserJet PostScript printing"

PC Magazine, June 25, 1991

FASTEST PRINTING SPEED. LOWEST PRICE.

PacificPage XL is fast. So fast, that PC Magazine has cited it for ex-

ceeding the speed limit of Hewlett-Packard's PostScript® Cartridge by more than six times.

If by chance the speed doesn't sell you, the low price

will. Because it's the one feature of PacificPage XL that doesn't exceed HP's cartridge.*

How do we get it to work so fast? It's really quite simple. We've taken our award-winning PostScript language emulation cartridge called PacificPage P.E, and combined it with a high speed accelerator board that installs easily into your LaserJet IIP, III, IIID or IIIP printer memory

slot. LaserJet printing speeds are boosted by the fast Intel i960™ RISC processor that's mounted on i960 the board alongside 2 MB of

"An Intel i960 RISC processor on the accelerator board helps the PacificPage XL print graphics more than six times as fast as the HP PostScript Cartridge.

Do you use a shared printer? If you do, you'll definitely want the speed of PacificPage XL. Because output is printed so fast, other users won't have to wait for their jobs to

Make a quick price/performance comparison and you'll see -PacificPage XL is the smart choice!



"PacificPage XL provides the fastest PostScript printing available on a desktop."

35 POSTSCRIPT COMPATIBLE FONTS

Acquiring stylish, professional looking output is easy with PacificPage XL. Because we've in-

COURIER

SWISS

SWISS NARROW

DUTCH

ZAPF CALLIGRAPHIC

GEOMETRIC

REVIVAL

CENTURY

CHANCERY

Zapf Dingbats **0%×**@\$

Symbol ⇔Δ•ΦΓ∝ΥΝX≠

ach typestyle comes in normal, b alic and hold Italic treatments ex it Chansery, Zapl Dingbars, and

"The native 35 PostScript compatible fonts in PacificPage XL are Bitstream designs, some of them superior to Adobe's version."

cluded 35 fully scalable Apple LaserWriter equivalent fonts. These high quality Bitstream designs provide you with the tools you need to create output that shines. For even greater versatility, PacificPage XL supports Bitstream's Speedo fonts and Adobe Type 1 and

3 fonts. PacificPage XL

100% POSTSCRIPT LANGUAGE COMPATIBILITY — GUARANTEED

Many LaserJet users believe that only true Adobe PostScript gives true PostScript capabilities. The truth is, PacificPage XL provides exactly the



PostScript file output from LaserJet III with PacificPage XI

"PacificPage XL swiftly and accurately renders some test EPS files that other interpreters distort and had no trouble with any of the large and complex images used for testing.

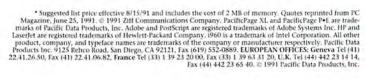
capabilities for your LaserJet as Adobe PostScript. Exactly. So you can pay less and, in addition to speed, get all of PostScript's powerful graphics functions. We're so sure of it that we give you our money back guarantee of satisfaction.

FREE DESKTOP PUBLISHING KIT

Call for your free introductory kit which includes: The PC is not a Typewriter (\$9.95) from Peachpit Press, a book to help you create professionallooking documents; a point size ruler, plus valuable offers on our products.

Quantities are limited. So call now! For more information or a dealer near you, contact Pacific Data

Products, (619) 597-4672.



printer

memory.



GET DRAW!



T'S A BLAST!



We just exploded the myth that all drawing programs are expensive, hard to master, and for art school graduates only.

More than 2,600 ready-to-use clip art images make *Windows Draw* perfect for business graphics, home office projects, even presentations.

Cut and paste images. Customize them. Or draw up your own ideas with a box full of smart tools and special effects.

In no time, you'll be confidently creating great-looking logos, illustrations, charts, posters, memos, newsletters and more.

Helpful on-screen hints keep you drawing in the right direction.

But if you need to talk, we're here 24 hours every weekday, and most of the weekend.

Best of all *Windows Draw* won't blow your budget. Along with being fun, fast and friendly, it's affordable – just \$149.95 suggested retail. According to *InfoWorld*, "...a real steal." So get your copy today. And have a blast!

MICROGRAFX[®]

Visit your local software dealer or call us toll-free at 1-800-755-4649 for the name of a store near you.

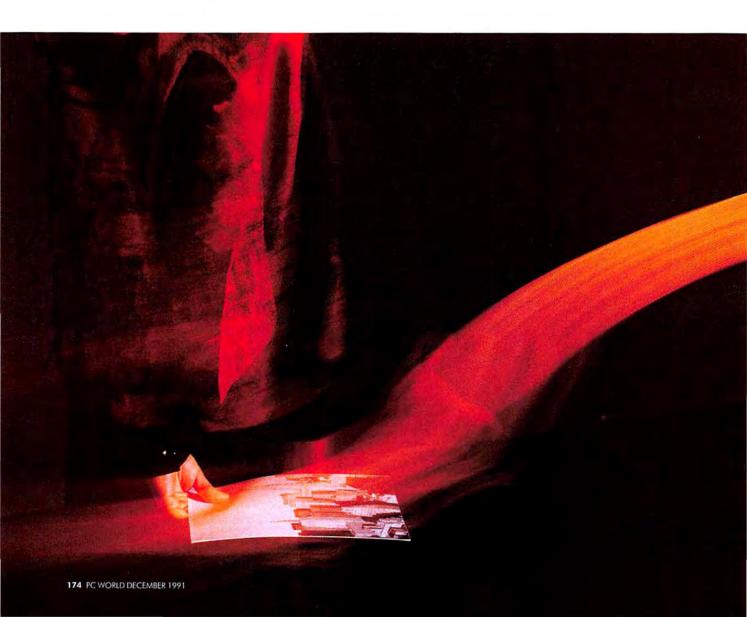
1991, Micrografx, Inc. All rights reserved. Micrografx and the Micrografx logo are registered trademarks and Windows Draw is a trademark of Micrografx, Inc.



POSTSCRIPT

hen it comes to producing dazzling text and graphics, there's no contest: A PostScript printer blows the LaserJet away. Don't believe it? Let's look at the facts.

Most PostScript printers come with 35 or more scalable fonts; unless you take on the expense and confusion of adding font options, the LaserJet III comes with eight. Thanks to its sophisticated page description language, a PostScript printer can produce graphics the LaserJet can only dream about—such as high-quality Encapsulated PostScript (EPS) clip art. And if you need to design professionally typeset materials, only a PostScript device lets you see what your final output will look like before you send it to the typesetter.



PHOTOGRAPHS BY LUIS DELGADO

LASERS

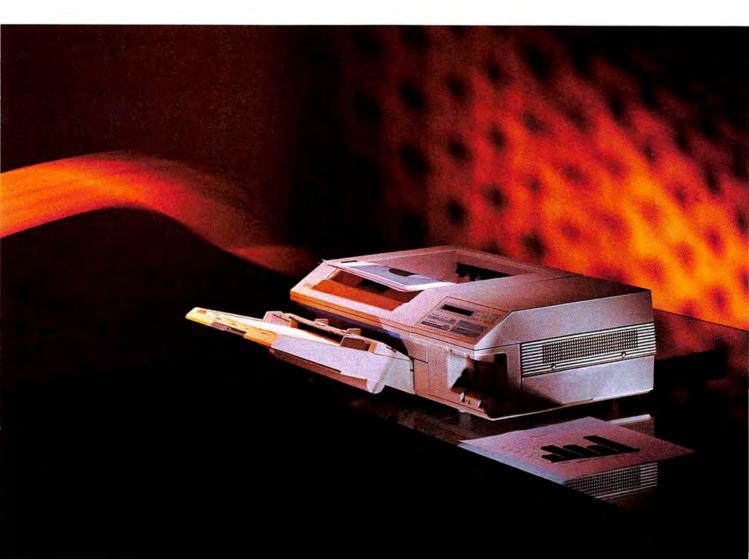
Want to avoid font confusion and still look your best? Today's PostScript printers give you sharp fonts and sleek graphics for under \$2600.

Of course, you may not need all that printing power. If all you do is crank out simple correspondence or spreadsheets, save yourself some money and buy a \$1000 LaserJet clone. But if you want to use eye-catching fonts in presentation overheads or add complex illustrations to a report, PostScript is the way to go.

For individual users or small work groups, a low-cost

PostScript printer is a perfect fit. (If you need to serve a big network, you should consider more expensive models offering heftier paper handling, font storage, and durability.) We looked at nine units with street prices running under \$2600 in our test configuration. All are 300-dpi devices, and are

BOB WEIBEL AND DANIEL TYNAN



equipped with at least 35 scalable typefaces, built-in PostScript (or compatible) interpreters, and enough RAM (4MB) to handle a passel of downloadable fonts. Print engines range from a lightweight 4 pages per minute (ppm) to a brawny 11 ppm, but the speed of PostScript printers generally depends more on the brain than on the brawnthe fastest performers are all built

around high-speed RISC processors.

In evaluating these units, print quality was of prime importance, followed by speed and price. Paper handling, fonts, and emulations also played a big role, as did service and support policies and ease of use (see "Buying Smart"). One clear winner stood out: The Best Buy Epson EPL-7500 delivered superb print quality and speed.

More sweet deals are on the way (see the sidebar "PostScript Printers: Best of the Rest"). If you've been thinking about purchasing a PostScript printer but have been put off by high prices, now is an opportune time to buy.

Bob Weibel is a freelance writer in Ashland, Oregon. Daniel Tynan is an associate editor for PC World.

WORLD TEST REPORT

Clear Leaders of the PostScript Pack

Epson's EPL-7500 and Microtek's TrueLaser give you the speed you need for printing complex text and graphics, thanks to their powerful RISC processors.

WordPerfect

First and cache print combined

Epson EPL-7500	BEST BUY	124		
Panasonic LaserPartner KX-P4455		125		
Microtek TrueLaser MTP 306		126		
Everex LaserScript LX		133		
Okidata OL840 LED Page Printer			157	
TI MicroLaser PS35			167	
NEC Silentwriter2 Model 90		1266	173	
QMS-PS 410			191	
Apple Personal LaserWriter NT				224
	- 1-	-1	-	
seconds (0 56	112	168	224

Ventura Publisher

Epson EPL-7500	152			_
Microtek TrueLaser MTP 306	155			
QMS-PS 410		260		
Everex LaserScript LX		261		
Panasonic LaserPartner KX-P4455		298		
NEC Silentwriter2 Model 90		306		
Okidata OL840 LED Page Printer		315		
TI MicroLaser PS35)), e	379	
Apple Personal LaserWriter NT				535
-	-	-	-	-
seconds 0	134	268	401	535

1-2-3

First and cache print combined

Epson EPL-7500	65			
Microtek TrueLaser MTP 306	69			
Everex LaserScript LX	8	2		
Panasonic LaserPartner KX-P4455	2011	85		
Okidata OL840 LED Page Printer		91		
NEC Silentwriter2 Model 90	200	102		
QMS-PS 410		111		
TI MicroLaser PS35		111		
Apple Personal LaserWriter NT		- 14		200
-		-1-	1	
seconds 0	50	100	150	200

PageMaker

First and cache print combined

Microtek TrueLaser MTP 306	316			
Epson EPL-7500	350			
Panasonic LaserPartner KX-P4455	407			
Okidata OL840 LED Page Printer	420			
NEC Silentwriter2 Model 90	422			
Everex LaserScript LX	425			
QMS-PS 410	470			
TI MicroLaser PS35	472			
Apple Personal LaserWriter NT				1720
H	-	-		-
seconds 0	430	860	1290	1720

Methodology

We printed four copies of each test file. The times shown are the sum of the initial print time plus the average time of the subsequent three printouts.

WordPerfect

We print a four-page text document with two columns, several different fonts, and headers and footers. The WordPerfect file does not contain any graphics.

We print a single page using Allways. The page consists of a half-page spreadsheet and a half-page bar chart. The file also contains several fonts.

The Ventura Publisher file is produced with the GEM version. The file is a single-page flier with several line-art graphics. We use four fonts and three paragraphs of text.

PageMaker

PageMaker is the only Windows application used. Our file is a two-page newsletter that contains a variety of fonts, two-column text, and TIFF images.

Data based on tests designed and conducted by the PC World Test Center. All rights reserved.

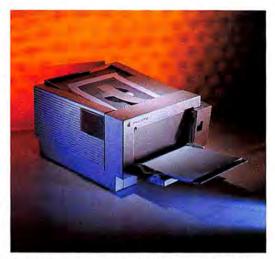
Apple Personal LaserWriter NT

PROS: Low price, compact footprint, easy maintenance
CONS: Very slow, no parallel port or front panel controls

The Personal NT is a printer for the Macintosh, not for PCs. The \$2043 price is seductive, but low speed and the lack of panel controls make the NT impractical for PC users unless they're sharing it with Macs.

The NT lacks a parallel port, and printing via the serial connection is a lesson in patience: The 4-ppm NT finished dead last in our tests. Manually boosting data transfer rates—or installing a LocalTalk board—can double print speed, but the printer will never be fast.

The NT's lack of front panel controls is fine for Macs, which provide printer control from the keyboard via an AppleTalk link, but not for PCs. To switch ports or emulations, you must power down the unit and flick a rear switch. And there's no LCD readout; small lights tell you if the printer is processing, out of paper, or jammed. The NT produces good-looking output, but other printers do it faster with less.



Apple delivers a surprisingly affordable entry, but it's slow and lacks the panel controls that PC users need.



The Epson EPL-7500's stunning print quality and zippy performance add up to this roundup's only Best Buy.

Epson EPL-7500

PROS: Excellent print quality, fast, convenient maintenance, two-year warranty

A virtuoso of versatility, the EPL-7500 can handle any job.

CONS: Limited HP fonts, relatively expensive



If top print quality is a must, the EPL-7500 will deliver—black areas print rich and smooth, and text is as crisp as a new \$100 bill. Fast and easy to use, this \$2472 Best Buy is perfect for high-quality reports, overheads, and handouts

The EPL-7500's RISC-based controller blazed through the speed tests, finishing neck and neck with the Microtek. Paper handling and ergonomics are superb—the printer holds a generous 250 sheets, and you can add a second 250-sheet tray for \$275. The EPL-7500 doesn't support font cartridges, but its liberal 6MB RAM capacity means you'll have plenty of room to download typefaces. Epson's toll-free support is prompt and knowledgeable, and the two-year warranty is tops.

If speed and output quality are key, the EPL-7500 is the one.

Everex LaserScript LX

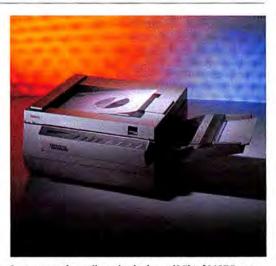
PROS: Inexpensive, well-designed front panel, 90 days free on-site service

CONS: Subpar graphics, emulation switching errors

If you want a PostScript bargain and don't print halftones or small type, the \$1687 LaserScript LX is tempting. Able to switch automatically between its four active ports, this printer is well suited for print sharing among Macs and PCs. The well-designed front panel LCD shows the status of all four ports and the emulation each port is using.

The LX's auto-emulation switching has an annoying habit of flipping from PostScript to HP, and memory for spooling print jobs is on the low side. Print quality is unspectacular: Black-and-white blends and patterns are fine, but gray-scale halftones are murky, and fonts below 12 points show slight aberrations.

The 6-ppm LX is relatively fast and comes with good support, including 90 days of free on-site service. If price is more important than top-notch graphics, the LX is a good choice.



Cutting costs, but still need to look good? This \$1687 Everex LaserScript LX is as cheap as PostScript gets.

Microtek TrueLaser MTP 306

PROS: Very fast, 60-days on-site service, supports LaserJet font cartridges

CONS: Rudimentary front panel menu, slow serial port

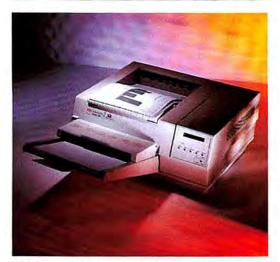
Like the Epson, the TrueLaser's RISC processor can keep a hectic pace. The printer's limited 150-sheet capacity limits its appeal to work groups, and its mediocre graphics quality will keep it off the desks of serious desktop publishers, but it's hard to say no to this speed demon

The Microsoft-engineered PostScript interpreter does well on most print jobs, though like the LaserScript, halftones tend to be muddy and text quality diminishes at small sizes. You can't assign different emulations to the serial and parallel ports, making the printer less flexible for work groups. The serial port's maximum data transfer rate is half that of the QMS-PS 410 or the LaserScript, a potential bottleneck when hooking up multiple PCs.

If speed is your main concern, these shortcomings are relatively minor trade-offs. The TrueLaser is a good value for individual users.



If you need it ASAP, Microtek's speedy TrueLaser is the answer, but graphics quality needs improvement.



NEC's Silentwriter2 wins second-place honors with its superb print quality and low-cost operation.

NEC Silentwriter2 Model 90

PROS: Excellent print quality, low price, convenient paper handling

CONS: Average printing speed

You'd need a magnifying glass and a bad attitude to notice any difference in print quality between NEC's Silentwriter2 and the top-rated EPL-7500. And at \$2100, NEC's 6-ppm Model 90 is more than \$300 cheaper on the street. If only it were faster, the Silentwriter2 would have earned its own Best Buy.

Paper handling is very convenient. The Silentwriter2 sports a unique letter/legal paper selection button on the front panel. It's the perfect accompaniment to the Silentwriter2's adjustable paper tray. Though other printers offer adjustable trays, like the Best Buy EPL-7500, the NEC lets you load the 250-sheet tray without removing it. At 2.5 cents per page, it's also the most economical.

The Silentwriter2 delivers hot output at a good price. If you're willing to wait a little longer for your print jobs, NEC has your printer.

Okidata OL840 LED Page Printer

PROS: Sharp text, multiple font options

CONS: No toner density control, poor direct phone support

The \$2267 OL840 has capable font and paper options and sharp-looking text, but graphics quality is subpar. Black fills are dark and solid, but halftones and gray shades have vertical streaking, and you can't control toner density—a bad combination if you plan to print a lot of graphics. The logical conclusion: The Okidata's a good choice for text jobs.

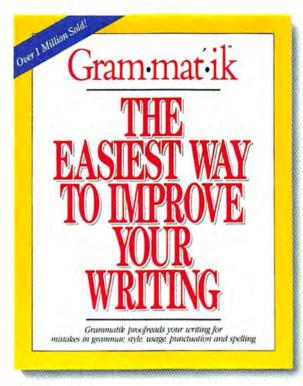
The OL840 excels at font options—it offers the equivalent of eight HP and three PostScript cartridges. You can also add a second 200-sheet paper bin (\$229), giving you an office-worthy printer for hundreds less than the Panasonic KX-P4455.

Okidata's phone support was poor We placed a dozen calls over three weeks and never reached a technician. (At press time, Okidata announced that TRW would be its third-party service provider.) Still, if you want lots of fonts, the OL840 makes sense.

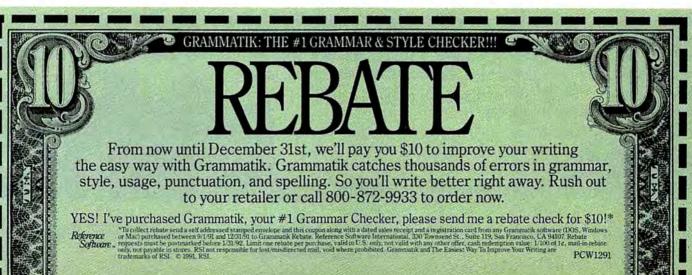


Born to churn out text, Okidata's OL840 offers a plethora of fonts along with crisp text output.

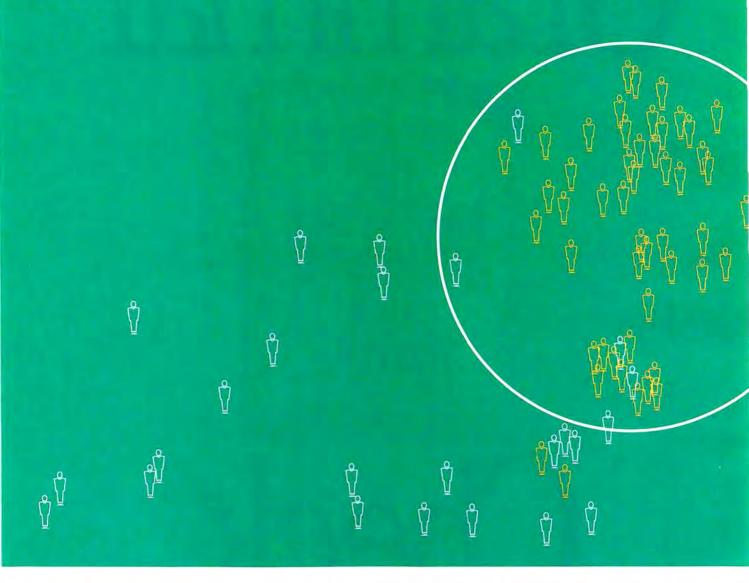
Grammar



Check.



Plot Their Next Move.



And start planning yours. Statistical software from SPSS helps you perform all types of market research. . . from survey and product packaging research to direct response and customer satisfaction analysis. You'll have the power to enter, edit, manage, analyze and present data with the most in-depth statistical software available. Software that helps 26 of the top 30 market research firms target segments and interpret buying behavior more effectively. Move to SPSS, suppliers of statistical solutions to over 2 million

users worldwide. Call 1(800) 543-5837 or FAX (312) 329-3668.

And stay a step ahead of the crowd.



We're Making It Easier To Decide.

Buying Smart: PostScript Printers on the Cheap

You want sharp-looking output, you want it fast, and you want it cheap.

PostScript shoppers should also consider paper handling, font options, service and support policies, and the ease of changing printer settings and replacing consumables.



OUTPUT QUALITY

All the printers reviewed here churn out readable

text at 12 points and up, but the top ones produce sharp text at all sizes. If you regularly use small fonts or magnify output via an overhead projector, you'll want that finer detail. When gauging graphics quality, look for dense, evenly filled black and gray areas and smooth gradations with minimal loss of detail when printing continuous-tone images (halftones).



SPEED

Processing power, not the print engine, is the key to

fast PostScript printing. Creating fonts and graphics involves heavy number crunching—and that's where highspeed RISC processors excel. Faster print engines do best when printing long text documents or multiple copies of pages whose fonts have already been processed. The WordPerfect test is probably your best gauge of text-printing performance. To check how a printer handles business graphics, look to the 1-2-3 test, and the Ventura benchmarks may give you an idea of line-art performance. If scanned halftones are finding their way into your documents, note the PageMaker scores.



PRICE

You don't need a brotherin-law in the printer busi-

ness to get a good deal. Considering that many PostScript printers cost \$4000

to \$6000, we gave almost all these personal PostScripts three and a half or four stars.

We called dealers all over the country to get printer street prices (including 4MB RAM and a legal-size paper tray if available), then averaged the results. Before you buy, figure in the cost of the RAM, fonts, and paper handling options you'll need. Also consider the cost of consumables; an extra penny a page can make a big difference over the life of a printer.



PAPER HANDLING

Don't you hate sending a rush job to the printer

only to find that it's out of paper? Large (200- to 250-sheet) paper trays help you avoid that headache, and dual bins are even better, especially if you regularly use different paper stocks or sizes. Some printers have adjustable trays that accommodate letter, legal, and other size paper and envelopes.



FONTS AND EMULATIONS

Because each printer

comes with at least 35 standard fonts—plenty for most business applications—they all receive at least a three-star rating. But if you produce presentation overheads or newsletters, you may want the additional scalable fonts that some units deliver. If you need to download soft fonts, you'll want at least 4MB of RAM to hold them. Look for the ability to add PostScript and LaserJet-compatible font cartridges—especially if you plan to print in both HP and PostScript modes, since all downloaded fonts are erased automatically when you switch emulations.

If you use an old application that doesn't support PostScript, or if some of your staff will remain standardized on the LaserJet, you'll want a printer that switches easily between the two emulations. The top models read the incoming print job and switch modes automatically; others make you issue software commands or toggle front panel controls.

EASE OF USE



The friendliest printers come with logical frontpanel controls and an

LCD readout that tells you paper and toner levels, emulation modes, and error messages. You'll also want an integrated toner/ drum/ developer unit—separate consumables can be messy and prone to damage from exposure to light.

If your work group isn't networked but you want to share a printer, you may want the convenience of a printer that lets you attach multiple PCs to its ports, and switches automatically between them. This is especially useful if you need to hook up Macs as well as PCs, but it's not essential—an inexpensive printer-sharing device can also do the job.



SERVICE AND SUPPORT

When you get stuck,

there's no substitute for good service and support. Look for a warranty of a year or more and on-site service. Sometimes a simple word of advice will do the trick—to gauge technical support, we called each vendor at least three times, asking questions of varying technical complexity and noted the timeliness and accuracy of each response. We also factored in support hours, toll-free lines, and BBS and fax support.

Panasonic LaserPartner KX-P4455

PROS: Dual paper bins, extra scalable fonts

CONS: Messy toner replacement

With its 11-ppm engine, high 500-sheet paper capacity, and hefty duty cycle, the \$2534 Panasonic LaserPartner KX-P4455 attempts to be a PostScript printer that can handle the workload of an entire office.

The KX-P4455 has trouble producing dense blacks, but halftones and screens look smooth, and text is good. Its software-accessible HP emulation comes with 26 fonts, and you get 39 PostScript fonts. Two 250-sheet input bins and a 20,000-page monthly duty cycle qualify the 67-pound LaserPartner as an office workhorse. But replenishing toner through a separate squeeze bottle is potentially messy and makes the printer difficult to maintain.

All in all, the Panasonic LaserPartner is a good deal for busy offices that are looking to crank out HP text documents with some occasional PostScript output.



The powerhouse Panasonic LaserPartner KX-P4455 pumps out text documents but hits the wall when printing graphics.



The QMS-PS 410 is first at fonts but among the last at speed. Have patience and enjoy the results.

QMS-PS 410

PROS: Extra built-in fonts, compact footprint, automatic port and emulation switching CONS: Fairly slow, minimal front panel controls, small paper input tray

The QMS-PS 410 is a handsome little printer that gives you a truck-load of extra fonts to play with—your \$2226 buys 45 built-in PostScript fonts plus support for additional font cartridges. With its automatic port and emulation switching, it's an especially good choice if you want to share your printer without investing in a network. Not only is the price right, maintenance costs a low 27 cents per page.

The 4-ppm unit was fairly lethargic, finishing in the middle of the pack. The PS 410 is not the friendliest printer to operate—it offers ten front panel indicator lights but no LCD display or menu. There's no way to tell which port or emulation is active when a job is printing, and reconfiguring the unit requires a software utility.

If you need extra built-in fonts for your presentations and other high-visibility documents, the QMS-PS 410 is a good pick.

Texas Instruments MicroLaser PS35

PROS: Good font support, small footprint, large paper capacity

CONS: Fairly slow, hard-to-replace consumables

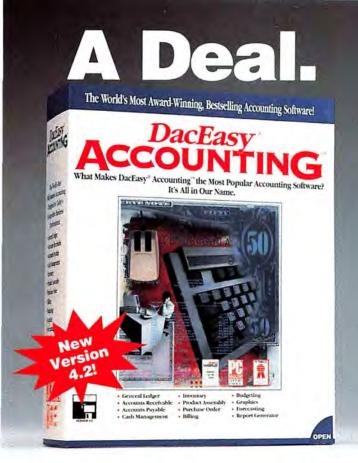
The TI MicroLaser PS35 is the most compact printer in the roundup, and you get generous font support. What you sacrifice is speed: The 6-ppm PS35 was one of the slowest in the bunch. (At press time, TI announced it was replacing this printer with a similarly priced 9-ppm version as well as introducing a RISC-based model for \$2249.)

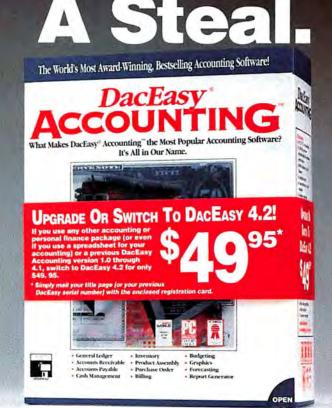
Type quality is good; blacks are fairly dark but suffer slightly from banding. Though the PS35 lacks automatic port switching, you can save multiple port and emulation configurations and then quickly invoke them from the front panel menu. The 250-sheet paper tray is another plus for a printer this small, and you can add a second bin for \$395, but you'll have to hassle with separate toner, drum, and developer units.

If you're short on space and don't require speedy output, the \$2196 MicroLaser is a steal. ●



The best little workhorse in Texas: TI's MicroLaser PS35 has huge paper capacity for its size, but it's no barn burner.





Choosing Your First Accounting System? Try DacEasy® Accounting™ 4.2 and Get a FREE Supply of Invoices or Statements.

Award-winning DacEasy Accounting is the easiest-to-use, full-featured accounting software you can buy. It takes just minutes to install, and before you know it, you'll be using the most popular Accounting software in the world to manage your business bookkeeping better than you ever thought possible.

New! DacEasy Accounting 4.2 includes 11 fully integrated modules, built into a flexible platform that accommodates the growing needs of a business for years to come! Choose from a variety of pre-defined charts of accounts and custom reports tailored to fit your sole proprietorship, partnership or corporation.

tailored to fit your sole proprietorship, partnership or corporation.

Here's the Deal. Buy DacEasy Accounting 4.2 for only \$149.95 (Suggested Retail), and receive your choice of statements or invoices to get your business started.

Using Another Accounting, Personal Finance, or Spreadsheet Program? Upgrade or Switch to DacEasy® 4.2 for just \$49.95!

New DacEasy Accounting 4.2 outperforms the other full-featured accounting programs with its highly acclaimed user interface and sophisticated features. DacEasy Accounting lets you create invoices, pay bills, track your inventory, manage your cash transactions, store a wealth of customer and vendor data and much more! Try that with a personal finance or spreadsheet program. Or if you use an earlier version of DacEasy Accounting, you can upgrade to 4.2 for the same low price of \$49.95!

Here's the Steal. To move up to DacEasy Accounting 4.2 for \$49.95, visit your local software retailer, or send the order form below with the title page from your current accounting, financial or spreadsheet software manual (or serial number from current DacEasy software).

Or Get DacEasy Accounting and Payroll for \$199.95 - With FREE Invoices or Statements!

The DacEasy BonusPack combines the award-winning features of DacEasy Accounting with DacEasy Payroll, the most complete payroll and personnel management software, for an extra-value price of just \$199.95. You save \$50 off the separate item price!

Visit your local dealer or call: 1-800-DAC-EASY

1-800-322-3279 • FAX 214-250-3752 For Canadian Version with GST, call: 416-940-3314

☐ Send me th	he DacEasy Boni	usPack for just \$199	and include the FREI .95, and include the I have enclosed my tit	REE invoice or sta	tement offer!
Phone:	Name:	Comp	oany Name:	7 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	
Address:		City:	State:	Zip:	
Payment: Check	AMEX MasterCard	d 🗆 Visa Card #:	Exp:	Signature:	
	In Texas add 8.	25% sales tax. Mail to: 179	50 Preston Road • Suite 800	Dallas, Texas 75252	
Media Code: PCW	20 Des Manage Back Commented and the first to the				

Anti-Radiation Screens. What's The Difference?



Only One Does It All. NoRad.

The **NoRad Shield** ™is the only product that performs the tasks others try to do. Some claim to reduce ELF and VLF radiation, but fall short when test time arrives. Most of them cut down radiation in the electric field only. The NoRad Shield blocks the *entire* range of electric fields *and* the high range of magnetic fields.

- Electric Radiation Virtually the entire spectrum of electric field radiation is blocked by more than 99.99% - from ELF through VLF and beyond, up into the microwave range.
- Magnetic Radiation Magnetic radiation is cut down by more than 50% in frequencies above 30 KHz, to levels no other screen manufacturer offers.

Some screens reduce glare, but actually increase reflections because they're made of polished glass. The NoRad Shield's high-resolution screen tackles these two problems handily and also eliminates the static field which attracts dust to your monitor and propels dust to your skin and eyes.

Why buy a screen that only does a fraction of what you need, when one does it all? **NoRad.**



The NoRad Shield is available in several models to fit virtually all IBM®PCs and compatibles, terminals and large format displays.



The NoRad Shield fits Apple® and Macintosh® displays, and is available in a platinumcolored frame for the SE and the Classic.

Call now to learn more about the **NoRad Shield** and receive your free MYIHS AND FACTS OF ANTI-RADIATION SCREENS booklet.



1-800-262-3260

NoRad

NoRad Corporation 1549 11th Street Santa Monica, CA 90401 (213) 395-0800 FAX: (213) 458-6397

FEATURES EVALUATION

Positive PostScript Vibrations

 $Output\ quality\ and\ speed\ are\ your\ key\ PostScript\ buying\ issues--and\ the\ Best\ Buy\ Epson\ EPL-7500\ delivers$ on both counts with a small-footprint machine that's a breeze to set up.

O No	200	13 6	1 3 E	9 g a	C / 5 8	1 4 P	1 2 4	QMS-F	8
○ Deficient │	Will Per	Epson Laser	Everex Acribi C	Microlek Microlek	ATHE GE	Okidata Okidata	on on	25 \	Texas Instru
\	er Zon		With 300	1	NEC Writer2		ponosonic	P535 P535 P5 410	" Tum
Standard features	Apple Personal		. /	1	NEC writer?	e /	\	1	Texas Instrument
Street price1	\$2043 ²	\$2472°	\$16874	n/a ⁵	\$2100	\$2267	\$2534	\$2226	\$2190
List price ¹	\$2678	\$2999°	\$21954	\$19956	\$2994	\$3087	\$3743	\$3294	\$228
Rated engine speed (ppm)	4	6	6	6	6	8	11	4	6
RISC processor	0		0	•	0	0	0	0	0
Duty cycle (pages per month)	n/a²	3000	3000	3000	6000	5000	20,000	6000	3000
Engine life (pages)	150,000	180,000	300,000	300,000	180,000	300,000	300,000	360,000	n/a
Estimated cost per page (cents) ⁸	2.7	2.9	4.1	3.1	2.5	3.2	3	2.7	2.7
Paper handling									
Standard/maximum capacity	250/250	250/500	150/150	150/150	250/250	200/400	500/500	50/300	250/5
Dual bins	0		0	0	0	• 9	•	•9	•
Adjustable trays	0		•	•	•	0	0	•	0
Legal-size paper	•9		•	•	•	• 9	• 9	•	•
Envelopes	•9		•	•	•	•9	• 9	• 9	•
Fonts and emulations									
Standard scalable typefaces	35	35	35	35	35	35	39	45	35
Standard LaserJet fonts	26 ¹⁰	3	24	13	13	26	26	2410	13
Accepts Type 1 downloadable fonts	•		•	•	•	•	•	•	•
Accepts PostScript font cartridges	0		0	0	0	•	0	•	•
Accepts LaserJet font cartridges	0	0	•	•	0	•	0	•	•
Automatic emulation switching	0	⊕ ¹¹	•	0	O11	O11	911	•	0
Standard/maximum RAM (MB)	2/8	2/6	2.5/4.5	2/4	2/4	2/4	2/4	2/4	1.5/4
Ease of use									
Front-panel controls	0	000	•	•	•	•	•	•	
Front-panel LCD	0		•	•	•	•	•	0	•
Integrated toner/drum/developer	•		•	0	•	•	0	•	0
Automatic port switching	0	0	•	•	0	0	0	•	0
Separately configurable ports	0	0 25	•	0	0	0	0	0	0
Parallel port	0		•	•	•	•	•	•	
Serial port	•		●12	•	•	•	•	•	•
LocalTalk port	•			•	•	•	•	•	•
Service and support									
Warranty (years)	1	2	1	1	1	113	1	1	1
Toll-free tech support	O14		0	0	0	•	•	0	0
Daily support hours	11	10	12	10	11.5	9	9	9	9
On-site service	⊖15	•	•	•	0	•9	0	0	0
BBS/fax support	0	•	•	•	•	•	0	•	•

¹ Price based on 4MB RAM and legalsize paper tray, if available.

²With 2MB additional third-party RAM; price for 2MB model is \$1861.

³ Extra tray not available.

^{4.5}MB RAM; extra tray not available.

⁵Unable to get street price due to limited dealer coverage.

⁶³MB RAM; extra tray not available.

⁷ Information unavailable from vendor.

⁸ Cost of toner, drum, and developer, averaged over 100,000 pages.

⁹Extra-cost option. 10 Uses PostScript fonts for HP emulation.

¹¹ Via software utility.

¹²Two serial ports standard.

¹³LED engine warranted for 5 years.

¹⁴ Dealer referral only.

¹⁵ Varies by dealer.

Quality Counts: The Best PostScript Output

If you're buying a PostScript printer, you're probably serious about the quality of your printed output. That's why we gave image quality the heaviest weighting in our evaluation of these printers. The good news is that none of the printers in this roundup displayed poor output. Even printers with the lowest print quality (the TI MicroLaser PS35 and the Everex LaserScript LX) earned fairly good scores in that category.

But if you're going PostScript, why not look your best? For the highest-quality output, check out our Best Buy, the Epson EPL-7500.

Same printers offer better looking text than graphics, and vice versa. Generally, the greatest differences in text quality occur in small print, such as 6-point footnote type. But a laser printer's biggest challenge is printing continuous-tone halftone images such as scanned photographs. Potential defects include poor gradations between shades of gray and a "banding" effect that overlays the image. Using a good 256-gray-scale scanner—and knowing how to select the right scanning options—will improve your halftones, but optimum quality will elude you unless your printer can handle its part of the bargain.

Epson EPL-7500

Zebras have the right to remain silent. T Lester always said. He didn't explain it, but argument would be pointless. I'd never heard whinny, out of a zebra. But then again I'd neve agitated. Never seen one with a lioness howling of

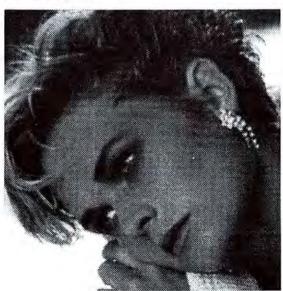
6pt. The same the right to remain silent. That's what Lester always said. He did I knew an argument would be pointless. I'd never heard a peep, or whinny, out of again I'd never seen one agitated. Never seen one with a lioness howling on its baif it would protest on the unfairness of it all with some type of yowl, bark, belunexpected, some rie hybrid sound, like the wheeze of a Scottish bagpipe disappear.

TI MicroLaser PS35

Zebras have the right to remain silent. The Lester always said. He didn't explain it, but I argument would be pointless. I'd never heard a whinny, out of a zebra. But then again I'd never agitated. Never seen one with a lioness howling o

Zebras have the right to remain silent. That's what Lester always said. He die I knew an argument would be pointless. I'd never heard a peep, or whinny, out of again I'd never seen one ogitated. Never seen one with a lioness howling on its ba if it would protest on the unfairness of it all with some type of yowl, bark, bels unexpected, some erie hybrid sound, like the wheeze of a Scottish bagpipe disappear

Epson EPL-7500



Everex LaserScript LX



A sale of encyclopedic proportions.



ENCYCLOPEDIA

THE SOFTWARE TOOLWORKS*
WORLD ATLAS

You've got the whole world at your fingertips with the finest interactive printable CD-ROM that puts you just a "click" away from 240 maps of the world, individual countries, regions and counties. Incorporating geographic, demographic, economic, government and communications data in a brilliant presentation will get high marks with this indispensable Atlas/

"Best encyclopedia on CD."
PC Magazine, June '91
"Best selling CD-ROM
encyclopedia on the market."
Bureau of Electronic Publishing

THE NEW GROLIER
ELECTRONIC ENCYCLOPEDIA*

Aviation to zebras, this encyclopedia captures the sights and sounds of information in living color. It contains 33,000 articles, 1500 full-color graphics including 250 maps and stereo sounds that speak volumes for its capabilities.

Very rarely does a new product come along that turns an industry on its ear. Such is the case of CD-ROM with its massive capacity that allows you to experience the exhilaration of living color, sound and special effects. So you're in for one of the most exciting interactive, sensory experiences you've ever had sitting down. Get three of the current top ten

CD-ROM software titles: The New Grolier Electronic Encyclopedia,™ The Time Table of History and

The Software Toolworks* World Atlas, with your special discounted purchase of the high-performance NEC Intersect* CDR-36 portable CD-ROM reader. Act now and save \$500* from the manufacturer's suggested retail price on this exclusive package at just \$749* for Macintosh and \$849* for IBM XT/AT and \$899* for PS/2. Or, upgrade to the fastest CD-ROM reader on the market, the NEC CDR-73 at the low price of \$1,099* for Macintosh, \$1,199* for IBM XT/AT and \$1,299* for PS/2. This essential reference package includes an Interface Kit for either Macintosh or IBM, headphones with CD-audio software diskette to play stereo music CD's, and quick-install program diskette which installs the reader and the three CD titles instantly. The big plus is toll-free telephone access to the NEC hotline for hardware or software technical assistance and a 2-year limited

MICROAGE 602-968-3168 MULTIPLE ZONES, INC. 800-248-0800 COMP USA 800-451-7638

hardware warranty. The supplies for this promotion are limited, so act before January 15, 1992.

COMPACT DISK PRODUCTS 800-MEGABYT (800-634-2298)

PC WAREHOUSE 201-587-0910 MAYA COMPUTER COMPANY 800-541-2318

*Suggested retail price, actual price may change depending on dealer

Because \uparrow is the way you want to go.





One unit supports many PCs or compatibles. No jumpers or switch settings to change, no DMA channels to select, no installation programs to run. Available in 60, 160, and 250-MB models. Call today, 1 (800) VALITEK (825-4835). Or call (413) 549-2700, or FAX (413) 549-2900.

Circle 307 on reader service card

PST-160





PostScript Printers: Best of the Rest

The word is out-PostScript printers are here to stay. And they're getting cheaper all the time. A baker's dozen of new PostScript printers should be available by the time you read this.

Model	List price	Rated engine speed (ppm)	Resolution (dpi)	Scalable fonts	Adobe licensed	RISC processor	Standard/ maximum RAM (MB)	Standard paper capacity (sheets)	LaserJet IIP emulation
Dataproducts LZR 960	\$2995	9	300	35	A)	Y	2/10	250	Y
Digital Equipment DEClaser 1150	\$2849	4	300	43	Y	N	2.5/2.5	250	Y
GCC Technologies BLP II	\$21482	4	300	35	Υ	N	2/4	200	үз
GCC Technologies BLP IIS	\$3048 ²	8	300	35	Y	N	2/4	200	үз
Lexmark/IBM LaserPrinter 5E	\$2692	5	300	35	Y	N	2/9	200	Υ
Mannesmann Tally MT906 PS	\$2795	6	300	35	N	N	2.5/4.5	200	Υ
Mannesmann Tally MT911 PS	\$3195	10	300	35	N	N	2.5/4.5	200	Y
NewGenTurboPS/400p	\$29954	4	400	35	N	Y	4/16	50	Υ
Okidata OL830 LED Page Printer	\$1999	8	300	17	Y	N	2/4	200	Υ
Qume CrystalPrint Publisher II	\$2995	6	300	39	N	Y	3/6	100	Υ
Sharp JX-9500PS	\$2849	6	300	35	Y	N	2.5/3.5	250	Y
Star Micronics LaserPrinter 4 StarScript	\$1995	4	300	35	N	Y	2/5	50	Υ
TI MicroLaser Turbo PS35	\$2249	9	300	35	Υ¹	Y	2.5/10.5	250	Υ

WHERE TO BUY

DataProducts
6219 De Soto Ave.
Woodland Hills, CA
91367
800/334-3174,
818/887-8000
Reader service no. 613

Digital Equipment Corp.

146 Main St. Maynard, MA 01754-2571 800/344-4825, 508/493-5111

Reader service no. 614

GCC Technologies, Inc.

580 Winter St. Waltham, MA 02154 800/422-7777. 617/890-0880 Reader service no. 615

Lexmark Int'l, Inc.

740 New Circle Rd. NW Lexington, KY 40511 800/426-2468, 606/232-2000 Reader service no. 616

Mannesmann Tally Corp.

8301 S. 180th St. Kent, WA 98032 800/843-1347, 206/251-5520 (fax)

Reader service no. 617

NewGen Systems Corp.

17580 Newhope St. Fountain Valley, CA 92708 800/879-4639, 714/641-8600

Reader service no. 618

Okidata

532 Fellowship Rd. Mount Laurel, NJ 08054 800/654-3282, 609/778-4184 (fax) Reader service no. 619

Qume

500 Yosemite Dr. Milpitas, CA 95035 408/942-4000 Reader service no. 620

Sharp Electronics

Sharp Plaza Mahwah, NJ 07430 800/237-4277, 201/529-8200 Reader service no. 621

Star Micronics America, Inc.

420 Lexington Ave. #2702 New York, NY 10170 800/447-4700 Reader service no. 622

Texas Instruments P.O. Box 202230 Austin, TX 78720

800/527-3500 Reader service no. 623

For more information about all products in this sidebar, circle reader service no. 902.

WHERE TO BUY

Apple Personal LaserWriter NT

Apple Computer, Inc. 20525 Mariani Ave. Cuperlino, CA 95014 408/996-1010 LIST PRICE: \$2599 ACCESSORIES: legalpaper tray \$79, envelope tray \$89

Reader service no. 604

Epson EPL-7500 Epson America, Inc. 20770 Madrona Ave.

Torrance, CA 90509 800/922-8911, 213/782-0770 LIST PRICE: \$2999 ACCESSORIES: 2MB RAM \$499, 4MB RAM \$899, 100-sheet output

tray \$99, 250-sheet input tray \$275

Reader service no. 605

Everex LaserScript LX

Everex Systems, Inc. 48431 Milmont Dr.

Fremont, CA 94538 800/628-3837, 510/498-1111 LIST PRICE: \$1995 ACCESSORIES: 2MB RAM \$200 (factory installed), HP cartridge

Adobe PostScript Level 2. Includes \$ 149 PC accessories kit with parallel port.

Extra-cost option.
*300-dpi version with 2MB RAM costs \$2495.

EXECUTIVE SUMMARY

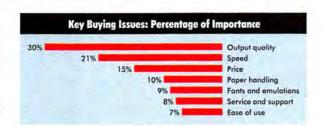
Epson Knows PostScript

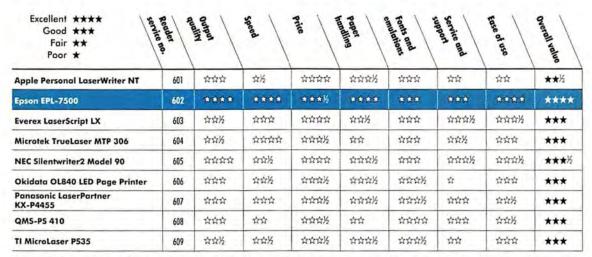
King of the dot matrix world cracks the laser nut with Best Buy EPL-7500.



Once ponderous and pricey, today's PostScript printers are sleek, swift, and surprisingly affordable. The **Epson EPL-7500** wins a Best Buy thanks to its stunning text and graphics, fast performance, and

easy operation. Runner-up NEC Silentwriter2 checks in cheaper than the EPL-7500, with similarly impressive output. But it just can't match the Epson's blistering print performance.





Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

WHERE TO BUY

support \$160 (factory installed), 50-sheet faceup output tray \$50 Reader service no. 606

Microtek TrueLaser MTP 306

Microtek Labs, Inc. 680 Knox St. Torrance, CA 90502 800/654-4160, 213/321-2121 LIST PRICE: \$1995 ACCESSORIES: 1MB RAM \$295, 4MB RAM \$895 Reader service no. 607

NEC Silentwriter2 Model 90

NEC Technologies, Inc. 1414 Massachusetts Ave. Boxborough, MA 01719 800/632-4636, 508/264-8000 LIST PRICE: \$2495 ACCESSORIES: 2MB RAM \$499, face-up output tray \$139

Okidata OL840 LED Page Printer

Reader service no. 608

Okidata 532 Fellowship Rd. Mount Laurel, NJ 08054 800/654-3282, 609/778-4184 (fax) LIST PRICE: \$2599 ACCESSORIES: 2MB RAM \$399, font cards \$195-\$395 each, 200sheet paper bin \$229, legal-paper tray \$89, envelope tray \$89 Reader service no. 609

Panasonic Laser-Partner KX-P4455

Panasonic Communications and Systems Co. 2 Panasonic Way Secaucus, NJ 07094 800/742-8086, 201/348-7000 LIST PRICE: \$2995 ACCESSORIES: 2MB RAM \$390, legal-paper cassette \$59, envelope cassette \$85

Reader service no. 610

QMS-PS 410

QMS, Inc.

1 Magnum Pass
Mobile, AL 36618
800/523-2696,
205/633-4300
LIST PRICE: \$2795
ACCESSORIES: 1MB
RAM \$345, 2MB RAM
\$495, 4MB RAM \$795,
HP Pro Collection font
cards \$225 each, 250sheet paper feed \$195
Reader service no. 611

Texas Instruments MicroLaser PS35

Texas Instruments
P.O. Box 202230
Austin, TX 78720
800/527-3500
LIST PRICE: \$1749
ACCESSORIES: 1MB
RAM \$239, font cards
\$135–\$205, HP and
Diablo emulation cards
\$175 each, 250-sheet
paper bin \$275, envelope feeder \$275, legalpaper tray \$55
Reader service no. 612

For more information about all products in this article, circle reader service no. 901.

25 MHz.

Announcing The World's Fastest SX Notebook.



AST® Premium® Exec™ 386SX/25

■ 386SX Processing Power ■ 25 MHz Speed ■ True 80 MB Hard Drive ■ 4 MB of RAM Standard ■ Over 3 Hours of Battery Life

Fasten your seatbelt. AST presents the Premium Exec 386SX/25, the very first SX notebook powered by a 25 MHz processor—the fastest available.

The Premium Exec 386SX/25 flies at speeds 25% faster than 20 MHz notebooks—it's even faster than systems with hardware cache. So it cruises through demanding tasks such as

Windows™ 3.0 or vertical applications.

Yet the Premium Exec 386SX/25 is comparably priced to less powerful 20 MHz systems from other manufacturers. Once again, AST offers you the highest performance and quality without the high price.

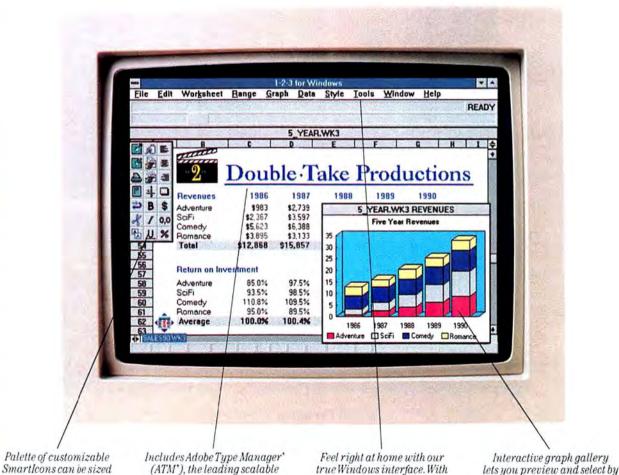
For more information or the dealer nearest you, call **1-800-876-4AST**.

Circle 10 on reader service card

AST markets products worldwide, outside of the United States and Canada call AST International on (714) 727-9292 or FAX to (714) 727-8585. AST, AST logo and Premium registered, Exec trademark AST Research, Inc. Copyright ⊚ 1991 AST Research, Inc. All rights reserved.







it, you can easily integrate

spreadsheet data with other

Windows applications.

font manager, for outstanding

spreadsheet publishing and

presentations.

ATTA

example a wide range of chart

and graph types.

. .

() 太郎

and placed anywhere

on the screen.



deliver a balance of power and simplicity. And third, make it fully compatible with the earlier versions of 1-2-3 that millions of users are familiar with.

Well, we've done all this and more. Which is no doubt why 1-2-3 for Windows was awarded Byte Magazine's *Best New Windows Application* at Comdex/Spring '91.

One of the first things you'll notice about 1-2-3

for Windows is its SmartIcons[™]—simple, one-click shortcuts to

performing common spreadsheet tasks. For example, sum a row of numbers, make text bold, create a graph, save or print a file, even run a macro all in a single step.

Unlike the Toolbar[™] in Microsoft* Excel, 1-2-3 for Windows actually lets you create your own

icons for the tasks that are unique to you.

When you're ready to

print, your results will be nothing short of

perfection. And thanks

to its Auto Compress feature, you can easily

make an entire report

fit on one page.

And yes, 1-2-3 for Windows takes full advantage of the Windows environment, with pull-down menus, dialogue boxes, sizable windows, full DDE support and everything else you'd expect to find in Windows.



Customizable Smartlcons give you push-button access to basic and advanced spreadsheet functionality. Over 50 standard icons come with the program, or create new icons to suit your needs. For example, sum a column or a row, or change text to bold—all in a simple step. 100 NO.

?=

留

N

ĀĀ

\$

0,0

16

心 4 2 9 9 8 8 8 9 9 € 至

What's more, with its interactive graph gallery, you can select by example a wide range of graph types, including true 3D. Altogether, over 200 different graph style combinations.

Finally, to make the move to Windows a simple one, we've

included 1-2-3 Classic* commands in the program. At the push of the slash key, the 1-2-3 menu appears on the screen. So not only are all your existing files, styles, and macros compatible with 1-2-3 for Windows, but the familiar keystrokes are too.

So see why Lotus 1-2-3 for Windows is more than a great Windows spreadsheet.

It's everything you've been looking for in one.

And now upgrade your current version of 1-2-3 to 1-2-3 for Windows and get both 1-2-3 and Ami Pro™ 2.0, our award-winning word processor, for just \$199* (a \$645 value).

For a free auto demo, or to order your upgrade directly from Lotus,**call 1-800-TRADEUP, ext. 6059.



1-2-3 for Windows



"Siggs sted retail price. Offer expires (271.09)
"Please have your credit card and product package rendy when you call. In Danada, call I-800-668-1609.

1991 Lotus Development Corporation. All rights reserved. Lotus, 1-2-3 and Datalens are registered trademark and Smartleonics a trademark of Lotus Development Corporation. Classic is a registered trademark and windows and foodbar are trademarks of Microsoft Corporation. Adobe Dye Manager and ATM are registered trademark and two productions and the Corporation and ATM are registered trademarks of Microsoft Corporation. Adobe Dye Manager and ATM are registered trademarks of Monthly of Microsoft Corporation. Adobe Dye Manager and ATM are registered trademarks of Monthly of Monthly



Why is cc: Mail the lea

cc:Mail is so easy to install, learn and use, you can have your electronic mail system up and running quickly.

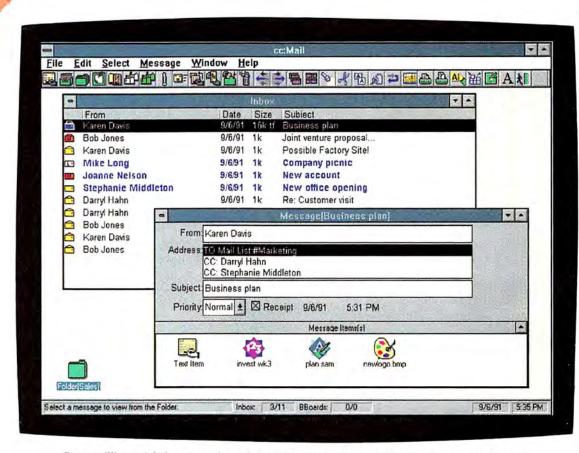








Only cc:Mail can send information across all of these computing platforms to reach everyone in your organization.



Over a million satisfied customers have already given cc:Mail a first-class rating. For example, Windows users love its easy-to-use interface, SmartIcons™ and application integration . And PC World says ''Sending a cc:Mail message is easier than addressing an envelope and licking a stamp.''* 9/91

© Copyright 1991 cc. Mail, Inc., a wholly-owned subsidiary of Lotus Development Corporation. All rights reserved. Lotus, 1-2-3 and Smarthons are registered trademarks of Lotus Development Corporation, cc. Mail is a trademark of cc. Mail, Inc. a wholly-owned subsidiary of Lotus Development Corporation, a wholly-owned Banyan is a registered trademark of Banyan Systems, Inc. Ami Pro is a trademark of Sanna Corporation, a wholly-owned

ding e-mail package?





You can send a file from any mail-enabled application, such as 1-2-3* for Windows and other industry leading software programs without leaving the application.



Keep things running on time with cc:Mail's advanced integrated calendaring and scheduling option.

It's easy to see why cc:Mail [™] from Lotus [®] is the world's leading electronic mail package. Because it delivers more than messages. It handles just about any electronic mail need you

might have. No matter how large or small your workgroup is. With it you can send text, files, graphics and faxes across all major local area networks such as Novell, LAN Manager and Banyan. Without needing new hardware.



Better still, it's the only system that allows you to send electronic mail effortlessly back and forth from different platforms—such as DOS,

Windows[™] 3.0, OS/2^{*} and Macintosh^{*}—
across the same LAN, without the
need for gateways. Plus, with cc:Mail
you can access public mail and even
mainframe mail quickly and easily.

Our newly released cc:Mail for

Windows takes full advantage of Windows 3.0. Support of Dynamic Data Exchange lets you easily send other mailenabled Windows files from within those applications. For example, you can send a report you've written with Ami Pro™ for Windows across the country while the application is still on your desk top.

Plus, cc:Mail is the first package of its kind to take advantage of a new, fully scalable messaging architecture. This means cc:Mail will grow along with your

business. Whether you're adding six new users, 6,000 or 60,000, cc:Mail

is a proven solution.
As *PC World* has said,
'It's clearly a best
buy." *PC World*, 9/91*

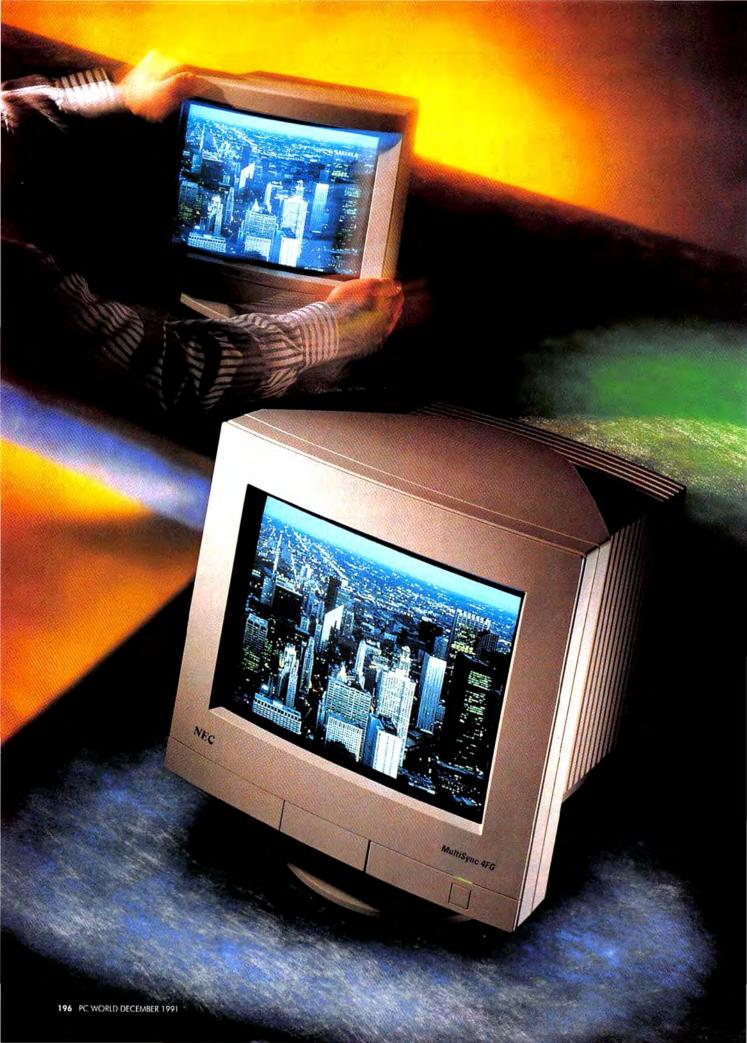
LAN TIMES

For a free demo disk of the cc:Mail Macintosh, Windows or DOS Platform Pack of your choice, call us today at **1-800-448-2500**.



cc:Mail from Lotus

Windows is a trademark of Microsoft Corporation. OS/2 is a registered trademark of International Business Machines Corporation. Macintosh is a registered trademark of Apple Computer, Inc. Novell is a registered trademark of Novell. Inc. subsidiary of Lotus Development Corporation. "This quote reprinted with the permission of PC World.



WINDOWS MONITORS

Now's the time to consider a larger, sharper display. These 12 king-size monitors make Windows shine, and several cost you little more than today's standbys.

an your monitor display everything that Windows has to show? Probably not. The whole idea of Windows is to serve up multiple applications running at the same time, so you can cut and paste, read your electronic mail, and more without breaking stride. To see those applications full-blown, you need more screen area and higher resolution than the usual 12- to 14-inch VGA monitor provides.

Large, high-resolution monitors were once affordable only to those with deep pockets. Fortunately, at this writing, monitor prices are taking a dive, and you can now buy these babies for less than \$1000—and that's a price that makes sense for any serious *Windows* user.

In this review, we've rounded up a dozen high-res monitors measuring 15 to 17 inches diagonally and put them to the test. All of them are *multiscan* monitors, which means they can adapt to several resolutions—including 1024 by 768, a popular new resolution more than twice as sharp as VGA. Better still, this dazzling dozen can do 1024 by 768 *noninterlaced*, a scanning technique that minimizes eye-wearing flicker.

To further protect you from eyestrain, we narrowed the field to include only monitors that support a 70-Hz refresh rate. Studies show that monitors displaying 70 or more screens per second—instead of the 60 screens per second you see on standard VGA—enable you to work for longer periods of time without experiencing eye fatigue.

In other words, this is a great-looking bunch of monitors—the cream of the crop among affordable displays.

When evaluating these overachievers, we measured image sharpness, color intensity, glare, and actual (as opposed to advertised) screen area. We also inspected the controls for accessibility and range, and took into account size and weight—critical factors in a crowded cubicle. And though many of these monitors are just now shipping, we tested vendor service and support so you'll know what to expect if you need help.

A couple of clear winners emerged, the Mag MX15F and the NEC MultiSync 4FG. Both of these 15-inchers won Best Buys by providing an excellent balance of low price and superb image quality. However, if you simply must have the best image possible, consider

Mag's high-priced, 17-inch MX17F.

Remember that to get the full benefit of these monitors, you'll need a super-VGA board that supports high resolution and fast refresh (see "Screen Gems: Super-VGA Boards," August 1991). If your present board doesn't support them, plan on spending \$200 to \$300 for a replacement—or \$500 or more if you want a board that also delivers high video speed.

As we go to press, the wave of affordable, next-generation monitors is just With prices on large,
high-resolution monitors
taking a dive, you can
now buy one of these
babies for under
\$1000.

beginning to crest. You can't go wrong with the top-rated monitors here, but many comparable ones are on the way. Check the table of newly introduced units at the end of this review—and get set for a sharper, brighter future.

TJ Byers is a contributing editor for PC World.

For more information about all products in this article, circle reader service no. 906.

EXECUTIVE SUMMARY

NEC and Mag Do Your Eyes a Favor

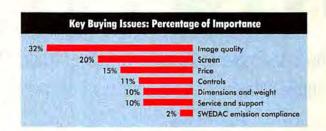
With low flicker and big screens, these monitors show Windows at its best-without overcharging for the view.



Excellent ***

The Best Buy **NEC MultiSync 4FG** stands head and shoulders above the rest, thanks to its excellent price, small footprint, and dazzling images—plus unique controls that help match on-screen color with printed

output. The **Mag MX15F** also qualifies for a Best Buy. While it lacks frills and low-emission compliance, this monitor offers comparable size and image quality at a lower price.



Good *** Fair ** Poor *	eader number	mage quality	Agent /	iti	omrols and	opp.	ompre and ervice and	WEDAC emission	verall value
Aamazing CM-1726X	746	***	公公公公	拉拉拉	ជជជ	***	拉拉拉	n/a	***
ADI 4A MicroScan	747	拉拉	垃圾	垃圾圾圾	ជជជជ	ተተ	垃圾圾	n/a	***
CTX CPS-1760	748	***	***	企业 企业	ជជជជ	公公	企业企 系	n/a	***
Dell GPD-16C	749	ተ ተተ	☆☆☆ %	***	ជាជាជាជា	公公公	ስስስስ	n/a	***
IOcomm CM-5128	750	ជជជជ	动动动场	ជាជាជាជា	ជជជ	ជាជាជាជា	公公公	n/a	***
IOcomm CM-7128	750	ተ ተተተ	垃圾圾圾	拉拉	动动动场	垃垃	ያ ተ ተ ተ ተ ተ	n/a	***
Mag MX15F	751	****	***12	****	***	****	****	n/a	****
Mag MX17F	751	垃圾圾圾	垃圾圾圾	☆	ជាជាជាជា	公公 %	भेभेभेभे	n/a	***
Nanao FlexScan 9080i	752	企业 企为	***	公公光	ជជជជ	ជជជ	ተ ተ ተ ተ ተ ተ ተ	ជាជាជ	***
NEC MultiSync 4FG	753	****	***%	****	****	****	****	****	****
Taxan MultiVision 875	754	***	***	☆☆	ជជជ	计计分级	企业 企场	n/a	***
ViewSonic 7	755	ជាជាជាជា	ជជជជ	公公公	垃圾垃圾	ជជ	拉拉拉	n/a	***

Overall value is calculated by multiplying each category rating by the category's weight percentage, summing the results, and rounding to the nearest half number.

Aamazing CM-1726X

PROS: Excellent sharpness, compact

CONS: Small image area for a 17-incher, slow turnaround for repairs

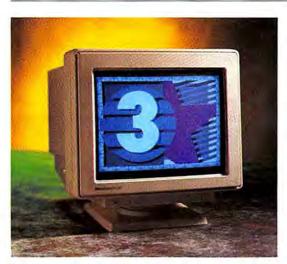
Kicking off this roundup is Aamazing's incredibly good-looking, 17-inch CM-1726X. The screen's dot pitch is a tight 0.26mm—and the image is crisp and clear across the entire tube. Moreover, the unit is small and light for a 17-inch monitor.

So why isn't this monitor a Best Buy? First, its estimated street price of \$1150 is nothing special. Second, the viewable screen area is only 101 square inches. That's because the CM-1726X is one of only two monitors in this roundup that lacks a microprocessor and can't *overscan* to fill the screen all the way to the edges.

Tech support calls are on your dime, and the 14-day turnaround for repair or replacement is simply out of step with the competition. You won't find a 17-inch monitor with comparable image quality for the price, but buy this unit only if you can swing good dealer support.



With a fine 0.26 dot pitch, crisp focus, and accurate color, the CM-1726X offers superb image quality.



The MicroScan's sensible controls, low cost, and compact footprint can't make up for imprecise color and focus.

ADI 4A MicroScan

PROS: Low price, light weight

CONS: Small viewing area, fuzzy focus

If size and weight are primary concerns, check out the \$800 (estimated street price) ADI 4A MicroScan. At just 30 pounds, it won't dent even 'the flimsiest plastic PC, and its small size lets it fit in tight spots.

Otherwise, look elsewhere. The 85-square-inch viewing area ties for the smallest in the roundup. Moreover, the screen has a *convergence* problem that results in color "shadows"—thin red edges around white text characters, for example. Unfortunately, this is an inherent problem that can't be corrected by a repair person.

In some respects, competitors could learn from this monitor. Welltuned push buttons make screen adjustments fast and simple. The warranty is two years, and tech support is 12 hours a day, toll free.

Impressive, but as the ad says, image is everything. The MicroScan is simply too fuzzy to earn a recommendation.

CTX CPS-1760

PROS: Low price, large viewing area, video mode indicator

CONS: Fuzzy corners

With an estimated street price of just \$950, the CTX CPS-1760 is the only 17-inch monitor in this roundup that sells for less than \$1000. For that you get an expansive 114 square inches of screen area. While the focus isn't quite as sharp as that of the other 17-inchers, especially at the corners, it's good enough for all but the smallest text.

The push-button controls are typematic—you hold the button down to repeat the changes—just like your PC's keyboard. An LED readout tells you what video mode the screen is displaying.

The monitor itself has a one-year warranty. But there's a two-year warranty on the CRT, which means you have to pay for the labor of replacing it if it conks out in the second year (about \$45, plus shipping). If you have big-screen dreams on a beer budget, and you don't mind a little fuzziness in the corners, this 17-inch monitor is for you.



The lowest priced of the 17-inchers, the CTX CPS-1760 offers a big viewing area and a handy video mode indicator.

Dell GPD-16C

PROS: Overnight replacement
CONS: Large chassis, hazy screen

Moderately priced at \$999 (direct), the Dell GPD-16C uses an older curved-face CRT with an etched screen for diffusing glare. It also has a dot pitch of 0.31mm—the coarsest in the roundup. Not surprisingly, the image isn't as sparkling as you'll find on today's 0.28mm, nearly flat screens. In addition, it's a fairly large box.

The GPD-16C has every control you could wish for, including manual degaussing, which corrects drifting colors. But plan on buying a small screwdriver, because you must rotate tiny, slotted controls to make adjustments.

The turnaround time is nothing short of fantastic, with guaranteed overnight replacement via Federal Express. If you can get a discount by buying the monitor with one of Dell's PCs, consider it seriously. But if you want to upgrade, you can do a lot better for less money.



The GPD-16C could be a good deal—if you buy it at a discount with one of Dell's fine PCs.



An extremely low \$500 street price and beautiful images make IOcomm's 15-inch CM-5128 a very attractive buy.

IOcomm CM-5128: ThinkSync 5

PROS: Lowest price, great image quality, light weight CONS: No automatic image adjustment, small screen

At a \$500 estimated street price, the CM-5128 from IOcomm is far and away the least expensive monitor in this roundup. It's both lightweight and small, measuring just 15.7 inches deep, perfect for cramped quarters. And while the CM-5128 ties for the smallest screen area (85 square inches), its image is crisp to the corners and glare free.

Plan on doing some tweaking, though, because the CM-5128 is one of only two monitors here that lacks a microprocessor. Exit *Windows* to the DOS prompt and you'll scramble for the horizontal position control. Fortunately, the controls are easy to locate and (because they're simple twist knobs) even easier to use.

If you're looking for a big, high-res display that costs little more than a 14-inch one, and you don't mind fiddling with knobs, buy this monitor. Only the lack of a microprocessor keeps this unit from a Best Buy.

IOcomm CM-7128: ThinkSync 7M

PROS: Large, well-focused screen; some on-site service CONS: Big, heavy

Big brother to the IOcomm CM-5128, the microprocessor-controlled CM-7128 has a large, well-focused 116-square-inch screen. As with the big-screen Taxan and ViewSonic units, which use the same picture tube, you get over 50 pounds of sheer heft and a monster footprint—at an estimated street price between \$1200 and \$1400.

The push-button screen controls are typematic and reside under a front panel cover. You have to press a memory button to record your new settings, and there's no recall button to bring the screen back to factory specs should you find yourself in the twilight zone.

On-site service is for southern California only, but we've been told that some of the service depots will arrange on-site service for this model. The CM-7128 is huge and it's not cheap, but better turnaround time and convenient control location put it ahead of similar units.



It's big and heavy, but the 17-inch CM-7128 offers great image quality and ample viewing area.

NOW SAVE

Add PC World To Your Management Reading List

ACT NOW!

Take advantage of these Special Savings and we'll

BILL YOU LATER!



✓YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only \$19.97. That's

almost 58% off the annual cover price of \$47 subscription rate of \$29.90—plus I receive F		
NAME		
COMPANY		
TITLE		
ADDRESS		
CITY	STATE	ZIP
PiwerBase ** diskette is offered solely by PC World Magazine. It should which is relational database software offered by Compuware Corporation. Pl of your first issue. Offer good in the U.S. only.	lease allow 6 to 8 weeks for delivery	FREE PowerBase*** Disk —12 Tips, Macros and Utilities
✓YES! Bill	Me L	ater
Rush me one year (12 monthly issues) of PC almost 58% off the annual cover price of \$47 subscription rate of \$29.90—plus I receive F	7.40 and over 33% off	the regular
NAME		
COMPANY		

PowerBase ** diskette is offered solely by PC World Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only

PC W\(\begin{aligned} \text{RLD} \end{aligned}

ADDRESS

4G076



✓YES! Bill Me Later

Rush me one year (12 monthly issues) of PC World for only \$19.97. That's almost 58% off the annual cover price of \$47.40 and over 33% off the regular subscription rate of \$29.90—plus I receive FREE: PC World's PowerBase*.*.

NAME		
COMPANY		
TITLE		
ADDRESS		

PowerBase ** diskette is offered solely by PC World Magazine. It should not be confused with 'power-base' which is relational database software offered by Compuware Corporation. Please allow 6 to 8 weeks for delivery of your first issue. Offer good in the U.S. only.



4G076





BUSINESS REPLY MAIL

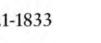
FIRST CLASS PERMIT NO 1262 BOULDER, CO

POSTAGE WILL BE PAID BY ADDRESSEE

PC World Subscription Department P.O. Box 51833 Boulder, Colorado 80321-1833

Haddoodladladladladladladladladla

NO POSTAGE NECESSARY IF MAILED IN UNITED STATES



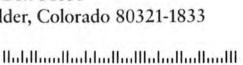


BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO.

POSTAGE WILL BE PAID BY ADDRESSEE

PC World Subscription Department P.O. Box 51833 Boulder, Colorado 80321-1833 NO POSTAGE NECESSARY IF MAILED IN UNITED STATES





BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 1262 BOULDER, CO.

POSTAGE WILL BE PAID BY ADDRESSEE

PC World Subscription Department P.O. Box 51833 Boulder, Colorado 80321-1833

Haldhaalladdadhalladhalladhalladh

NO POSTAGE NECESSARY IF MAILED IN UNITED STATES



Our notebook PC, cellular phone, and fax have revolutionized business. Again.

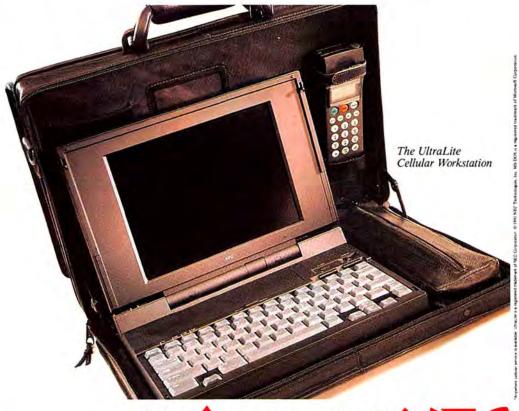


Who better to bring you a portable Cellular Workstation than NEC? After all, we're a leader in fax machines and hand-held cellular technology, And we invented the notebook PC.

Introducing the new UltraLite* Cellular Workstation. A high-performance notebook computer with an internal fax modem and a state-of-the-art cellular phone. All made by NEC. All in one convenient leather attaché. To meet all your business needs. Anywhere!

The powerful UltraLite SX/20 comes ready to run, loaded with MS-DOS* and all the data communications software you need. So you can send and receive faxes, read and reply to E-mail, query data bases or retrieve important files. And with the compact cellular phone you're never out of reach of the office or clients.

NEC's unsurpassed notebook and cellular technology have been combined in a revolutionary total portable communications solution. Now there really are no limits to how far your business can go. For more information, call 1-800-NEC-INFO.





Where Else Can You Get An Ocean View Like This?

Want to see more of the world?

Check out the view from our Windows.

Because now, with new World Atlas for Windows, you can see the world as you've never seen it before.

With just a quick click of the mouse, you can swiftly navigate the globe. And along the way, explore hundreds of impressively detailed, full color reference and relief maps, all developed by professional cartographers.

And while other Atlas programs may promise you the world, only ours can give you such a picturesque panorama of every major region.

Fascinating, detailed portraits of the world's great oceans.

Plus an extensive look at over 200 countries. With conversions for currency, weights and measures and time

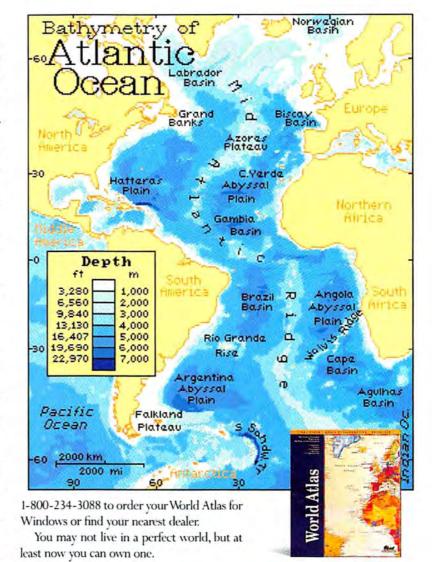
In addition to World Atlas' 4,000 statistical maps, you'll find comprehensive data on over 285 world and regional topics.

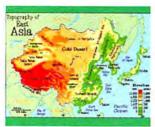
Analyze them. Chart them. Compare them.

Get an instant snapshot of crime in Costa Rica, inflation in Ireland, tourist attractions in Tanzania and much more. All of which you can use to quickly and easily create graphs, reports and custom maps.

And since World Atlas for Windows takes full advantage of the Windows environment, you can now copy and paste any map, graph or data into any Windows file. You can even create new categories and add your own data to the permanent database. Apart from Windows, World Atlas is available for IBM, Macintosh, Multimedia PC and CDROM.

So if you want to turn days of research into minutes, revolutionize your travel planning, or simply provide your kids with a better world, call





What a relief.



Over 200 reference maps



Nothing compares to our comparison maps.



Buying Smart: Large-Screen, Super-VGA Monitors

When running Windows at high resolutions, there's no compromising on screen size. But there's more to consider than viewing area. Sharpness, brightness, and color intensity all play a role in image quality.



SCREEN

With Windows, if you increase screen resolution

and use the same old 14-inch monitor, screen fonts grow smaller. That's because the characters are made up of a fixed number of dots, so letters that are ½-inch tall on a 14-inch 640 by 480 VGA screen are only just over ½-inch tall on a 14-inch 1024 by 768 screen. Raise the resolution and increase the screen size, and the characters won't shrink as much.

Published screen size is the diagonal measurement of the CRT (or picture tube) from corner to corner before it's mounted in the cabinet.

Subtract for the bezel, and you end up with a smaller-than-advertised screen (a 15-inch screen is typically more like 13½ inches). The total viewable image area (in square inches) is a better way to compare screen sizes, and we've provided this for your convenience.

Screen glare varies according to screen flatness and screen treatment. As a rule, the flatter the screen, the easier it is to eliminate glare by using the tilt-and-swivel base to adjust the viewing angle.



IMAGE QUALITY

Image quality is greatly affected by dot pitch—

the distance between tiny picture elements on the screen. Generally, the smaller the dot pitch, the crisper the image. On a 17-inch monitor, the dot pitch should be no greater than 0.31mm—about 80 dots per inch; 15-inch screens demand 0.28mm or better.

Of course, the finest dot pitch in the world can't make up for bad focus or poor color registration (commonly called convergence). Users often create bad focus themselves by turning up the brightness too high—overdriving the electronics—or setting the contrast too low. Many monitors limit the range of both.

Poor convergence is caused by a misalignment of the red, blue, and green electron beams. It results in white dots tinged with crescents of color that decrease image sharpness. You can correct slight convergence problems with a pincushion/barrel convergence control, which several of the monitors here offer. Really bad convergence problems are caused by incorrect gun settings at the factory or damage incurred in shipping and require the services of a technician.

Stray magnetic fields also affect convergence. Seven of these monitors have a manual degaussing button that neutralizes screen magnetization. If your monitor lacks a degausser, you can pick up a handheld degaussing coil at Radio Shack.



DIMENSIONS AND WEIGHT

A number of Fortune

1000 companies have a size and weight restriction on monitors, usually because there's only so much space in the standard company cubicle. Check your company's height and depth restrictions before buying. If the monitor is to sit on the PC, make sure the PC can handle the weight; many small-footprint PCs can't bear the load of a 50-pound, 17-inch behemoth.



CONTROLS

The screen controls for the monitors in this

roundup are more versatile and easier to use than controls found on most smaller units. Most incorporate a programmable microprocessor that analyzes and remembers size and centering adjustments for the different video modes you work with. Just make sure the controls and power switch are accessible from the front of the monitor, or plan on growing gorilla-length arms.



SWEDAC EMISSION COMPLIANCE

Possible health risks as-

sociated with monitors are a growing concern. Two monitors in this roundup comply with SWEDAC's emission guidelines. See "Monitor Emissions: Hazard or Hype?" for details.



SERVICE AND SUPPORT

Because these monitors are more complex than

standard VGA monitors, there's more to go wrong. Demand at least a one-year warranty, but two years is obviously preferable. A central tech support number with long hours can help you fix minor problems (especially those due to user misadjustments).

However, most monitor problems require a qualified repair technician. On-site service saves a trip to the shop and eliminates problems caused by moving the monitor, but few vendors had their on-site policies hammered out by press time. Two companies offer overnight express replacement, a godsend if you don't have a backup monitor.

Mag MX15F

PROS: Low price, video mode indicator

CONS: Small screen



With a street price of just \$700, the Mag MX15F costs the least among the microprocessor-controlled 15-inch monitors. Despite the small 87-square-inch viewing area, *Windows* fonts come through crisp and clear.

Moreover, the Mag has the lowest profile of all the monitors reviewed.

As with the CTX, the Mag's push-button controls are typematic; they work smoothly and record your changes automatically. A handy LED indicator displays the current video mode, a nice feature for those who switch between *Windows* and other applications.

The warranty is one year for parts and labor, but with a two-year warranty on the CRT; approximate replacement cost of the CRT in the second year is \$110, including shipping. With its small size, clear images, and hot price, this sizzling monitor roundly deserves its Best Buy.



A terrific screen, compact cabinet, and intelligent image adjustment all for \$700 on the street?



If you can afford it, the big, beautiful MX17F will furnish you with the best image quality available in its class.

Mag MX17F

PROS: Large screen, exceptional clarity

CONS: Expensive, heavy

The MX17F is the best-looking monitor of the crop. Thanks to a small 0.26mm dot pitch, the screen text of this baby is so large and clear that users won't need their reading glasses. But with nearly 20 inches of depth and 50 pounds of heft, you'll need a fair amount of elbow room and a PC with a solid cabinet. And with an estimated street price of \$1450, this unit is also the most expensive one we reviewed.

Although the push buttons are typematic, they are easy to control. There's no recall button, but the controls won't put you into the outer limits. An LED displays the current video mode.

Like its baby brother, the MX17F has a one-year warranty for parts and labor plus a two-year warranty on the CRT. The screen on this beauty is so great that it defies comparison. The only question is whether you can justify its high cost for *Windows* work alone.

Nango FlexScan 9080i

PROS: SWEDAC Level 1 compliance, sharp focus

CONS: Curved-face CRT

The 16-inch FlexScan 9080i displays an impressively sharp image, though it uses an older, curved-face CRT, which causes more glare than flat-screen models. The street price of \$1200 is about average for a monitor of this size.

The FlexScan's controls are unique. Instead of using push buttons, the monitor uses one knob for all adjustments. You simply choose the screen function and start twisting—a fast, accurate method. Another switch changes the display to black-and-white or amber.

The FlexScan is one of a handful of color monitors that meet SWEDAC's low-emission radiation standards. Compliance is with Level 1 only, not the more stringent Level 2. If you're worried about radiation, then the 9080i is one of few choices—but check out the NEC MultiSync 4FG before deciding.



One of two low-emission monitors reviewed, the FlexScan also has the handlest controls of any monitor we've seen.

Last year alone, over 160,000 businesses made Pacioli 2000 their smart choice in accounting software.

For Only

PC W\(\text{RLD}\)

BEST BUY

Pacioli 2000 is easyto-learn. It's easyto-use. It provides all the accounting features you need.

And best of all, while other packages cost hundreds, even thousands of dollars, *Pacioli 2000* costs only \$49.95.*

No wonder over 160,000 businesses have purchased *Pacioli* 2000 in the past year alone.

They've discovered what you'll discover— that it's the smart accounting choice.

After all, Pacioli 2000 makes

"...a full-featured package that adds the extra element of network support."

Computer Reseller

managing your business finances easier than ever.

Easier, because it features M2/S2™(Multi-Module/Single-System). M2/S2 fully integrates eight accounting modules in one system: General Ledger, Accounts Receivable, Accounts Payable, Inventory Control, Billing, Purchasing, Budgeting, and Auditing.

These modules, along with

"...the equal of other high end accounting programs in every way but cost." New York Times

pull-down menus, full mouse support, context-sensitive help and automatic installation, create a full-featured accounting program that's extremely "user-friendly".

Pacioli 2000 also provides 36



"...the best software value of the year."

on-line accounting periods, and Multi-Company Support, allowing you to keep up to 999 companies on-line.

Plus, it's fully networkable — with no additional user fees! While other companies will charge you hundreds of dollars for network capabilities, we include it at no extra cost.

Pacioli 2000 is backed by a 90day money-back guarantee (less shipping charges) when purchased directly from M-USA. And we include free 30-day technical support to registered users.

Also available to registered users are free offers for our complete *Payroll* system, and the *Pacioli 2000* video tutorial (you pay only shipping and handling).



Circle 7 on reader service card

So, when you choose an accounting software for your business, choose the program honored as a "Best Buy" by PC World magazine and Computer Buyer's Guide and Handbook. And hailed as the "Best Financial Software of 1991" by Compute magazine.

The program over 160,000 businesses have picked as their smart accounting choice.

Choose Pacioli 2000.

To order, visit your local software dealer.

Or call us at **1-800-345-4243**, Operator **254**.

*Suggested retail USA. Add \$7.50 S & H (and 8.25% sales tax for Texas residents).

Special Pacioli 2000 Canadian Version

is also now available. Supports GST and PST.

Only \$99.95 (Canadian) Suggested retail plus freight.

To order, call 1-800-668-0454, Operator 2540

Free offers not available in Canada.

M-USA Business Systems, Inc. 15806 Midway Road Dallas, TX 75244-2195

Minimum Hardware Requirements: IBM or compatible computer with 500Kb of free memory available, hard disk, MS-DOS 2.1 or later (3.1 or later for networks), and 132 column dot matrix printer in compressed mode.

1991 M USA Business Systems, Inc. All rights reserved. Pacioli 2000, Pacioli 2000 Syrioli and M2'S2 are trideriarias of M-USA Business Systems. Inc. All others are rasomarks or resistance trademarks of their owners.

Our notebook computer already has the lowest list price of any leading brand.

Model N3/SX20

386SX, 20 MHz

40 or 60 MB hard drive

VGA with 32 grey shades

6.9 lbs.

2.5 hour battery life

3 hour recharge time

2 MB memory expandable to 5 MB

lightweight adapter/ recharger

fax/data modem option

12" x 10" x 1.8"

MS-DOS 5.0

As a rule, low price means low perfor-

mance in the fiercely competitive PC

and Super VGA monitor, the Leading

Edge N3/SX20 notebook can also

double as a desktop for gen-

eral business use. How do

we offer so much high

market. But this is

the exception to the

rule - an incredibly

portable 386SX note-

book machine running

at 20MHz. VGA screen with 32 shades

at 20MHz, VGA screen with 32 snade

of grey. 84-key standard-spaced key-

board. Internal fax/data modem

option. And with ports for

both external keyboard

performance at

such a low price?

With the backing of Daewoo. A

22-billion dollar company whose

strength and resources have made

Leading Edge the leading

LEADING EDGE' brand in price/performance.

A Daewoo Telecom Company

(Call to find out how low. 1-800-874-3340)

LEADING EDGE. THE LEADING BRAND IN PRICE/PERFORMANCE.

FEATURES EVALUATION

Big Monitors for Wide-Open Windows

Large displays like these let you see several Windows applications full-blown. Beautiful screens, low street prices, and intelligent controls earn Best Buys for the NEC 4FG and Mag MX15F.

tandard features	1	1	/	1	1			Horston yo	anso madi	Modfrey Sto	1	,
Street price	\$11501	\$800 1	\$950 1	\$999	\$5001	\$1300	\$700	\$14501	\$1200	S8251	\$1300	\$12001
List price	\$1599	\$859	\$1495	\$999	\$695	\$1995	\$1099	\$1549	\$1699	5899	\$1978	\$1999
Video-mode indicator	0	0	•	0	0	0	•	•	0	•	0	0
creen												
CRT size (diagonal inches)	17	15	17	16	15	17	15	17	16	15	17	17
Viewable area (square inches)	101	85	114	108	85	116	87	116	104	85	120	116
Dot pitch (mm)	0.26	0.28	0.28	0.31	0.28	0.28	0.28	0.26	0.28	0.28	0.28	0.28
Flat screen	•	•	•	0	•	•	•	•	0		•	•
imensions and weight									07		7-8-1	817 BU
Height (inches)	15.9	14.2	17.1	16.5	14.2	16.9	13.7	16.5	15.9	15.5	15.2	16.9
Depth (inches)	16.9	15.4	16.5	18	15.7	19	17.3	19.5	17.7	16.5	17.1	19
Weight (pounds)	46	30	44	46	32	51	37	50	45	39	51	51
ontrols												
Microprocessor controlled	0	•		•	0	•		•	•		•	•
Front-panel power switch/ brightness/contrast	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	0/0/0	01010	0/0/0
Reset/recall	0	•	0	0	0	0	0	0	0	•	•	0
Pincushion/barrel convergence	0	0	0	•	•	0	0	0	•	•		0
Manual degauss	•	0	0	•	0	•	•	•	•	•	0	•
WEDAC emission compliance	0	0	0	0	0	0	0	0	•2	•	0	0
ervice and support												
Warranty (months)	12	24	123	12	12	12	123	123	12	12	24	12
On-site service less than \$100	0/0	0/0	0/0	0/0	0/0	0/0	0/0	0/0	010	0/0	0/0	010
Vendor support												
Central support/toll-free	010	0/0	0/0	0/0	0/0	0/0	0/0	●/●	0/0	0/0	0/0	0/0
Daily support (hours)	8.5	12	12	15	9	9	9	9	10	9.5	10	10
Weekend support	0	0	0	•	0	0	•	0	0	•	0	0
Electronic BBS/fax	010	0/0	010	●/●	0/0	010	0/0	●/●	0/0	0/0	0/0	0/0
Turnaround policy	14 days	3 days	3-5 days	24 hrs 4	3 days	3 days	3 days	3 days	2-3 days	24 hours	3 days 5	7-10 day
Vendor-to-dealer support												
Dedicated support staff required	distributor	•	distributor	direct	0	0	distributor	distributor	0	•	distributor	0
Support staff training required	distributor	•	distributor	direct	0	0	distributor	distributor	•	•	distributor	•
Dedicated support line for dealers	distributor	0	distributor	direct	0	0	distributor	distributor	0	•	distributor	0
Inventory and parts requirement	distributor	0	distributor	direct	0	0	distributor	distributor	0	•	distributor	0
		_					BEST			BEST		

¹ Estimated.

³24 months on the CRT.

²MPR Level I only. ⁴Next-day replacement via Federal Express.

⁵ Next-day replacement via Federal Express at extra cost.

NEC MultiSync 4FG

PROS: Low price, excellent sharpness, SWEDAC Level 2 compliance

CONS: Small screen



If you want the best bang for the buck, look no farther than the Best Buy NEC MultiSync 4FG. For just \$825 (estimated street price) you get 85 square inches (15 diagonal inches) of super-crisp, flat-screen viewing. The

monitor's slim profile meets the toughest space requirements, and it complies with SWEDAC's stringent Level 2 radiation standard.

Unique to the MultiSync 4FG is the ability to adjust screen colors, a boon to color printing. And if you don't like what you see, you can return to factory specs. For clarity's sake, NEC has left off any antiglare coating, so if a light causes problems, buy the optional glare filter (\$79).

Turnaround time for repairs is a short 24 hours. The MultiSync 4FG has everything you could ask for: color adjustment, small footprint, SWEDAC compliance, and a low price. Don't miss this bargain.



A generation ahead, the MultiSync 4FG offers a brilliant screen, the lowest emissions, and unique color controls.



The MultiVision has the largest viewing area of the 17-inchers and a long two-year warranty.

Taxan MultiVision 875

PROS: Large screen, overnight replacement CONS: Heavy, poorly located controls

Taxan's MultiVision 875 is another challenger for the big-screen, heavyweight title. Weighing in at 51 pounds, this unit boasts a large 120-square-inch screen and good focus over most of the tube. The \$1300 street price is right in there with the other 17-inchers.

All controls, including the power switch, are located on the right side of the monitor. This means you have to crane your neck to find the correct button, then (with your finger still on the button) swing back around to observe the adjustment.

The warranty is a long two years, and you can buy an insurance policy that guarantees overnight replacement should your monitor fail during the warranty period. The MultiVision 875 has what it takes to be a champ—and it could have been one, were the controls better located.

ViewSonic 7

PROS: Large, well-focused screen

CONS: Big, heavy, seven-to-ten-day repair turnaround

The last of our big-screen heavyweights is the ViewSonic 7. Like the units from IOcomm, Mag, and Taxan, it gives you nice big characters on a large viewing area—and a hernia if you're not careful. Basically, the IOcomm CM-7128 and ViewSonic 7 are twins—a phenomenon you'll be seeing a lot more of as large-screen monitors proliferate. The estimated street price is \$1200, about average for a 17-inch monitor.

The push-button screen controls are simple to operate. Don't forget to save your new settings, though, or they'll be lost when you switch off the monitor.



A near twin of the IOcomm CM-7128, the ViewSonic has a big, attractive screen and conveniently located controls.

Give Us a Few Minutes and \$199⁹⁵ and We'll Network Your Small Business.



That's all you need to turn your scattered PCs into a fully functioning network that includes both software and hardware, guaranteed!

Easy to Buy. Now you can finally afford to share your resources like printers, hard drives and programs making data and equipment available to everyone who needs them. For only \$199.95, you can get the MainLanEasy Network Starter Kit which includes network boards, network software, E-Mail, interfaces for both DOS and WINDOWS and plenty of cabling. It's the only network that offers so much for so little, and its perfect for your growing small business. Plus, it's available everywhere!

this easy. If you can plug in your phone, you can install MainLanEasy yourself in minutes. Just snap in the network boards, plug in the phone cabling to each PC and install the software. It's just that simple. Plus installation support is free, too.

Easy to Use. MainLanEasy works the way you do. Whether you use WINDOWS or DOS, or a combination of both, this network is designed to run transparently without a dedicated server. And, MainLanEasy makes logical use of menu icons so access to the network is quick. E-mail and MainLan's exclusive MainLOC password security are other features that you'd only expect to find on networks costing hundreds of dollars more. And MainLanEasy is compatible with all popular network software.

MEDIA CODE: PCW

Easy to Expand. The MainLanEasy Starter Kit has everything needed to connect 2 PCs and it is easily expandable. Expansion adapters are only \$99.95 each, so that when you're business grows, you can afford to let your network grow, too. Plus, should you ever need a larger network, MainLan offers the exclusive 100% trade-in guarantee which lets you apply all of your MainLanEasy purchase price toward the economical MainLan Ethernet and MainLan 386 networks which expand to hundreds of nodes! It's a guarantee that finally makes expansion in expensive!



MainLan's Family of Networks which has an installed base of over 100,000!

Networking doesn't have to be hard or expensive! MainLan has affordable solutions for your small business. So if you've got a few minutes and a small budget, we've got your network!

To Order, For More Information, or For the Dealer Nearest You Call:

1-800-999-6770

Unconditional 30-Day Money-Back Guarantee When Ordered Directly.

MainLan, Inc. and DacEasy, Inc. are U.S. subsidiaries of the Sage Group plc. MainLan Inc., 1215 N. Highway 427, Ste 135, Longwood, FL 32750 © Copyright 1991 MainLan, Inc. MainLan is a trademark of MainLan, Inc. All company names and product names are trademarks of their respective corporations.

The information service that's more than a retriever. It's your own personal bloodhound.

Dow Jones News/Retrieval is not only loyal, it's extraordinarily obedient. Not only will it fetch

facts for you, but all on its own it will relentlessly — and continuously — track down exactly the news and information you need.

The way it works is simple. With just a few keystrokes, you can set up separate electronic

folders for the topics you want to be kept current on. Then News/Retrieval will automatically search through a multitude of Dow Jones news sources. And feed your electronic folders a steady stream of timely, preselected news, which you can read So you can spend your time actually using the information, instead of gathering it.

Up-to-the-second informa-

Just \$29.95 gets you started and includes three free hours.*

For more information, call
1-800-522-3567, Ext. 295.

In N.J., it's 609-520-8349, Ext. 295.

As well as hundreds of local, regional and national business publications.

In addition to the news, you'll also have access to a wealth of historical business and financial data.

To send News/Retrieval chasing after the news you need, simply call our toll-free number.



*One-time offer to new U.S. members only Free time is per account and must be used within 30 days after receipt of password. Certain data bases have charges in addition to usage fees, which are excluded from the free-time offer Dow Jones News/Retrieval and Dow Jones News Service are registered service marks, Capital Markets Report is a service mark and The Wall Street Journal is a registered trademark of Dow Jones & Company, Inc. 4D Bights Reserved.

© 1991 Dow Jones & Company, Inc. All Rights Reserved.

WHERE TO BUY

Aamazing CM-1726X

Aamazing Technologies 5980 Lakeshore Dr. Cypress, CA 90630 714/826-9680, 714/826-9681 (fax) LIST PRICE: \$1599 WARRANTY: One year TECHNICAL SUPPORT: 8½ hrs.

Reader service no. 746

ADI 4A MicroScan

ADI Systems Inc. 2121 Ringwood Ave. San Jose, CA 95131 800/228-0538, 800/675-7322 (California) LIST PRICE: \$859 WARRANTY: Two years TECHNICAL SUPPORT: 12 hrs.

Reader service no. 747

eye10001.tif

CTX CPS-1760

CTX Int'l
20530 Earlgate St.
Walnut, CA 91789
714/595-6146,
714/595-6293 (fax)
LIST PRICE: \$1495
WARRANTY: One year,
two years on the CRT
TECHNICAL SUPPORT:
12 hrs.

Reader service no. 748

Dell GPD-16C

Dell Computer 9505 Arboretum Blvd. Austin, TX 78759-7299 800/289-3355, 512/338-8700 (fax) LIST PRICE: \$999 WARRANTY: One year TECHNICAL SUPPORT: 15 hrs.

Reader service no. 749

IOcomm CM-5128: ThinkSync 5 IOcomm CM-7128: ThinkSync 7M

IOcomm Int'l Technology 12700 Yukon Ave. Hawthorne, CA 90250 213/644-6100 LIST PRICE: \$695 for CM-5128, \$1995 for CM-7128

WARRANTY: One year TECHNICAL SUPPORT:

Reader service no. 750

Mag MX15F Mag MX17F

Mag Innovision 4392 Corporate Center Dr. Los Alamitos, CA 90720 800/827-3998, 714/827-3998 LIST PRICE: \$1099 for MX15F, \$1549 for MX17F WARRANTY: One year, two years on the CRT TECHNICAL SUPPORT: 9 hrs

Reader service no. 751

Nanao FlexScan

Nanao USA 23535 Telo Ave. Torrance, CA 90505 213/325-5202, 213/530-1679 (fax) LIST PRICE: \$1699 WARRANTY: One year TECHNICAL SUPPORT: 10 brs.

Reader service no. 752

NEC MultiSync 4FG

NEC Technologies 1255 Michael Dr. Wood Dale, IL 60191 800/366-0476, 708/860-9500 LIST PRICE: \$899, antiglare filter \$79 WARRANTY: One year TECHNICAL SUPPORT: 91/2 hrs.

Reader service no. 753

Taxan MultiVision

Taxan America 161 Nortech Pkwy. San Jose, CA 95134 800/648-2926, 408/263-4900 LIST PRICE: \$1978 WARRANTY: Two years TECHNICAL SUPPORT: 10 hrs.

Reader service no. 754

ViewSonic 7

ViewSonic 12130 Mora Dr. Santa Fe Springs, CA 90670 800/888-8583, 213/946-1618 (fax) LIST PRICE: \$1999 WARRANTY: One year TECHNICAL SUPPORT: 10 hrs.

Reader service no. 755

How would you rather hunt for an image?

Scrapbook+ for Microsoft® Windows™ lets you see the images you've stored, so you don't have to guess your way through long lists of cryptic filenames to find what you need. You can store hundreds of images with multiple formats in a single Scrapbook+ file... view them in seconds as thumbnails or full size... and then quickly place them into your documents. Don't waste another minute playing hideand-seek with your images. Call 800/727-2793 for your local dealer.

© 1990 Eikon Systems, Inc., 989 E. Hillisdale Blvd., Suite 260, Foster City, CA 94404

The old way.

blinker.tif eye10006.tif foureyes.cgm eye10007.tif cornea.bmp glasseye.eps eye10008.tif crosseye.drw large.cgm eye10009.tif eagleeye.eps lenses.drw eye10010.tif eye.drw moreeyes.tif eye.pcx eye2.pcx oneeye.cgm eye.txt eye3.pcx optomet.pcx eye01.cgm eyeball.tif pupils.bmp eye02.cgm eyeball.wmf sadeyes.bmp eye03.cgm eyelash.bmp small.cgm eye04.cgm eyelid.tif sparkle.tif eye05.cgm eyepiece.pcx squinter.cgm evel.pcx eyes.rtf sunglass.drw

threeeye.cgm

eyes01.drw

The Scrapbook+ way.



Big-Screen Monitors: Best of the Rest

Model	List price	CRT size (diagonal inches)	Dot pitch (mm)	Microprocessor controlled	Dimensions (inches) ¹	SWEDAC compliance	Warranty (months)
Acer AcerView 76	\$1199	17	0.31	Y	16.8 x 16.6 x 18.1	N	12
Addonics MON-C171	\$1395	17	0.31	N	15.9 x 17.2 x 16.3	N	12
Addonics MON-C151	\$1095	15	0.28	N	14.3 x 14.8 x 15	N	12
Hewlett-Packard HP D1188A	\$2795	16	0.28	N	14 x 15.8 x 17.9	N	12
NEC MultiSync 5FG	\$1599	17	0.28	Y	16.4 x 17.8 x 19.8	Y	242
Princeton Ultra 1700	\$1699	17	0.26	Y	15.5 x 15.8 x 17	N	12
Qume QM870	\$1495	17	0.26	Υ	16.3 x 16.3 x 16.4	N ₃	12
Relisys RE1776	\$1495	17	0.26	N	22.5 x 22 x 22.5	N	12
Sampo AlphaScan 17	\$1395	17	0.28	Y	16.3 x 15.9 x 17.2	Y	12
Sony CPD-1604S	\$1699	17	0.25	N	15.9 x 16.8 x 17.3	Υ	12
Tatung CM-17MBD	\$1799	17	0.26	Υ	14.9 x 16.2 x 18.9	N	12
TVM MediaScan 6A	\$1395	17	0.26	Υ	15.7 x 16.4 x 17	N	12
		TOWNSON THE PARTY OF THE PARTY		- 1. T. S.	C. P. C.		- V - V - V - V -

Height by width by depth.

2 24 months parts, 12 months labor.

3 Extra-cost option.

WHERE TO BUY

Acer America 408/922-0333

Reader service no. 864

Addonics 408/944-0393 Reader service no. 865

Hewlett-Packard

800/752-0900

Reader service no. 866

NEC Technologies 708/860-9500 Reader service no. 867

Princeton Graphics

Systems 800/221-1490, 404/664-4103 (fax) Reader service no. 868

Qume 800/457-4447, 408/942-4052 (fax) Reader service no. 869

Relisys 408/945-9000 Reader service no. 870 Sampo America 404/449-6220.

404/447-1109 (fax) Reader service no. 871

Sony 800/222-0878 Reader service no. 872 Tatung

800/827-2850, 213/637-8484 (fax) Reader service no. 873

TVM Professional Monitor Corp. 714/985-4788, 714/985-8377 (fax) Reader service no. 874

Acer (





Great View, Clear Choice.

End to end, nobody offers you a clearer choice of 14-inch color monitors than the AcerView™ series – from VGA to SuperVGA to UltraVGA. Including models that meet low emission, VESA™ and European standards...that incorporate an advanced 72Hz refresh rate technology for a flicker-free display...that use the highly acclaimed Sony Trinitron® tube for vivid color sharpness. These quality monitors all come with front-mounted user controls and tilt/swivel base. All are backed by Acer® engineering – for reliability you can count on. Take the wide view – AcerView – and you'll find the right monitor at the right price.

Monitor Emissions: Hazard or Hype?

Cigarettes, fatty foods, monitor emissions...all pose a hazard to your health. Or do they? While the harmful effects of nicotine and saturated fats are well documented, conclusive evidence has yet to emerge about electromagnetic emissions from monitors.

Still, inconclusive evidence abounds. Since 1977, studies have linked high cancer rates to electromagnetic fields from power lines and other sources; in 1982, a Canadian study implicated monitors as another potentially dangerous source. A Kaiser Permanente study of 1583 women, published in 1988, suggested that those who spent more than 20 hours a week in front of a VDT had an 80 percent higher risk of miscarriage than those who performed

similar work without computers.

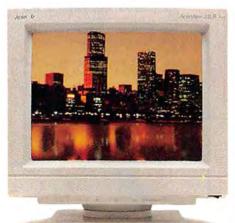
Critics argue that in such studies it's difficult to separate the possible effects of emissions from those of stress and other factors. Nonetheless, many of us would prefer not to wait until the experts decide on the quality of the evidence.

The Swedish Board for Technical Accreditation (SWEDAC) has taken bold preemptive action in setting limits on monitor emissions.

SWEDAC's two standards, MPR 1 and MPR 2, specify maximum values for both alternating electric fields and magnetic fields and provide monitor manufacturers with useful guidelines in creating low-emission monitors.

Until recently, low-emission displays have been almost exclusively monochrome. This roundup features two new low-emission color monitors: the Nanao FlexScan 9080i and NEC's MultiSync 4FG. The FlexScan complies with the Level 1 guidelines, while the MultiSync 4FG complies with the far more stringent Level 2 guidelines.

Even a monitor compatible with the Level 2 standard isn't necessarily "safe." No one, including SWEDAC, claims to have established safe limits for emissions—especially when definitive proof of harm is elusive. But then, we weren't so sure about nicotine 30 years ago. Buying a lowemission monitor costs little more than buying an ordinary one. If you'd rather be safe than sorry, consider the FlexScan or the MultiSync—or any of the other low-emission competitors that should arrive soon.







	AcerView 35	AcerView 25	AcerView 33	AcerView 33LR	AcerView 31	AcerView 11
Screen	14" 0.26mm Sony Trinitron	14" 0.28mm	14° 0.28mm	14" 0.28mm/Very Low Radiation	14" 0.28mm	14° 0.39mm
Resolution	1024 x 768 non-interlaced	640 x 480 800 x 600 72Hz refresh rate 1024 x 768 non-interlated 70Hz refresh rate	640 x 480 800 x 600 60Hz refresh rate 1024 x 768 interlaced	640 x 480 800 x 600 60Hz refresh rate 1024 x 768 interlaced	640 x 480	640 x 480
Horizontal Scan	31KHz-55KHz	31KHz-60KHz	31KHz-38KHz	31KHz-38KHz	31.5KHz	31.5KHz
Compatibility	UltraVGA, VGA, XGA, 8514/A	UltraVGA, VGA, XGA, 8514/A	SuperVGA, VGA, XGA, 8514/A	SuperVGA, VGA, XGA, 8514/A	VGA	VGA
MSRP*	\$899	\$799	\$599	\$669	\$529	\$399





Your Global Partner in Computing

Acer America Corporation
401 Charcot Avenue • San Jose, CA 95131
1-800-SEE-ACER

Acer and the Acer logo are registered trademarks and Acer View is a trademark of Acer America Corporation and Acer Incorporated. Story and Trinitron are registered trademarks of Sony Corporation. VESA is a trademark of Video Electronics Standard Association.

Had your fill

1990 World Class Award for Best Mail-Order Company



☐ 31/2" format available from us. Specify when ordering.

package includes both 51/4" and 31/2" disks.
 31/2" format available from manufacturer by request. Call us for details.

CP—copy-protected; NCP—not copy-protected.

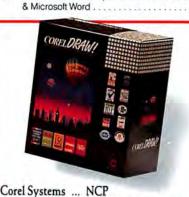
The four-digit number next to each product is the product's ITEM NUMBER. Please refer to this number when ordering. Thank you.

SOFTWARE

We carry only the latest versions of products. Version numbers in our ads are current at press time.

Products listed here in red are Microsoft Windows Applications.

	Adobe Systems NCP
7547	Adobe Type Manager 1.1 for Windows \$69.
9623	Adobe TypeAlign 1.0 for Windows 69.
	Adobe TypeSets for Business ea. 95.
9874	Adobe TypeAlign 1.0 w/ATM
7928	Adobe Plus Pack 1.0
8367	■ATM & Plus Pack Bundle 169
7392	Adobe PostScript Cartridge (with choice of
	FREE Type Cartridge 1 or Type Cartridge 2) 299.
	(Entire Adobe Type Library, from 1 to 230
	is available. Call for more information.)
	Aldus NCP
8000	□Persuasion 2.0 for Windows 359.
1332	□PageMaker 4.0. 549.
V	Application Techniques NCP
1214	● Pizazz Plus 2.0 69.
9621	Picture Eze 1.0 for Windows 99
222	Artisoft NCP
2455	Lantastic EtherNet Starter Kit (includes
	software, 2 EtherNet cards, cable) 495.
2452	EtherNet Adapter Card 209.
2454	EtherNet Microchannel Starter Kit 649.
2.0	Ashton-Tate NCP
4450	□dBASE IV 1.1
1100	Atech Software NCP
9436	□Publisher's Powerpak 1.2 for Windows, 49.
9435	□Publisher's Powerpak 2.1 for WordPerfect
2400	& Microsoft Word



5506 □ CorelDRAW! 2.0-The PC graphics

CoreIDRAW! 2.0 now comes with more

drawing power, more type control, and more

value...and it's still easy to use \$389.

software that's fast, fun and powerful.

Automap ... NCP 2729 ☐Automap 1.0... Avery Dennison ... NCP Label Pro 1.0 (Laser). 6006 7336 Avery 1st Impression 1600 Banner Blue Software ... NCP 3322 Org Plus Advanced 6.0. 3324 Berkeley Systems ... NCP 9885 After Dark 1.0A for Windows. Bitstream ... NCP 7568 FaceLift 1.2 for Windows 2.x/3.0. 8040 ■FaceLift 1.5 for WordPerfect 5.0/5.1 . . . 59. Companion Value Pack 1.0. 125. Type City Cartridge with Deli 259. Typeface Packages each 89. Borland International ... NCP 6242 Quattro Pro 3.0..... □Borland's C+ + 2.0..... 9695 339 1514 Paradox 3.5 ... □Pascal Pro (2nd Edition) 209. 7356 9635 Object Vision 1.0 . Broderbund ... NCP New Print Shop. 1434 ButtonWare ... NCP ■TakeNote 1.0 for Windows 3613 6419



Bitstream ... NCP
Fast and easy to use, FaceLift scales printer
fonts to any size. FaceLift for WordPerfect 1.5
now includes 16 typefaces and provides dot
matrix support.
8040 FaceLift 1.5 for WordPerfect 5.0/5.1 . \$59.
7568 FaceLift 1.2 for Windows 2.x/3.0 ... 59.

	Caere NCP
8933	Omnipage Professional 1.0 669.
	Central Point NCP
5039	□PC Tools 7.1
8114	Backup 7.0 (DOS and Windows) 84.
1675	●Commute 1.0
9751	• AntiVirus 1.0
	Chipsoft NCP
1663	Turbo Tax Personal 1040 for DOS 9.0 49.
3517	Turbo Tax Personal 1040 for Windows 2.0 59.
	State Tax Packages
	DOS ver ea. 38. Windows ver ea. 49.
	Chronologic Corporation NCP
8849	●Instant Recall 1.2 64.
	CompuServe NCP
7546	DOS Membership Kit 1.3 29.
	Concentric Data Systems NCP
6575	R & R Relational Report Writer 4.0 159.
	Corel Systems NCP
5506	□CorelDRAW! 2.0
	DAC Easy NCP
1748	Accounting 4.2
1751	■Bonus Pack 4.2
	Data Storm NCP
4798	●PROCOMM PLUS 2.01 69.
	Delrina Technology NCP
2446	■WinFaxPro 2.0
7351	■PerFORMPRO 1.0
	Digital Research NCP
8288	□DR DOS 6.0



Berkeley Systems ... NCP 9885 After Dark 1.0A for Windows—Prevent screen burn-in with over 35 incredible displays—Aquatic Realm, Flying Toasters, Logo, Messages, Multimodule or create your own. Features DOS blanking, password protection & SOUND! \$29.

7298 7300	HiJaak 2.1
	Inset Systems NCP
6222	■Resume Maker 1.3
1328	Individual Software NCP Professor Windows 1.0 27
2666	IBM NCP □DOS 5.0 Upgrade
8204	HyperACCESS/5 2.0 (DOS)
9627	Netroom 2.0 (single user)
8974	©Icon Designer 1.0
9639	hDC Computer Corporation NCP
7983	Hayes NCP Smartcom Exec 2.0
4880	□One Write Plus Acct. Sys. 2.06 189
9827	Great American Software NCP Money Matters 2.0 & Payroll 2.0 99
9832	Gibson Research NCP SpinRite II 2.0
8789	Geoworks NCP ©Ensemble 1.2
9488	Funk Software NCP Sideways 3.3 & P.D. Queue 1.0 85
6188	Fox Software NCP BFoxPro 2.0
7795	Disklock 1.0
3950	■Fastback Plus 3.0
7725	Fifth Generation Systems NCP ■Direct Access 5.1



Inset Systems ... NCP
7298 ● Hilaak 2.1 – Capture screens & convert
graphics files with Hilaak release 2.1. New
features include 5K pop-up window, many
new raster & vector formats and support for
more than 25 Group 3 fax devices \$99.

of crowded malls?



9847 ■M. V.O.B. for Windows-Incredible Accounting Software for Windows. M.Y.O.B. contains full-featured G/L, A/R, A/P, Inventory and Card file. The hottest selling program for the Mac is now available for PC users . \$139.

	Insight Development NCP
8320	●PrinTools 1.085.
	Intuit NCP
2426	■Quicken 4.0
2474	Quicken with QuickPay
	LaserTools NCP
6882	● PrintCache 2.4
2656	Printer Control Panel 2.2
2801	Fonts-on-the-Fly 1.0 (WordPerfect 5.1/5.0) 99.
	Lotus NCP
5417	□1-2-3 3.1 Plus
5653	□1-2-3 2.3
1852	□1-2-3 2.3 Upgrade 95.
2755	□1-2-3 for Windows 1.0 419.
2747	1.2-3/W and Ami Pro Upgrade 159
5799	■Ami Pro 2.0 309.
1847	Ami Pro Competitive Upgrade
1621	☐Freelance Graphics 4.0 for DOS 349.
2750	
2748	Occ:mail Windows Platform Pack 325.
2749	●cc:mail 25 user Pack 379.
	MacroMind NCP
3484	Action! 1.0 (31/2" only)
	M-USA Business Systems NCP
3408	Pacioli 2000 (Accounting software) 29.



MacroMind ... NCP 3484 Action! 1.0-Create dazzling multimedia presentations. Purchase between 11/1/91 and 12/31/91, send in your registration card along with a dated sales receipt and receive a \$100 rebate directly from MacroMind \$349.

	MECA NCP
2798	☐Managing Your Money 7.0 \$99
4603	Andrew Tobias' Tax Cut 1991 49
	Micro Logic NCP
6787	■Info Select 2.0
	Microcom NCP
7649	●Virex-PC 2.0
6234	CarbonCopy Plus 6.0
2718	Relay Gold for Windows 239
	Microlytics NCP
9636	Strunk & White Elements of Style 1.0 35.
7931	□Random House Encyclopedia 1.0 68.
	Microsoft NCP
3338	□Money 1.0 for Windows
2894	□QuickBasic 4.5
7010	□Windows 3.0. 99
7388	Project 1.0 for Windows 459
2904	□Works 2.0
2735	Works 1.0 for Windows
3337	Publisher 1.0 for Windows 139
2901	□Word 5.5
7387	PowerPoint 2.0 for Windows
6195	Word 1.1 for Windows 329
2856	Excel 3.0 for Windows
8137	Office 1.6 for Windows
2853	■C Compiler 6.0
1620	□DOS 5.0 Upgrade 65
1624	●Visual Basic 1.0

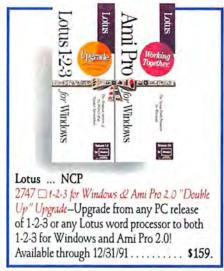


Chipsoft ... NCP 1663 Turbo Tax Personal 1040 for 1991 (Headstan edition)-Everything you need; features over 80 forms, schedules & worksheets plus a tax planning module. Prints IRS-approved returns. Windows version & state packages avail. \$49.

	Multisoft NCP
4925	PC-Kwik Power Pak 2.1
	Nolo Press NCP
5122	■For The Record 2.0
2982	■WillMaker 4.0
	Norton-Lambert NCP
2753	□CloseUp for Windows & DOS Dual Pack 129.
	OCR Systems NCP
9878	RiReadRight 3.0 for Windows 309
	Okna NCP
9696	Desktop Set 3.0 for Windows 85.
	PC Globe NCP
5902	●PC Globe 4.0
5900	■PC USA 2.0
1	200/200 0003

1-000/000-0003

PC Connection 910W 6 Mill Street Marlow, NH 03456 SALES 603/446-7721 FAX 603/446-7791



	Personics NCP
9288	Laptop Ultravision 2.1 (31/2" only) 49.
4384	 Ultravision 2.0
,00,	PowerUp! NCP
7860	Calendar Creator Plus 4.0 52.
7857	■ Labels Unlimited 3.0 49.
7858	●Express Publisher 2.0
7311	● Form Publisher for Windows w/Fill & File 195.
. 0.1	Qualitas NCP
7539	□386MAX 5.12 (w/ASQ)
7967	BlueMAX 5.12 for PS/2 (31/2" only) (w/ASQ) 85.
, 00,	Quarterdeck NCP
3221	□Expanded Memory Mgr. 386 6.0 65.
3220	DESQView 2.4
4586	□DESQView 386 2.4
4500	QUE Software NCP
4155	■RightWriter 4.0
1857	RightWriter 4.0 Network
1037	Reality Technologies NCP
7891	WealthStarter 2.0 w/Charles J. Givens. 39.
6572	WealthBuilder 1.1
03/2	Reference Software NCP
4396	Grammatik IV 2.0
	Grammatik for Windows 2.0
7483	Roykore NCP
0.170	Instant ORG Charting! 1.0. 125.
2473	einstant OHG Charting! 1.0
8162	ABC Flowcharter 1.1
0075	Sitka NCP
6675	☐TOPS Network Bundle 3.0 159.
3720	Flashcard 2.1 (AppleTalk network card) . 155.
05.40	Softlogic Solutions NCP
3542	□Software Carousel 5.0,
0.100	Software Publishing NCP
3496	□Professional Write 2.2 169.
9638	□Professional Write Plus 1.0 169
3482	□Harvard Graphics 3.0 419.
6600	Superbase 4 for Windows 1.3
0000	Software Toolworks NCP
9859	Word for Word 4.2 for Windows 47
3290	Desk Reference Library 45.
	Solution Systems NCP
7977	□Brief 3.1 (Programmer's Editor) 189.
	Spinnaker NCP
1415	●PFS: WindowWorks 1.0
7604	■PLUS or Windows 2.0
2000	Stac Electronics NCP
1409	■Stacker 2.0
2000	Symantec NCP
6397	☐The Norton Backup 1.2 (Windows/DOS) 89.
3146	■The Norton Utilities 6.0
3425	□O&A 4.0



Park at your phone



Tool Technology ... NCP 3863 Win Tools 1.0 for Windows—Full object oriented. Customize with Image Librarian's 100 icons. Automate your work with icons that run programs and Big Sky's sixteen virtual screens (3½" only) \$125.

7999	Norton Anti-Virus 1.5
2359	The Norton Desktop 1.0 for Windows 105.
8378	□PC Anywhere IV 4.03 125.
	Systems Compatibility NCP
9046	□Complete Writer's Toolkit 1.1 85.
6564	□Software Bridge 5.0 79.
	Teleware NCP
9847	M.Y.O.B. for Windows
	TIMESLIPS NCP
2987	□Timeslips III 4.0
1270	□TimeSheet Pro 2.0
	Timeworks NCP
6253	■Publish-It! 2.0
	Tool Technology NCP
3863	WinTools for Windows 1.0 (31/2" only) 125.
	Touchstone Software NCP
7420	
	Traveling Software NCP
5179	■LapLink III 3.0
	Ventura NCP
7796	Publisher V 4.0 for Windows 569.
	WordPerfect Corporation NCP
7781	■LetterPerfect 1.0
4214	WordPerfect Office PC
3804	□WordPerfect 5.1
	WordStar International NCP
1482	■Correct Grammar 1.0 for Windows 65.
6791	□WordStar Professional 6.0 199.
	XTREE NCP
6161	■XTree Gold 2.5
	Z-Soft NCP
1626	Publisher's Paintbrush for Windows 299.



Draw room plans, arrange furniture & more 63. 3638 Design Your Own Home-Landscapes 1.0—Create complete landscape plans............63.

RECREATIONAL/EDUCATIONAL

	Abracadata NCP
3629	Design Your Own Home-Architecture 3.0 \$63.
3631	Design Your Own Home-Interiors 1.0 63.
3638	Design Your Own Home-Landscapes 1.0 63.
	Broderbund CP
8068	•Where in World is Carmen Deluxe 52.
1836	•Where in America's Past is
	Carmen Sandiego 39.
5851	●SimCity
8886	■SimEarth
	Electronic Arts NCP
4534	• Mavis Beacon Teaches Typing 2.0 (CP) 35.
3031	Mavis Beacon for Windows 45
3023	ChessMaster 3000
7865	□PGA Golf
1334	Chuck Yeager Air Combat Trainer 42.
7372	World Atlas 2.0
3050	□ World Atlas for Windows 57
	Harvard Associates NCP
2324	RIPC Logo 3.0
2024	HyperGlot Software NCP
	(French, German, Italian, Spanish available.)
	□Word Torture for Windows ea. 34
	☐Word Torture 3.0 ea. 29.



	Knowledge Adventure NCP	
3861	☐Knowledge Adventure 1.0	65
	Microsoft NCP	
7881	□Entertainment Pack for Windows 1.0	
2858	□Flight Simulator 4.0	39
3270	Aircraft and Scenery Designer 1.0	29
	Microsoft Press (Books)	
3129	Running Windows (2nd Edition)	22
	Penton Overseas NCP	
	VocabuLearn/ce Levels I & II (French.	
	Italian, German, Spanish, Russian,	
	Hebrew and Japanese) each	35
	Sierra CP	
2767	☐ Leisure Suit Larry V (VGA)	
9466	□Space Quest IV (VGA)	
7972	☐King's Quest V (VGA)	45
	Software Toolworks NCP	
3294	■Game Pak (5 games in one)	
9860	Word for Word Professional 4.2.	89
	Spectrum Holobyte NCP	
3047	Wordtris	-
3457	□Falcon 3.0	45
	Stone & Associates NCP	
3435	Letters, Numbers, Words	
3439		27
	Toyogo NCP	
2701	Go Master 5.0 for Windows	
2703	 Nemesis Deluxe Toolkit 5.0 	
2704	Nemesis Deluxe Toolkit 5.0 for Windows.	75
	True BASIC, Inc NCP	
	ElKemeny/Kurtz Math Series each	45



Practical Peripherals ... 5 years 2264 PM2400FX96 Fax Modem—2400 bps internal modem with true 9600 bps send/receive capabilities. A Hayes compatible 1/2 card, it also allows you to receive faxes in the background, & includes QuickLink II. \$145.

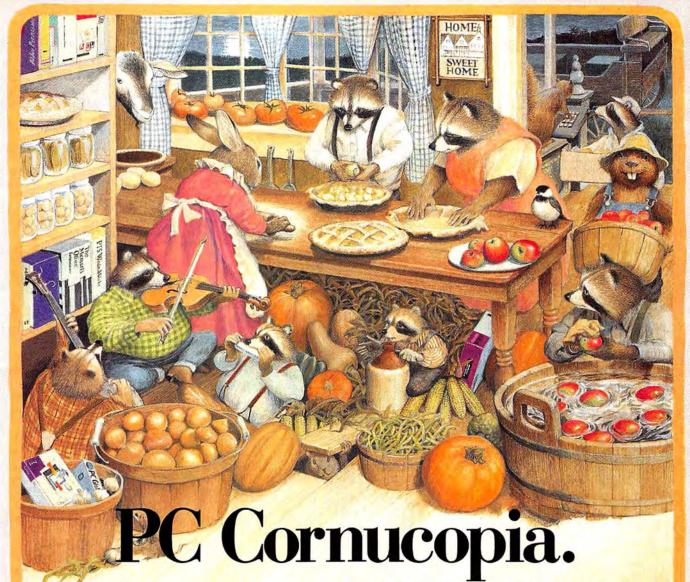
	Walt Disney Computer Software CP	
2629	■Mickey's 123's	5.
2624	Mickey's ABC's	5.

HARDWARE

Warranties listed next to manufacturer.

	American Power 2 years
7108	Smart UPS 400
7105	Smart UPS 600
6811	Back-UPS 360 185.
7106	Back-UPS 520
	ATI Technologies 2 years
9821	VGA Basic-16 (640 x 480, 16 colors) 69.
2706	VGA Wonder XL (w/1 MB)
9985	VGA Integra (1024 x 768, 16 colors) 95.
2382	Graphics Vantage VGA (w/1 MB) 359.
9822	Graphics Ultra (w/1 MB)
2012	Graphics Ultra w/VGA (w/1 MB) 619.
1825	2400etc/i Modem (w/9600 SendFax) 139.
9620	9600etc/e Modem
3080	Stereo • F/X
3076	VGA Stereo • F/X (w/512K, upgrd. to 1 MB) 329.
	Boca Research 5 years
7001	BOCARAM/AT PLUS (OK)
7150	BOCARAM/AT PLUS (2 MB) 219
7139	(4 MB) 329. 7138 (8 MB) 539.
6998	I/O Board for AT
6999	I/O Board for Microchannel (S/S/P) 109
8380	BasicVGA (256K, 640 x 480) 63
8381	SuperVGA (1 MB, 1024 x 768) 145.
3859	2400 Internal Modem
3860	2400 External Modem
5000	Bravo Communications 2 years
7400	2 Position Laser Compatible Switch Box. 109.
, ,,,,,	Brown-Wagh 1 year
8578	Creative Labs Sound Blaster
2336	Creative Labs Sound Blaster Pro 189.
	Caere 1 year
8158	Typist Plus Graphics
	Canon 1 year
	We are an authorized Canon Service Center.
7894	BJ-10ex Printer (4.6 lb.)
7897	BubbleJet Ink Cartridge (BJ-10ex) 23.
7896	BJ-10ex Sheet Feeder
	Cardinal 1 year
2720	MB2450 Internal 2400 Baud Modem 69.
2719	MB2295SR Internal Send/Receive Fax 109.
2721	VGA732 True Color Ultra VGA Card 185.
26.20	CH Products 1 year
7801	FlightStick w/Falcon 49.
	CoStar 1 year
1418	AddressWriter Envelope Printer 499.
10,14	Curtis lifetime
1708	Ruby-Plus SPF-2+ 65.
7358	Command Center SPF-4 89.
	Glass Filter Plus (specify size) each 65.
	indiposity size/





Oh my gourd! What will they think of next?

t's time to preserve, pickle, and pack it in for the season up here in the glorified pumpkin patch of Marlow, NH (pop. 567). But even though there's a definite nip in the air, and we're tucking ourselves in tighter each night, we continue offering the freshest crop of PC products you'll find anywhere—not to mention

service that's way more personal than any computer will ever be.

Our illustrious party animals have been adding a human touch to high tech for almost ten years now. But for newcomers it may be a little hard to see the Connection, so to speak. Well, it's simple—while we do have

the best combination of low prices, technical support, and fast shipping around, we're still just a bunch of country folk doing an honest day's (and often night's) work here in the woods of New Hampshire. Call anytime—whether you want the latest video display or a report on this year's apple crop.

A kernel of truth. (Or, let's not get too corny.)
Things will really start hopping around your office when

you get your supply of PC Connection Popcorn on the Cob. We're sending some free to everyone who places an order for \$750 or more between now and December 31. Just put a cob in the bag, place it in your microwave, and out come three cups of popcorn. What an earful!



Lend you an ear? We'll give you 3 of them! PC Connection Popcorn on the Cob. One batch per customer. Not available outside continental U.S.

P&-CONNECTION

No hustle or hassle.

	Practical Peripherals 5 years
3103	2400 Baud Internal Modem \$85.
3102	2400 Baud External Modem 179.
8993	2400 Baud Internal Modem (V.42 bis) 169
8994	2400 Baud External Modem (V.42 bis) 199.
4542	2400 Baud Internal Modern for PS/2 229.
8132	PM2400 Pocket Modern 109
2266	PM9600 Internal Modem
7934	PM9600SA Modem
2264	PM2400FX96 (modem/fax board) 145.
	Targus lifetime
1305	Universal Notebook (for ntbk. computers) 69.
	TheComplete PC 2 years
8082	Half Page Scanner/400 w/ReadRight 289.
5828	TheComplete Communicator
	Toshiba 1 year
3359	T2000SX Notebook (60 MB)
3360	T2000SXE Notebook (40 MB)
3361	T2000SXE Notebook (60 MB) 3649.
1779	T3100SX Laptop (80 MB)
1773	T3200SX Laptop (120 MB) 3499
victor on	Tripp Lite 2 years
6199	Isobar 4-6 (4 outlets, Gold Seal Warranty) 49.
6200	Isobar 6-6 (6 outlets, Gold Seal Warranty). 59.
6201	Isobar 8-12 (8 outlets, Gold Seal Warranty) 69.
6018	LC1200 (1200W line conditioner)
1528	PS6.0 (600VA on-line UPS)
12420	Video 7 7 years
9768	VRAM II VGA 1 MB 329.
C3.00	Zoom Telephonics 7 years
1307	Int. 2400 Baud w/9600 Baud Fax Modem 109.
1178	Ext. 2400 Baud w/9600 Baud Fax Modem 119.
1170	2400 Baud w/4800 Baud sendfax
1181	2400 Baud V.42bis Modem (2 year) 129.
1167	2400 Baud Internal Modem 65
1166	2400 Baud External Modem
3075	9600 V.32 Turbo Internal Modem (2 yr.) 399.



IOMEGA ... 1 year 2224 Bernoulli II Transportable 90 MB-Rugged and built to last, this drive will absorb 1000 g's of shock and provide 90 MB of portable storage. Awards from Byte and InfoWorld. Requires adapter card \$799.

DRIVES

		Conner Peripherals 1 year	
	8875	CP3044 40 MB IDE HD (25 ms)	
	2339	CP30104 120 MB IDE HD (19 ms)	399
	1337	CP3204 200 MB IDE HD (16 ms)	629
		IOMEGA 1 year	
		We are an authorized Iomega Service Cert	ter.
	2224	Bernoulli II Transportable 90 MB.	799
	2616	Internal 90 MB Bernoulli	799
	2500	PC2B Controller	
	2530	90 MB Cartridge.	
	2467	90 MB Cartridge Tripak	439.
		Mountain Network Solutions 2 year	irs
	2917	40-60 MB Internal Tape Drive	259
i	5190	DC2000 Pre-formatted Cartridges ea.	35.
:	6153	DC2120 Tape Cartridge (5 pack)	149
•		Pacific Rim 1 year	
	1304	1.2 MB External (for any parallel port)	239
•	6602	1.44 MB External (for PC/XT/AT)	239.

	Plus Development 2 years
8304	Hardcard II XL 50 MB (9 ms)
8287	Hardcard II XL 105 MB (9 ms) 599.
	Seagate 1 year
4554	40 MB Internal HD ST251-1 (28 ms) 249
1321	ST157A 40 MB IDE Hard Drive 229
1320	ST 1144A 130 MB IDE Hard Drive 459
	TEAC 1 year
4670	1.44 MB Drive for PC/XT (31/2") 69.
4326	1.44 MB Drive for AT (31/2", w/Basetech). 89.
4951	720k Drive for PC/XT (31/2")
6951	1.2 MB Drive for AT (51/4")
	MEMORY

6556	256k DRAM (100 ns, set of 9)	call
5510	1 MB x 9 SIMMs (80 nanosecond)	
2497	4 MB x 9 SIMMs (80 nanosecond)	call
5746	1 MB Chips (80 ns. set of 9)	call
7813	256K x 4 Chips	call
	N. A. Committee of the	



Boca Research ... 5 years

Fast & affordable, these modems provide many powerful features-at pleasantly surprising prices. Both are backed by a 5 year warranty. 3860 2400 External Modem \$109.



Quarterdeck ... NCP

3221 Expanded Memory Manager 386 6.0-Gain up to 200K or more of previously unusable memory. Incl. automatic memory conversion, full compatibility with Windows, & speed optimization of memory (w/Manifest). . \$65.

DISKS/MEDIA

	Maxell lifetime	
2790	51/4" MD2-D 1.2 MB Diskettes (Qty. 10)	15
2792	31/2" DS/DD 720k Diskettes (Qty. 10)	13.
2793	31/2" DS/HD 1.44MB Diskettes (Qty. 10)	21
	Sony lifetime	
3291	51/4" DS/DD 360k Disks (Qty. 10)	8.
3297	31/2" DS/DD 720k Diskettes (Oty. 10)	11.
3298	31/2" DS/HD 1.44 MB Diskettes (Qty. 10) .	18.
6148	31/2" DS/DD (3 Pack)	29

6375	31/2" DS/HD (3 Pack)	\$49.
8185	QD2040 Tape Cartridge	19
1895	QD2120 Tape Cartridge	
6715	QD6150 Tape Cartridge	27
	3M lifetime	
3943	DC 2000 Tape Cartridge	19.
6065	DC 2080 Tape Cartridge	25
3944	DC 600 Tape Cartridge	29
5679	DC 6150 Tape Cartridge	29
	The state of the s	

OUR POLICY

- We accept VISA and MASTERCARD only.
- No surcharge added for credit card orders.
- Your card is not charged until we ship.
- If we must ship a partial order, we never charge freight on the shipment(s) that complete the order (in the U.S.).
- No sales tax, except Ohio residents (please add applicable tax).
- All U.S. shipments insured; no additional charge.
- APO/FPO orders shipped 1st Class Mail.
- International orders U.S. \$250 minimum. Manufacturer support and upgrade eligibility may be limited outside
- Upon receipt and approval, personal and company checks clear the same day for immediate shipment of your order
- COD max. \$1000. Cash, cashier's check, or money order
- 120 day limited warranty on all products. Defective software replaced immediately. Defective hardware repaired or replaced at our discretion. All items subject to availability. Prices and promotions subject to change without notice.
- To order call us Monday through Friday 8:00 a.m. to 1:00 a.m., or Saturday 9:00 a.m. to 5:30 p.m. Eastern Time. You can call our business offices at 603/446-3383 Monday through Friday 9:00 a.m. to 5:30 p.m.



Intel ... 5 years

3864 14.4EX Modem-Intel's fastest modem! Features 14.4Kbs throughput (up to 57.6Kbs with compression), 16 MHz 80188 automatic error correction with Trellis Coded Modulation, and automatic speed optimization \$549.

SHIPPING

Note: Accounts on net terms pay actual shipping Continental US:

- For heavy hardware items such as printers, monitors, Bernoulli Boxes, etc. pay actual charges. Call for UPS 2nd-Day & Next-Day-Air.
- For all other items, add \$3 per order to cover UPS Shipping. For such items, we automatically use Airborne Express at no extra charge if you are more than 2 days from us by UPS ground. Hawaii:
- For monitors, printers, Bernoulli Boxes, computers, hard drives, and power backups, actual UPS Blue charge will be added. For all other items, add \$3 per
- Alaska and outside Continental US:
- Call 603/446-7721 for information.

and give us a call



Canon ... 1 year 7894 BJ-10ex Printer-New enhanced version of the popular 4.6 lb. printer provides laser-like print quality (up to 360 dpi) on plain bond paper, envelopes or transparencies. Available in white or gray \$339.

	Cyrix Corporation 5 years
	MATH COPROCESSORS
9875	FasMath 83D87-25
9876	FasMath 83D87-33
9877	FasMath 83S87-16 (SX compatible) 115.
	Datadesk 3 years
6901	Switchboard (modular keyboard)
	Epson 2 years
	We are an authorized Epson Service Center.
1906	FX-850 (80 col., 264 cps, 9 pin) 319.
1904	FX-1050 (136 col., 264 cps, 9 pin) 449.
2358	LQ-570 (80 col., 252 cps) 289
2361	LQ-870 (80 col., 330 cps)
2357	LQ-1170 (136 col., 330 cps) 669.
5184	LX-810 (80 col., 180 cps, 9 pin) 185.
	Everex 1 year
1683	Tempo LX Notebook (5 MB, 60 MB HD) 2899.
	Hauppauge Computer 1 year
9870	25 MHz 386N Motherboard for AT 899.
9034	33 MHz 386N Motherboard for AT 979.
0004	Hayes 2 years
7391	Ultra 96 Modem
3522	OPTIMA 96 479.
9884	Pocket Edition 2400
3004	Hewlett-Packard 1 year
9993	LaserJet IIIP (with toner)
	Laser let III (with toner)
6754	LaserJet III (with toner)
9492	Hitachi 2 years 14MVX/LMF 14" SVGA Monitor (1024 x 768)
9492	(with low radiation screen) 489.
3864	Intel 5 years
1	1.44EX Modem
6421	2400B MNP Internal Modem 189.
6420	2400EX MNP Modem
7880	9600EX Modem
2346	Inboard 386/PC with 1 MB., 495.
5336	Above Board Plus 8 2 MB 449.
5342	Above Board Plus 8 I/O 2 MB 479.
7782	SatisFAXtion (fax board) 389.
8778	SatisFAXtion for Microchannel 449.
8903	Matched Memory 4 MB (PS/2)
	Matched Memory (for LaserJet IIP, III, IIIP IIID)
1810	1 MB 99. 1787 2 MB 159.
1637	Snap-In 386
3358	Power Pak (Snap-In 386 & Above Board
	Microchannel 4 MB) 925.
	MATH COPROCESSORS
7385	80287XL (16 MHz 80286 CPU's) 89.
4750	80387SX (16 MHz 80386SX CPU's) 129.
6830	80387SX-20 (20 MHz 80386SX CPU's) . 145.
5409	80387-33 (80386DX CPU's)

	Kensington Microware 1 year
2582	Master Piece Plus \$99.
7899	Expert Mouse serial 119, 7900 bus 129
3312	LaserStand
3311	MasterStand
	Key tronic 3 years
4518	101 Plus Keyboard
	Kraft 5 years
5801	Game Card (2 ports) 27
5813	Game Card w/Thunderstick 49.
5800	3 button Thunder Joystick 29
7862	TopTrak (Laptop Trackball)
	Logitech limited lifetime
6029	Trackman serial 75, 6028 bus 79.
2343	Trackman Portable
1484	ScanMan 32
7975	ScanMan 256
3295	MouseMan (combo) 75. 9766 (cordless) 89.
	Megahertz 5 years
1193	T324D 2400 Modem (for Toshiba Laptops) 129.
1196	T224 2400 Modem (for Toshiba Laptops) 129.
1187	T324FM 96/24 Fax Modern (Toshiba Lptps.) 299.
1199	T52CC - 2 MB Upgrade for
	Toshiba T 1000 series or T2000SX 239.
	Micron Technology 2 years
7595	2 MB Expansion for HP LaserJet IIP or III 119.
7012	Memory Upgrade PS/2 70 - 2 MB 139



Hayes ... 2 years 3522 OPTIMA 96-Get Hayes performance and reliability at a terrific price! Supports V.32 9600 bps operation with V.42bis data compression for speeds up to 38,400 bps..... \$479.

	Microsoft lifetime
7597	Microsoft Mouse (bus or serial) 89.
2897	Mouse with Paintbrush (bus or serial) 105.
2898	Mouse with Windows 3.0 (bus or serial) . 149.
1956	Mouse with Works (bus or serial) 155.
1896	Ballpoint Mouse (serial only)
	MicroSpeed 1 year
2763	MicroTRAC (serial & PS/2 interface) 59. PC-TRAC Trackball
6007	serial 75. 6008 bus 89.
7271	Inport 79. 6330 PS/2 79.
	Mouse Systems lifetime
5997	Trackball (1 yr, wrnty.) serial. 65. bus 69.
3213	PC Trackball II (serial)
7878	PC Mouse III (serial) 89. (bus) 95.
1	200/200_0003

1-000/000-0009



910W PC Connection 6 Mill Street

Marlow, NH 03456 SALES 603/446-7721 FAX 603/446-7791



TIMESLIPS ... NCP 2987 □ Timeslips III 4.0-Know exactly who owes you what with this time and expense billing system. Perfect for service professionals (accountants, lawyers, etc.) who need to track and bill their time \$195.

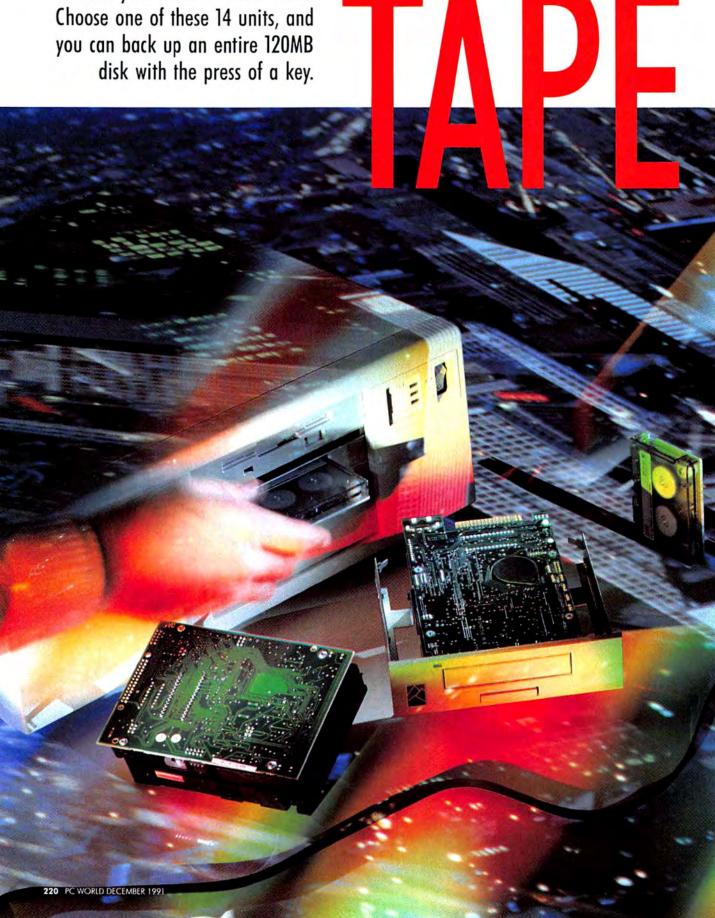
	NEC 2 years	
9441	CDR36 Portable CD-ROM Drive	399
4799	Multisync 2A (VGA Monitor)	139
5085		619
	Orchid Technology 4 years	
7863	ProDesigner VGA IIS (with 1 MB, includes	
	RAMDAC chip)	249
	PC Power & Cooling 1 year	
	REPLACEMENT POWER SUPPLIES	
3203	Turbo Cool 200	149
7915	Turbo Cool 300	165
	Pacific Data Products lifetime	
6779	25 Cartridges in One! (for LJ II, IIP, III). 2	275
2255	Fontbank (0.75 MB)	225
3491		299
8975		275
	Memory upgrade for LaserJet IIP/III:	
7055	2 MB 149. 7759 4 MB 2	259
	Memory upgrade for LaserJet II/IID:	
6838		379
8091	Pacific Connect with 256K	275
8090	Pacific Connect with 1.25 MB	349
7158	Pacific Page PE 4.1 (for LJ IIP/III)	379
6834	Pacific Page (for LJ II) w/2 MB Mem. Brd. 3	379
9833		799
	그는 아이들 아이를 하는 것이 되었다. 그 아이들 이 없는 것이 없는 것이다.	



Microcom ... NCP 7649 Virex-PC 2.0-Powerful, comprehensive solution to DOS-based computer viruses. Featuring: MiniScan TSR for continuous virus protection, Windows & Network compatible, less than 1K & detects over 450 viruses . \$79.



Data is your most valuable asset.



t takes just one brush with hard disk disaster to convince you to back up your data: Nobody wants to be stuck repeating long hours of work or trying to explain the loss of important records to the boss or clients. But for most business users, it's no longer practical to back up a work PC using floppy disks. Today's graphics-intensive business applications require 100MB or larger hard disks, so even with an average 2-to-1 compression ratio and 1.44MB floppy disks, you'd have to shuffle 35 or more disks for every full backup!

Affordable large-capacity tape drives provide the most sensible way to back up data and safeguard your applications. You can launch a backup as you leave the office and find your entire hard disk safely backed up the next morning.

What kind of tape drive do you need to back up today's business PC? You want to fit every megabyte of data from your hard disk onto a single tape. Otherwise, you'll have to babysit the drive, waiting to insert another data cassette. Your tape drive should also be compatible with other tape drives in the office. If PCs get moved around and you get a new working machine, you'll want to be able to restore your application setup and data from the backup tape you made on your old PC. And you never know when you may have to restore a record from a co-worker's backup.

WHICH TAPE STANDARD FOR YOU?

Low drive and media cost convinces most users to buy QIC-40, QIC-80, or Irwin proprietary Servo-format drives. All these drives use quarter-inch minicartridges from the DC2000 family. QIC-40 and Irwin 40MB drives still top the sales charts, but they hold only 40MB of uncompressed data on a standard-length tape and 60MB on an extended-length tape. For today's larger hard disks, the doubled capacities of QIC-80 and 80MB/120MB Irwins are much more practical. You can find QIC-80 drives with street prices as low as \$300, and they'll read tapes from a ART WILCOX

QIC-40 drive you may already own.

YERRE-YVES GOAVEC

80MB/120MB TAPE DRIVES

5	peci	fical	lions

Company		List price	Warranty (months)	Formatted capacity (MB)	Capacity with compres- sion (MB)	Format tape on the fly	Preformat- ted tape available	Tape included	Works with floppy controller	High- speed controller
ALLOY COMPUTER PRODUCTS	Retriever 250C	\$525	12	80/120	250	N	Y	Y	Y	N
BACKTRAX	Phantom 250	\$379	18	80/124	250	N	Y	Y	Y	N
COLORADO MEMORY SYSTEMS	Jumbo 250	\$500	12	80/120	250	N	Y	N	Y	Υı
CORE INT'L	Coretape Light	\$590	18	80/120	300	N	Y	Y	Y	N
EVEREX SYSTEMS	Excel 120F	\$359	24	80/120	240	N	Y	N	Υ	N
IRWIN MAGNETIC SYSTEMS	AccuTrak Standard 250 AccuTrak Plus 250	\$359 \$479	12 12	80/120 80/120	250 250	2 2	Y	N	Y	N Y
MAYNARD ELECTRONICS	ArchiveXL 5580i	\$499	12	80/120	250	Y	Y	Y	Y	N
MOUNTAIN NETWORK SOLUTIONS	FileSafe 8000Plus FileSafe 8000Plus Mach2	\$795 \$995	24 24	80/124 80/124/152	250 304	N Y	Y	Y	Y	Y
TALLGRASS TECHNOLOGIES	FS250 FS300	\$575 \$995	24 24	80/120 80/120/150	250 300	2 2	2 2	Y	Y	N Y
TECMAR	MiniVault 250	\$519	24	80/120	250	N	Y	Y	Y	Υı
WANGTEK	Model 3080	\$599	12	80/120	250	N	N	Y	Y	γι

Fatra-cost notion

The popular Irwin drives. although not compatible with the QIC-80 standard, use the same DC2080 (80MB) and DC2120 (120MB) media and provide similar capacities at a similar price. And they're sold widely with systems, particularly Compags and IBMs. So if you already have 40MB/ 60MB Irwin drives in your office, an 80MB/120MB Irwin drive is probably your best choice because you'll still be able to read Irwin's Servo-format 40MB tapes.

Each drive listed here comes with menu-driven back-up software, but the QIC-80 standard gives you other options as well. Both the powerful Central Point Backup 7.0 and Sytron's Sytos Plus 1.3 can back up to both floppies and tape and provide full QIC-40/80 support. The popular Fastback Plus and Norton Backup floppy-based programs also promise QIC-40/80 support soon (see "No-Sweat Backup Software," July 1991).

With a program that handles floppy and tape backups, your entire staff can use the same software, whether they're backing up big disks with tape or small ones with floppies. You should be able to use Central Point Backup 7.0 or Sytos Plus 1.3 with all drives in this guide except the Backtrax, Everex, and Irwins, which require their own software. Happily for Windows fans, Central Point Backup 7.0 comes with Windows versions; Irwin has just added a \$60 Windows upgrade to its EzTape; and Colorado Memory Systems has a \$49 Windows upgrade.

Drives recognizable as a DOS device can be assigned a drive letter. You can then back up to them with any floppy-based package, but you'll sacrifice both speed and function.

CAPACITY AND FORMATTING

Each drive's backup program provides data compression, which on the average can dou-

ble storage capacity. Software compression slows your backup, but that's a small price to pay for the increased capacity you'll gain. Mountain Network Solutions and Tallgrass Technologies increase tape capacity another 25 percent on some of their drives by offering proprietary formatting schemes that store 150MB of uncompressed data on a DC2120 tape or up to 300MB using compression. If you use this extracapacity backup mode, however, other QIC-80 drives won't be able to read your tapes.

You have to format a tape before it can store data. The Maynard Archive XL 5580i and the Mountain FileSafe 8000Plus Mach2 let you format your tape on the fly during the backup process, sparing you the separate, time-consuming formatting process that can tie up your computer for as long as 3 hours. Fortunately, most vendors sell preformatted tapes that let you

avoid this inconvenience. If you order preformatted tapes from someone other than your drive vendor, make sure you're buying the tape that works with your drive.

CONTROLLERS AND BAYS

Most QIC-80 drives can run from your system's existing floppy controller, so unless your controller is already supporting its limit, you won't need to give up an expansion slot. If your floppy controller is driving all the devices it can handle, however, you'll need to purchase a floppy interface card along with your backup drive.

Several vendors offer highspeed interface cards that can effectively double the speed of a floppy controller—helpful if you need to back up during the workday. For an extra \$299, Colorado Memory Systems offers a compression controller that lets you back up with no loss in speed.

If you own a PS/2 or any

Bund	ed	sof	twa	re

Floppy controller available from manu- facturer	Fits in 3½-inch bay	PS/2 version available	MTBF (thousands of hours)	Bundled software	Password protection	Backup/ restore multiple disks and partitions	Supports QFA (quick file access)	Backup/ restore by archive bit	Recognized as DOS device	Reader service number
Y	N	Y	30	ResQ120	Υ	Y	N	Y	N	725
Υ	Υ	N	20	BackTrax	Υ	Υ	N	N	Υ	726
Y	Y	Υ	10	Jumbo for DOS	Υ	Y	N	Υ	N	727
Y	Y	Y	25	Coretope Light 2.0	Y	Y	Υ	Υ	Υ	728
Y	Y	Y	10	Everex FTape 3.0	Y	Υ	N	Υ	Υ	729
N	N	Υ	50	EzTape 2.22	Y	Υ	N	Υ	N	730
N	N	Υ	50	EzTape 2.22, EzTape 3.0 for Windows	Y	Y	N	Y	N	730
Υ	Y	Y	30	QICStream 2.0	Υ	N	N	Υ	N	731
Y	N	Υ	12	FileSafe Tape Software 5.2.3	Υ	Y	Y	Y	N	732
N	N	Υ	12	FileSafe Tape Software 5.2.3	Y	Υ	Υ	Y	N	732
Y	Y	Υ	12	FileSecure 1.5x	Υ	Υ	N	Y	N	733
N	Y	Y	12	FileSecure 1.5x	Y	Y	N	Y	N	733
γ	Y	N	24	MiniVault Software	N	Υ	Y	Υ	N	734
Y	Υ	N	40	Central Point Backup 7.0	Υ	Y	Υ	Y	N	735
	controller available from manufacturer Y Y Y Y Y N N N Y Y N N Y Y N N Y Y N N Y N N Y N N Y N	controller available fits in 3½-inch bay Y N Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y Y	Controller	Controller Ovalidate Ova	Page	controller available from manufacturer Fits in bay P5/2 version available MTBF (thousands of hours) Bundled software Password protection Y N Y 30 ResQ120 Y Y Y N 20 BackTrax Y Y Y Y 10 Jumbo for DOS Y Y Y Y 25 Coretape Light 2.0 Y Y Y Y 10 Everex FTape 3.0 Y N N Y 50 EzTape 2.22 Y N N Y 50 EzTape 2.22, EzTape 3.0 Y Y Y Y 30 QICStream 2.0 Y Y N Y 12 FileSac Tape Software 5.2.3 Y Y Y Y Y 12 FileSecure 1.5x Y Y Y Y 12 FileSecure 1.5x Y Y Y Y 12 FileSecure 1.5x Y	controller ovailable from manufacturer Fits in bay PS/2 version available from manufacturer MTBF (thousands of hours) Bundled of hours) Password protection Password disks and partitions Y N Y 30 ResQ120 Y Y Y Y N 20 BackTrax Y Y Y Y Y 10 Jumbo for DOS Y Y Y Y Y 10 Everex Flape 3.0 Y Y Y Y Y 50 EzTape 2.22 Y Y Y N N Y 50 EzTape 2.22, EzTape 3.0 Y Y Y Y Y Y 30 QICStream 2.0 Y N N Y N Y 12 FileSafe Tape Software 5.2.3 Y Y Y Y Y 12 FileSecure 1.5x Y Y Y Y Y 12 FileSecure 1.5x Y Y	controller ovailable from manufacturer Fits in bay P5/2 version available from manufacturer MTBF (thousands of hours) Bundled of hours) Password protection restore multiple disks and partitions QFA (quick file access) Y N Y 30 ResQ120 Y Y N Y Y N 20 BackTrax Y Y N Y Y Y 10 Jumbo for DOS Y Y N Y Y Y 10 Everce Flape 1.00 Y Y N Y Y Y 10 Everce Flape 3.0 Y Y N N N Y 50 EzTape 2.22 Y Y N N Y Y 30 QICStream 2.0 Y N N N Y Y Y 12 FileSafe Tape Software 5.2.3 Y Y Y Y Y Y Y 12 FileSecure 1.5x Y Y<	controller available from manufacturer Fits in bay P5/2 version available MTBF (thousands of hours) Bundled software Password protection Password partitions OFA (quick partitions) Backup/ restore by archive bit Y N Y 30 ResQ120 Y Y N Y Y Y Y N 20 BackIrax Y Y N N Y Y Y Y Y 10 Jumbo for DOS Y Y Y N Y Y Y Y Y 10 Everex Flape 3.0 Y	controller available from manufacturer Fits in bay P5/2 version available MTBF (thousands of hours) Bundled software Password protection restore multiple disks and partitions Supports (disks and partitions) Backup/ restore by archive bit Recognized as DOS device Y N Y 30 ResQ120 Y Y N Y N Y N Y N N Y N N Y N N Y N N Y N N Y N N Y N N Y N N Y N N Y N N Y N N Y N N Y Y N N Y Y N N Y Y N N Y Y Y Y N N Y Y Y N N Y Y N N Y Y N N Y N N Y

For more information about all products in this table, circle reader service no. 904

system that offers only a 3½-inch storage bay, you'll need a drive that fills the bill. All the drives listed here fit in a standard half-height 5¼-inch bay, but only about a third will fit in a 3½-inch bay. In addition, PS/2 owners need to purchase a drive that supports their specific model.

A drive has to be durable, so check the mean time between failures as a rough gauge of overall dependability. But remember that the times listed in the table are based on vendors' claims and have not been tested by *PC World*. Ultimately, the length of the warranty is more important.

SOFTWARE: TAMING TAPE

Each bundled backup program lets you back up selected files or subdirectories. And all include error correction, data compression, and an overwrite warning to prevent accidental loss of existing backup sets or files.

If you have multiple hard

drives or partitions, you'll want your software to back them up in a single session. To save more time, some backup programs support quick file access (QFA), which locates files without first reading every file on the tape—great when you're restoring only a few files. Finally, if your program lets you back up by archive bit, it will automatically back up only those files that have changed since the last backup.

BACKING UP TO THE FUTURE

WHERE TO BUY

Alloy Computer Products, Inc. 1 Brigham St. Marlborough, MA 01752 800/800-2556, 508/481-8500 (fax)

BackTrax 21800 Oxnard St. #700 Woodland Hills, CA 91367 800/669-3506, 818/340-3994 (fax)

Central Point Software 15220 N.W. Greenbrier Pkwy. #200 Beaverton, OR 97006 800/445-4208, 503/690-8088

Colorado Memory Systems 800 S. Taft Ave.

800 S. Taft Ave. Loveland, CO 80537 800/845-7905, 303/669-8000

Core Int'l 7171 N. Federal Hwy. Boca Raton, FL 33487 407/997-6055, 407/997-6009 (fax)

Everex Systems 48431 Milmont Dr. Fremont, CA 94538 800/628-3837, 510/498-1111 Irwin Magnetic

Systems	
2101 Commonwe	alth
Blvd.	
Ann Arbor, MI 481	05
800/421-1879,	
313/930-9000	
Manuscriation and the second	

Maynard Electronics, Inc. 36 Skyline Dr. Lake Mary, FL 32746 800/821-8782, 407/263-3555 (fax)

Mountain Network Solutions 240 Hacienda Ave. Campbell, CA

95008 800/458-0300, 408/379-4300

Sytron Corp. 134 Flanders Rd. Westborough, MA 01581 508/898-0100, 508/898-2677 (fax)

Tallgrass Technologies 11100 W. 82nd St. Lenexa, KS 66214 800/736-6002, 913/492-6002

Tecmar
6225 Cochran Rd.
Solon, OH 44139
800/624-8560,
216/349-0600

Wangtek 41 Moreland Rd. Simi Valley, CA 93065 800/992-9916, 805/583-5255 (fax)

"I don't think we're in Kansas anymore, Toto."



You'd be surprised where the new HP ScanJet IIc scanner can take you.

Our improved 8-bit grayscale brings you black & white that you once only dreamed of. And our new 24-bit color helps give your output magical impact. Both come with true 400 dpi quality.

Our new HP AccuPage technology combined with your OCR software makes text scanning better than ever. And with our automatic document feeder, you can scan up to 50 pages in quick succession.

When it comes to scanning color, the ScanJet IIc only



The HP ScanJet IIc makes it easier than ever to create a great image.

^{*}Suggested U.S. list price. $\mathbb O$ 1991 Hewlett-Packard Company PE 12121 †In Canada, call 1-800-387-3867, Ext. 2548.

The new HP ScanJet IIc opens up a whole new world. With better black & white. And color.



needs to make one pass. So you scan color images faster than you can click your heels three times.

Of course, the ScanJet IIc is compatible with all major software. And it's only \$2,195* for IBM ATcompatible and Micro Channel. Or only \$1,995* for Macintosh.

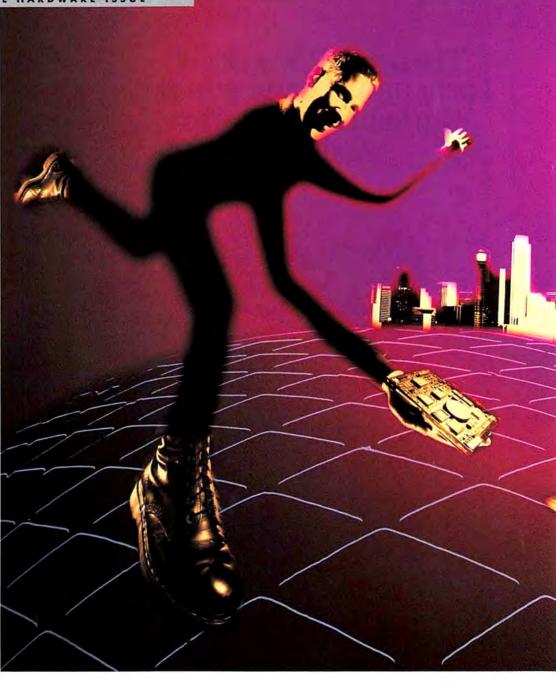
For the nearest authorized HP

dealer or for more information, call 1-800-752-0900, Ext. 2548.[†] You'll experience awes like never before.

HP Peripherals When it's important to you.







ver buy the latest *Windows* application only to find you have no place to put it? Face it: That old 40MB drive just can't cut it with today's multimegabyte applications. It's time you looked for a hard disk that can keep up with your needs. If you're like most users and work with a mix of DOS and *Windows 3.0* software, drives in the 100MB-to-125MB range will do nicely. These drives offer plenty of room for applications, even *Windows* disk-gobblers, plus space for massive data bases and worksheets.

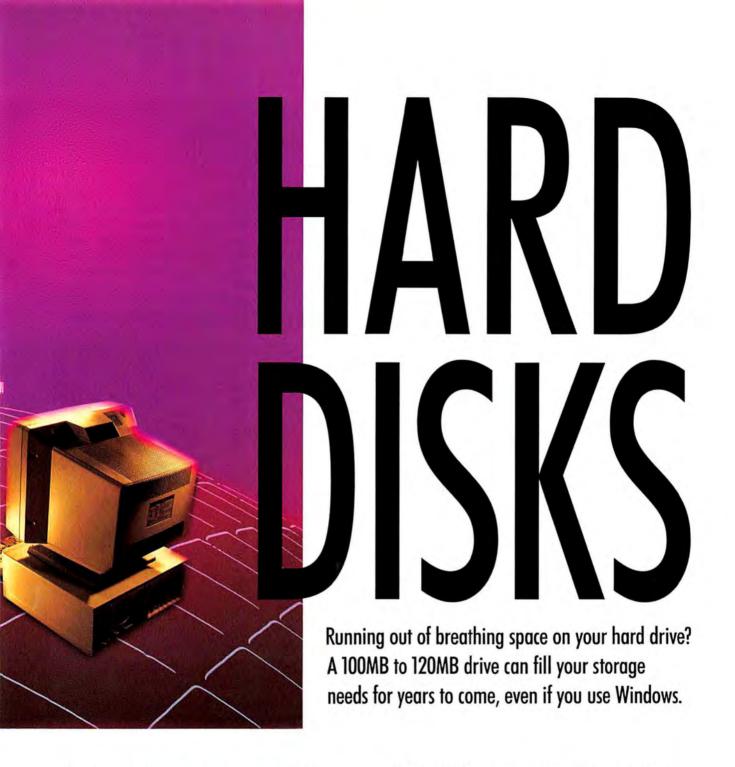
Not that these drives are for everyone. Programmers, or desktop publishers with hundreds of font and clip art files, may find even 125MB inadequate.

List prices for these drives range from just under \$300 to \$1900, or from \$2.60 to \$15.80 per megabyte. Street prices tend to be much lower, so shop around.

Chances are, however, that you'll need more than just the drive. Drives can't run by themselves, and your cost could go up by as much as \$300 if your current controller can't handle your new drive. And if you're not technically inclined, you'll want to pay someone to install your new drive.

A computer and a hard drive can't talk to each other without a device called a controller, which is either attached to your drive or comes on a separate expansion card. If your old

GEORGE CAMPBELL, DAN MILLER, & SUSAN LUSTY



and new drives both use controllers on cards, your old controller *might* work with your new drive, but it's not likely to work well, so you're better off buying your drive and controller together. And if your old controller also handles your floppy drives, keep in mind that your new one must as well.

There are four standard interfaces for hard disks and their controllers, and you need to consider speed, price, and compatibility when choosing the standard that suits you best.

MFM (modified frequency modulation) A few drives are still made with this once popular interface, although these drives tend to be slower. MFM controllers come on expansion cards you plug into your bus, and chances are you already have one, although it may not work well with a new 100MB drive.

IDE (imbedded drive electronics) Because the IDE standard puts the controller on the drive itself rather than on a separate card, it requires only a simple connector in the computer. PS/2s and many PCs put this connector on the motherboard; it's also available on inexpensive adapter cards. IDE drives normally insist on being the primary drive, making it tricky to set one up to coexist with your older drive. Many IDE drives are relatively inexpensive and therefore a good choice for the budget conscious.

SCSI (small computer system interface) A SCSI adapter can control up to seven devices (including CD ROM drives, scanners, and even some printers) each with its own, built-in controller. If you think you may be adding any of these devices,

ORGANIZING YOUR HARD DISK

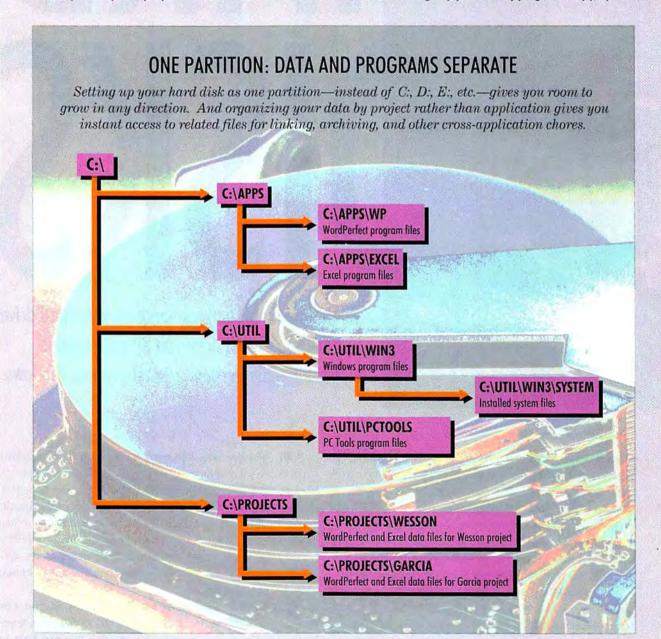
George Campbell and Lincoln Spector

hat's the best way to keep a large hard disk organized? Your professional needs, work habits, even your version of DOS affect where you'll want to keep your programs and data.

The first decision you'll have to make—and the hardest to change later—is whether to let DOS see your new drive as several small drives (or partitions) or as one large drive (also called a partition). Multiple partitions use the disk more

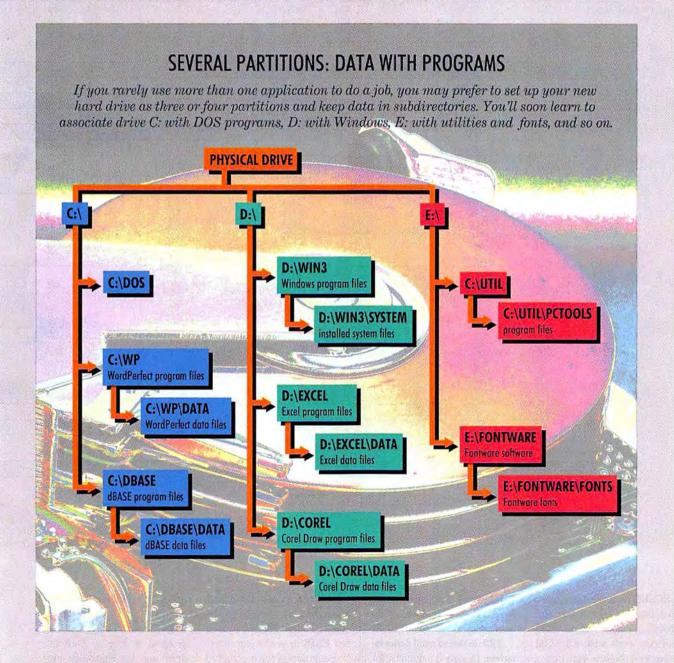
efficiently and make a handy division between types of files. But a single, large partition is less restrictive; a free 20MB in one place is more useful than 9MB here, 8MB there, and 3MB somewhere else. If you're using DOS 2.x or 3.x, you may not have a choice; the largest partition these versions of DOS support is 32MB.

However many partitions you choose, you must also decide whether to group your data by program or by project.



Putting all your 1-2-3 worksheet files in a C:\123\DATA directory lets you reach any WK1 file quickly and easily. But if your projects involve files from various sources, you may prefer to group your data by the jobs you do. For instance, if you keep the Garcia project's worksheets and word processing documents together in the C:\PROJECTS\GARCIA directory (see figure), you'll have an easier time importing a worksheet range into a document.

The accompanying figures show two examples of a wellorganized hard drive; there are many others. You could just as easily put all your programs on one partition and all your data on another, use one partition for old data you only occasionally use, or keep your data with your programs on one large partition. If you can easily find the files you need, and the setup accommodates the way you like to work, your hard disk is properly organized.



100MB TO 125MB HARD DISKS

			List price			Size				
Company	Product	Capacity (MB)	Without	With AT controller	With Micro Channel controller	Interface ¹	RLL compatible	Width (inches)	Height	
CMS ENHANCEMENTS	B120A3-M3540	120	\$899	San di	2 4 6 7	1	Y	31/2	third	
	B120A3-N	120	\$835			1	Y	31/2	third	
	B120F2-M5070	120	\$1079			M	N	31/2	third	
	K100A3-N	104.9	\$769			1	Y	31/2	half	
	K100S3-N	104.9	\$1051			5	Y	31/2	half	
	K120M50Z70-P	120	\$1199		0.150.15	M,S 3	N ,	31/2	half	
CONNER PERIPHERALS	Hopi 120MB	120		STATE OF	V=1	1,5	Y	31/2	third	
CORE INT'L	MC120	120	\$11505			E	N	31/2	half	
CUMULUS	7120A	124	\$894			1	Y	31/2	third	
	CP-30100	120	\$916			S	Y	31/2	third	
	CP-30104 CP-3100	120 104.9	\$874 \$836			S	Y	31/2	third half	
	CP-3100 CP-3104	104.9	\$834			1	Y	31/2	half	
DISK TECHNOLOGIES (DISCTEC)	RoadRunner XD-120	120	\$1900		1000	1,5	Y	21/2	half	
FUJITSU AMERICA	M2616	105	\$710			M,S	Υ	31/2	half	
KALOK	KL3100	105	\$295			1	Υ	31/2	half	
MICRONET COMPUTER SYSTEMS	EPS-100-A	104.9	\$1399	\$1399	AND THE PROPERTY OF	S	N	31/2	half	
MICROSCIENCE INT'L	7100-20	120.4	\$475			1	Υ	31/2	half	
PACIFIC MAGTRON	MT-4115E/S	115	\$290		***************************************	E,S	Υ	51/4	half	
PERISOL TECHNOLOGY	LanSafe 110A	110	\$403	\$419	(F	1,5	Υ	31/2	half	
	LanSafe 110S	110	\$484	\$591	\$787	S	Y	31/2	half	
	LanSafe 120E	120	\$619	\$766	\$1096	E	Y	31/2	half	
PROCOM TECHNOLOGY	PIRA120	120	\$1095			1	Y	31/2	half	
	PMC 120	120	\$915			M	N	31/2	third	
	PROPAQ 100	101	\$675			1	Y	31/2	half	
	PROPAQ 120-19	124	\$779			1	Y	31/2	half	
	S:100/PS3	100	\$850	\$1199	\$1199	S	Y	31/2	third	
	S:100/S3TO5	100	\$865	\$1214	\$1214	S	Υ	31/2	third	
QUANTUM	Hardcard II XL 105	105.1	\$869	\$869		9	Y	9	9	
	Impulse DriveKit for Microchannel	105.1	\$799		\$999	S	Y	31/2	third	
	ProDrive 120AT/S	120	\$620	\$620		1,5	Y	31/2	half	
	ProDrive LPS 105AT/S	105	\$510	\$510		1,5	Y	31/2	third	
RODIME SYSTEMS	Cobra 110at	110	\$839	\$894		1	Υ	31/2	half	
SEAGATE TECHNOLOGY	ST3120 A/N	107.2	4			1,5	Υ	31/2	third	
	ST1133 N	113.4	4			5	Y	31/2	half	
	ST2125 N	107	4			S	N	51/4	half	
	ST4135 R	115	4			M	N	51/4	full	
	ST4144 R	122.7	4			М	N	51/4	full	
STORAGE DIMENSIONS	MacinStor 120i	120	\$849			S	Y	31/2	third	-
TEAC AMERICA	SD-3105	105	\$395	Sec. 14.	1	1,5	Y	31/2	third	
TOSHIBA AMERICA INFORMATION SYSTEMS	MK-1034FC	106	\$590	\$590		I	Y	31/2	third	
WESTERN DIGITAL	Caviar WDAC2120	125	\$470			1-	Υ	31/2	third	
I FERRI I INF II LIFTI E COST		12.	F-1							

⁼ESDI, I=IDE, M=MFM, S=SCSI.

a SCSI drive and adapter card may be your best choice. But there's a catch: Not all SCSI devices work with all SCSI adapters; before you buy a

SCSI drive and card, make sure other SCSI devices you own or want will work with it.

ESDI (enhanced small device interface) Designed primarily for very large drives, the ESDI standard isn't common in the 100MB range. There are just a few ESDI drives in our chart. Some drives and controllers

use RLL (run-length limited) encoding to reach their 100MB size. This presents no problem as long as both the drive and the controller sup-

Manufacturer estimate:
SCSI controller sold separately.
Company does not sell directly to consumers and has no retail pricing.

	Speed			Compatibili	ty					Reader service number
	Average access time (ms) ²	Data transfer rate (MBps)	On-board cache	Optimizing software	Allows low-level formatting	MTBF (hours)	Warranty (years)	Money- back guarantee	Manufac- turer- based customer support	
	19	4	N	Υ	N	40,000	1	N	Y	682
	19	4	N	Y	N	100,000	1	N	Υ	682
	19	4	Y	Y	Y	45,000	1	N	Y	682
	25	4.75	N	Y	N	100,000	-1	N	Y	682
	25	2.5	N	Y	Y	100,000	1	N	Y	682
	23	1.25	N	Y	Y	45,000	1	N	Y	682
	19	1.5	Υ	N	Υ	150,000	1	N	N	683
	23	July 1	N	Υ	Y	45,000	1.	Y	γ6	684
	15	1.5/67	N	Y	N	150,000	1	Y	Y	685
	19	1.5/47	N	Y	N	40,000	1	Y	Y	685
	19	1.5/47	N	Y	N	40,000	1	Y	Y	685
	25	1.25/1.667	N	Υ	N	50,000	1	Y	Y	685
	25	1.25/4.75 7	Y	Υ	N	50,000	1	Y	Υ	685
-	19	1.25	Υ	Υ	N	100,000	1	Υ	Y	686
	26	1.5/2.58	Υ	N	Υ	50,000	1	N	Y	687
	19	1.25	Υ	Υ	N	100,000	1	N	Υ	688
	25	3.75	Y	Y	Y	28,000	1	Y	Y	689
	18	1.25	Υ	N	N	60,000	1	N	Υ	690
	16	1.25	N	N	Y	100,000	2	Y	Y	691
	18	1.25	Y	Y	N	100,000	1	Y	Y	692
	18	1.25	Y	Y	Y	100,000	1	Y	Y	692
	18	1.25	Y	Υ	Y	100,000	1	Y	Y	692
	19	1.25	Y	Y	N	150,000	1	N	Y	693
	19	1.5	Y	Y	Y	20,000	1	N	Y	693
	25	1.25	Y	Y	N	100,000	1	N	Y	693
	19	1.5	Y	Y	N	150,000	1	N	Y	693
	18	1.25	Y	Y	Y	70,000	1	N	Y	693
	18	1.25	Y	Y	Y	70,000	1	N	Υ	693
	9	1.4	Y	Y	N	60,000	2	N	Y	694
	9	.75/1.58	Y	Y	N	60,000	2	N	Y	694
	15	4	Y	Y	N	50,000	2	N	Y	694
	17	2/4 10	Y	N	N	60,000	2	N	Y	694
	20	0.75	Υ	Υ	N	40,000	2	N	Υ	695
- 0	16	1.5	Υ	Υ	Y	150,000	1	N	Y	696
	15	1.25	Y	Y	Y	150,000	1	N	Y	696
	18	1.1	N	Y	Y	100,000	-1	N	Y	696
	28	0.9	N	Y	Y	40,000	1	N	Y	696
- 14	28	0.9	N	Υ	Y	40,000	1	N	Y	696
	15	1.5	Y	Υ	Y	150,000	2	N	Y	697
-330	19	2/4 10	N	N	Y	30,000	1.	N	N	698
	16	1.6	Y	Υ	N	40,000	1	N	Y	699
	15	1.9	Y	Y	N	100,000	2	N	N	700

For more information about all products in this table, circle reader service no. 905.

port RLL. If you use an RLL drive with a non-RLL controller, you'll get much less storage space than you paid for; if you use an RLL controller with a non-RLL drive, you'll endanger your data. If you're buying a drive and controller separately (this is not possible with IDE or SCSI drives),

make sure you know the RLL status of each.

Another compatibility problem: The BIOS in many older systems will not support your drive of choice. Before buying, check your BIOS version (if you don't see it listed when you boot up, utilities like PC Tools Deluxe can display it), and ask the vendor about compatibility. You may need a new BIOS chip or a special software driver, either of which your dealer can supply.

FINDING A PERFECT FIT

Drives and drive bays (the compartments in computers that drives go into) are usually $3\frac{1}{2}$ or $5\frac{1}{4}$ inches wide and either full-, half-, or third-height. A smaller drive will fit in a larger bay with the help of an inexpensive bracket. But trying to stuff a larger drive into a smaller bay is like writing a love story into the plot of *Moby Dick*—it just won't fit.

Unfortunately, some computers have unusual bays that don't easily accept conventional drives. The differences generally aren't major, just an unorthodox mounting bracket or the like, and you should be able to buy an adapter to remedy the problem. But check with your system dealer to find out if your computer has any such restrictions.

You could avoid the whole drive bay issue by buying a drive mounted on an expansion card, such as the Quantum Hardcard. These drives tend to be expensive, and they'll rob you of an expansion slot. But since they slide directly into your expansion bus, they're easy to install.

THE GREAT DATA RACE

It doesn't matter how fast your processor is—if you have a slow hard disk, you have a slow computer. A new 100MB drive is almost certain to be faster than an old 40MB disk, but you'll still want the fastest you can afford.

The two most common measures of a hard drive's speed are its average access



time—the average time the drive head takes to reach and read a random spot on the disk—and its data transfer rate—a measure of how fast data moves from the drive to your PC's memory. Look for a low access time and a high transfer rate, although you'll need a computer with an EISA or Micro Channel bus to take advantage of a transfer rate of more than 1.2MB per second.

A controller with an onboard cache can increase your drive's effective speed. A cache is a chunk of RAM that sits between your drive and your computer; by keeping commonly used data where it can be grabbed quickly, a cache reduces the amount of time your computer spends accessing your hard disk.

SOFTWARE COMPATIBILITY

While virtually any drive should work with your applications, not every drive may be compatible with your favorite disk-maintenance utility.

A few drives choke on the disk optimizers that come with PC Tools Deluxe, Norton Utilities, and other utility packages. As you delete and create files, your drive's data becomes fragmented, scat-

tered like startled sheep. The result is wear and tear on the drive's read/write arm and a slower hard disk, and if you can't use an optimizer to herd the files back together, you'll miss one of the greatest benefits of most hard disk utility packages.

Less important is a drive's ability to accept low-level for-matting. Programs such as SpinRite can reduce drive failures and general wear by redoing the low-level format that all hard drives require. Some preformatted drives can't accept, and generally don't need, such reformatting. All these drives can accept the normal, high-level format of DOS's FORMAT command.

RELIABILITY

A drive's MTBF (mean time between failures) is the number of hours it's likely to run before it dies. This number represents manufacturers' calculations and should be taken with several grains of salt. After all, some manufacturers claim 100,000 hours over 11 years—of continuous operation, and you can be sure they didn't test the drive for anything near that long.

All these drives offer a warranty of at least a year, which should be adequate. A moneyback guarantee, however, is a real plus should a drive be DOA or incompatible with your system.

If you lack confidence in your local dealer, buy a drive with manufacturer-based customer support. If your dealer proves incompetent or goes bankrupt, you'll still have someone to call when problems arise.

George Campbell is a contributing editor, Dan Miller the Fluegelman Intern, and Susan Lusty and Lincoln Spector assistant editors for PC World.

WHERE TO BUY

CMS Enhancements, Inc.

2722 Michelson Dr. Irvine, CA 92715 714/222-6000, 714/549-4004 (fax)

Conner Peripherals,

3081 Zanker Rd. San Jose, CA 95134 408/456-4500, 408/456-4501 (fax)

Core Int'l, Inc.

7171 N. Federal Hwy. Boca Raton, FL 33487 407/997-6055, 407/997-6009 (fax)

Cumulus Corp.

23500 Mercantile Rd. Cleveland, OH 44122 216/464-2211, 216/464-2483 (fax)

Disk Technologies (Disctec) Corp.

904 Railroad Ave. Winter Park, FL 32789 800/553-0337, 407/628-4404 (fax)

Fujitsu America, Inc.

3055 Orchard Dr. San Jose, CA 95134-2022 800/626-4686

Kalok Corp.

1289 Anvilwood Ave. Sunnyvale, CA 94089 408/747-1315, 408/747-1319 (fax)

Micronet Computer Systems, Inc.

6970 Aragon Cir., Bldg. 3 Buena Park, CA 90620 800/468-6273, 714/739-2244, 714/739-4220 (fax)

Microscience Int'l Corp.

90 Headquarters Dr. San Jose, CA 95134 408/433-9898, 408/954-0988 (fax)

Pacific MagTron, Inc.

568 Weddell Dr. #8 Sunnyvale, CA 94089 800/828-2822, 408/744-0178 (fax)

Perisol Technology Corp.

3350 Scott Blvd. #1201 Sonto Clara, CA 95054 800/447-8226, 408/988-4431 (fax)

Procom Technology, Inc.

200 McCormick Ave. Costa Mesa, CA 92626 800/800-8600, 714/549-0527 (fax)

Quantum Corp.

500 McCarthy Blvd. Milpitas, CA 95035 408/894-4000, 408/894-3218 (fax)

Rodime Systems,

7700 W. Camino Real Boca Raton, FL 33433 800/227-4144, 407/391-9950 (fax)

Seagate Technology, Inc.

920 Disc Dr. Scotts Valley, CA 95066-4544 800/468-3472, 408/438-7852 (fax)

Storage Dimensions

1656 McCarthy Blvd. Milpitas, CA 95035 408/954-0710, 408/944-1200 (fax)

TEAC America Inc.

7733 Telegraph Rd. Montebello, CA 90640 213/726-0303, 213/727-7652 (fax)

Toshiba America Information Systems, Inc.

9740 Irvine Blvd. Irvine, CA 92718 714/583-3000, 714/583-3133 (fox)

Western Digital Corp.

8105 Irvine Center Dr. Irvine, CA 92718 714/932-4900, 714/932-6498 (fax)

The Finest Twenty-Inch Color Monitor You Never Heard of...



Is Also The Best Value.

Conventional color monitors pale by comparison to SAMPO's technically-advanced AlphaScan LS. It's autosync capability, from 30KHz to 67KHz, guarantees compatibility with virtually any graphics card, from VGA to 1280 x 1024 resolution or MAC 640 x 480 to 1024 x 768. The AlphaScan LS further transcends the conventional with its Invar Shadow Mask technology for increased brightness and contrast, while **Dynamic Beam Focusing** sharpens text and graphics. even in the far corners of the screen.

CAD/CAM users are the most discerning and demanding. Ergonomics are of critical importance. So we created the AlphaScan LS with a fully-functioning tilt-swivel base and an antiglare screen, and with all operator controls, including horizontal and vertical centering, ergonomically positioned on the front of the monitor.

SAMPO recognizes that

The Best Monitors at the Best Prices.

For years, SAMPO has been dedicated to making the best quality monochrome and color displays, at the most fiercely competitive prices. Now, in keeping with this tradition, we are offering twenty-inches of the best CAD/CAM performance at the best possible price.

To discover the SAMPO Reseller Advantage, please call:

(404) 449-6220

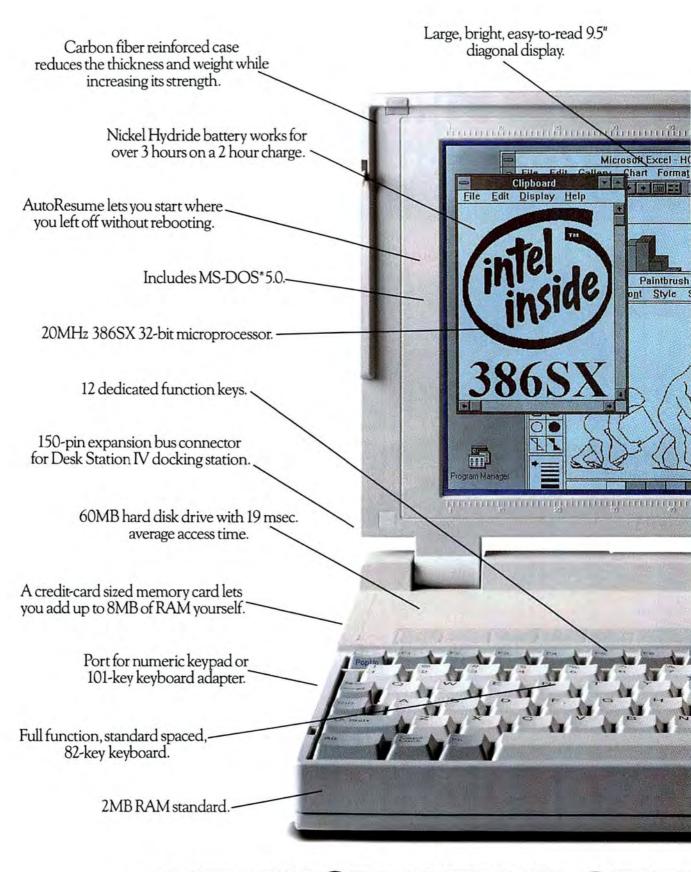
SAMPO

THE BEST MONITORS YOU NEVER HEARD OF.

5550 Peachtree Industrial Boulevard Norcross, Georgia 30071, U.S.A.

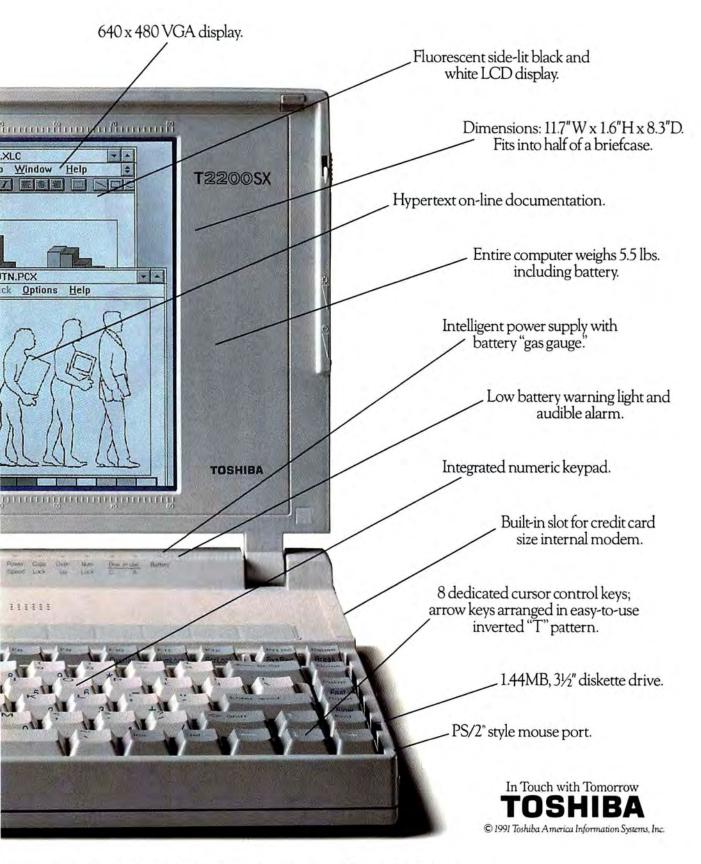
©1991 SAMPO AMERICA. All rights reserved. All trademarks, products or services are trademarks or registered trademarks of their respective owners.

Circle 255 on reader service card



WE JUST REWROTE

Introducing the T2200SX. At just 5.5 pounds, it's everything you've ever wanted



THE NOTEBOOK.

in a notebook computer, and less. For details, call 1-800-457-7777.

Circle 257 on reader service card



量SPEED MODEMS

Supersonic V.32 modems with data compression can save precious time and shrink those annoying on-line and long-distance charges.

re file uploads and downloads sending your long-distance bills through the roof? Do you grow frustrated waiting for the screen to refresh when you call in to your office PC with a remote communications package? Are you accumulating steep data base service charges? With the spread of Windows and other graphical applications, program and data files keep getting larger. Small wonder your 2400-baud modem seems to be slowing to a crawl.

It's probably time to consider buying a *high-speed mo-dem*—a device that lets your computer exchange data over telephone lines at lightning speed. Now that prices are dropping and standards are firming up, a faster high-speed modem can pay off in lower on-line costs, cheaper phone bills, and increased productivity.

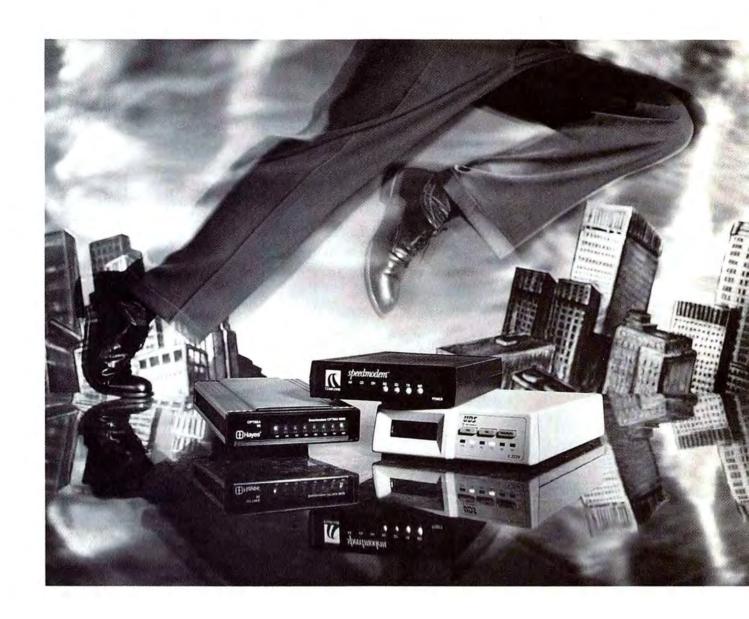
Not long ago every vendor's high-speed modems spoke a different language, so you needed the same brand on both ends in order to communicate faster than 2400 baud. But all that has changed; now almost all high-speed modem vendors are producing their units with V.32/V.32bis for the modulation standard and V.42/V.42bis as the error correction/data compression standard. A full explanation of these standards follows, but the bottom line is that modems manufactured with these protocols should give you extremely fast throughput of between 9600 and 38,000 baud.

The term *baud* relates to the speed at which the modem modulates signals. However, when calculating the overall PC-to-PC throughput of data, including the effect of data compression and error correction, it's more meaningful to use the bits per second (bps) measurements.

This buyers' guide lists 103 V.32/V.32bis modems that run V.42/V.42bis. To focus the guide, we've cut out rack-mounted models and those requiring the special leased-line

BRETT GLASS





connections commonly used in mainframe environments.

We've also omitted modems that have a list price higher than \$1400. It wasn't long ago that very few high-speed modems would have passed this price test, but with V.32 modems now selling for as little as \$399, it's easy to recommend them to just about anyone. If you're on a tight budget, however, or if you're browsing through text on line rather than exchanging files, a \$100-to-\$300 2400-baud modem will do just as well for you. (See "Buyers' Guide: 2400-Baud Modems" in our September 1991 issue).

For many applications, we clearly recommend high-speed modems. If you frequently perform PC-to-PC or PC-to-mainframe file transfers (especially long distance), you should go high. If you download files from an on-line service that charges by the minute, go high. If you're using a remote package to run applications from afar, go high (especially if you're remotely running *Windows*). And if you're setting up a

modem for your network or bridging two LANs via modem, get the fastest modem you can buy.

The key buying issue with high-speed modems is protocol support. Protocols are the common procedures by which modems operate, and modems differ in the types of protocols they support. Comprehensive support will let you link with the most modems at the fastest possible speeds. Unfortunately, the names of the modem standards devised by the Consultative Committee for International Telephony and Telegraphy (CCITT) seem almost intentionally designed to baffle users. You might think, for example, that a V.42bis modem is necessarily faster than a V.32bis modem. It isn't. A 2400-baud non-V.32 modem running V.42bis is slower than a 9600-baud V.32 modem that lacks V.42bis.

Confused? Then let's start over. All the modems in this guide can use several different *modulation schemes*—the standards that describe the sounds the modems make when

HIGH-SPEED MODEMS

Manufacturer	Product	Price	Warranty (years)	Interface	V.32	V.32bis	Other protocols	Fax	Power switch	Volume control switch	Callback security
ADVANCED MICROCOMPUTER	Xpress 96	\$499	5	external	Υ	Y	none	Y	N	Y	Y
SYSTEMS	Xpress 96MC	\$450	5	MC	Y	Y	none	Y	N	Y	Y
	Xpress 96PC	\$425	5	ISA	Y	Υ	none	1	N	Y	Υ
AT&T PARADYNE	Comsphere 3820	\$1395	2	external	Υ	Υ	none	N	Υ	N	Υ
ATITECHNOLOGIES	9600 etc/e	\$499	2	external	Υ	N	none	N	Υ	Y	N
BEST DATA PRODUCTS	Smart One 9642X	\$599	2	external	Y	N	none	N	Y	N	N
CARDINAL TECHNOLOGIES	9600V.42	\$699	1	external	Y	N	none	N	Y	N	N
CMS ENHANCEMENTS	CMS Calling Card X9600BX	\$779	2	external	Y	Ν	none	N	Y	Y	Υ
СОМРИСОМ	SpeedModem Star (external)	\$539	5	external	Y	Y	C	L	N	Y	N
	SpeedModem Star (internal)	\$499	5	ISA	Υ	Υ	C	1	N	Y	N
	SpeedModem Storm (external)	\$339	5	external	Υ	N	С	1	Υ	Y	N
	SpeedModern Storm (internal)	\$299	5	ISA	Υ	N	C	1	N	Y	N
COMPUTER PERIPHERALS	ViVa 9632e	\$699	5	external	Y	Υ	none	N	Y	N	N
	ViVa 9642e	\$649	5	external	Y	N	none	N	Y	N	N
CXR/ANDERSON JACOBSON	9632-MM2	\$1275	1	external	Υ	Υ	none	N	Υ	N	Y
DATATREK	DataTrek V.32 Modem	\$795	2	external	Υ	N	none	N	Υ	Y	Y
DIGICOM SYSTEMS	9624 LE	\$795	2	external	Υ	N.	none	N	Y	Y	Y
	9624 LE+	\$895	2	external	Y	Y	none	Y	Y	Y	Y
	9624 PC 9624 PC+	\$765 \$865	2 2	ISA ISA	Y	N	none	N	7 7	Y	Y
DOWTY COMMUNICATIONS	DCM 4232	\$1095	1	external	Y	N	none	N	N	N	N
E-TECH RESEARCH	Bullet Modern E9696M	\$795	2	external	Y	N	none	N	Y	N	Y
E-TEGIT RESERVED	Bullet Modern PC9696M	\$745	2	ISA	Y	N	none	N	N	N	N
EVEREX SYSTEMS	Evercom 96+ Evercom 96E+	\$649 \$699	2 2	ISA external	Y	ZZ	none	NN	N	NN	N
FASTCOMM	FDX 9696	\$999	2	external	Υ	1	none	N	Y	Y	N
COMMUNICATIONS	FDX 9696B	\$999	2	ISA	Y	1	none	N	N	N	N
	FDX 9696S	\$1199	2	external	Y	1	none	N	Y	Y	N
FORVAL AMERICA	IM 9600	\$775	5	ISA	Υ	N	none	N	N	Ν	Y
	IM 14400	\$1045	5	ISA	Y	Υ	none	N	N	N	N
	SA 9600	\$795	5	external	Y	N	none	N	N	N	Y
	SA 14400	\$1245	5	external		Υ	none	N	N	N	N
GALAXY NETWORKS	UFO 9600 UFO V.32bis 1440	\$999 \$1099	2 2	external external	Y	N Y	none	2 2	Y	Y	N N
CANDALE SYSTEMS	THE TAX OF						22000	-			
GANDALF SYSTEMS	Access Series 3242bis	\$1095	1	external	2000	N	none	N	N	N	Y
GENERAL DATACOMM	DataComm 596 DeskTop 596	\$1150 \$995	1	external external	Y	ZZ	none	N	N	N Y	N N
GVC TECHNOLOGIES	SM-96	\$599	5	external		N	none	N	N	N	Y
	SM-96+ SM-96H	\$699 \$559	5	ISA .	Y	N	none	N	N	N Y	Y
HAYES MICROCOMPUTER	Optima 96	\$4502	2	external		N	none	N	Y	N	N
PRODUCTS	Ultra 96	\$999	2	external	Y	N	E	N	Y	N	N
INTEL	Ultra 144 Intel 9600EX Modem	\$1199	5	external external		N	none	N	Y	Y	N
MAYA COMPUTER	Maya Modem 9600	\$525	1	external	Υ	N	none	N	Y	N	Y
The state of the s	11010111110011111000	4000		55(1101	_		.10170			1	and the same of

Extra-cost option.
7Estimated price. Hayes offers no official list price on the Optima 96.

C = CSP 9600. E = Express 9600. For more information about all products in this table, circle reader service no. 903.

	Bundled software	Reader service number
35	Bitcom, Bitfax	624
	Bitcom, Bitfax	624
	Bitcom, Bitfax	624
	none	625
	none	626
	Bitcom	627
	none	628
	none	629
	with fax option: MTEZ Express fax	630
	with fax option: MTEZ Express fax	630
	with fax option: MTEZ Express fax	630
	with fax option: MTEZ Express fax	630
	QuickLink II	631
	QuickLink II	631
	none	632
	none	633
	none	634
	Flashfax	634
	none	634
	Flashfax	634
	none	635
	none none	636 636
	Procomm	637
	Procomm	637
	none	638
	none	638
	none	638
	none	639
	Communications by Crosstalk	639
	none	639
	Communications by Crosstalk	639
	Telix	640
	Telix	640
	none	641
	none	642
	none	642
	none	643
	none	643
	Communications by Crosstalk	643
	Smartcom EZ	644
	none	644
	none	644
	Communications by Crosstalk	645
	White Knight	646
		nage 240

(continues on page 240)

they communicate with one another. Because the modems we have listed here all support the Bell 103J modulation scheme, they are able to communicate with 300-baud modems. Support for Bell 201A and V.22bis lets them talk with 1200-baud and 2400-baud modems, respectively. V.32 governs communications at 9600 baud, and V.32bis starts off at 14,400 baud.

The second group of standards governs error correction, which ensures that data gets through intact, and data compression, which condenses information into fewer bits so more information can move more quickly. Most modems use Microcom's MNP 4 error correction and MNP 5 data compression standards, which together typically double throughput. Recently, many modems (including 2400-baud models) have added the CCITT's V.42 error correction standard and V.42bis data compression protocol, which together more than triple throughput.

The good news is that every modem in this table offers V.42bis, V.42, MNP 4, and MNP 5 error correction and data compression, so you're compatible with just about everybody. When you add V.42bis data compression to V.32 or V.32bis modulation. you get an optimal throughput of about 30,000 (V.32) and 38,400 (V.32bis) bps from modem to modem. Due to all the stops and starts of modem communications and the bottleneck of the serial link between the modems and the connected PCs, the actual disk-to-disk throughput over a typical phone line is much slower. In PC World Test Center benchmarks of several popular V.32 and V.32bis modems, V.32 modems averaged 17,000 bps, and V.32bis modems clocked in at about 20,000 bps.

The actual throughput depends on the file type. When transferring the fastest file types, it matters little whether you have V.32 or V.32bis—data base files transferred at about 24,000 bps, and TIFF graphics traveled about 23,000 bps on both V.32 and V.32bis models. On the other hand, if you send a lot of text or program files, V.32bis modems can really pay off: With text they averaged 22,000 bps compared to

16,000 bps for V.32 models, and binary files were timed at about 18,000 bps for V.32bis and only 13,000 bps for V.32.

If you plan to use your modem to download ZIPped data and program files, the performance boost is less dramatic. Because the ZIP software compression conflicts with the hardware-based V.42bis compression, real-world throughput is slower than the raw speeds of the modems; 8000 bps for the 9600-baud V.32 modems and just over 10,000 bps for V.32bis models. The moral: Turn off your V.42bis compression when you're downloading ZIPped files. (See the figure.)

Some modems also support one or more proprietary protocols, which will permit you to communicate at top speed with older non-V.32 highspeed modems. For example, the U.S. Robotics Courier HST Dual Standard supports HST (High-Speed Technology) so it can talk at 9600 bps to the many BBS systems that use HST-only Couriers. The Telebit T2500 supports PEP (Packet Ensemble Protocol) so it can chat with the many Telebit units that are popular in



HIGH-SPEED MODEMS

Manufacturer	Product	Price	Warranty (years)	Interface	V.32	V.32bis	Other	Fax	switch	control switch	Callback security
MICROCOM	QX/4232bis	\$999	1	external	Υ	Υ	M	N	N	Υ	N
	QX/4232hs	\$899	1	external	Υ	Ν	м	N	N	Υ	N
MICROGATE	GV32	\$599	1	external		N	none	N	Y	N	N
	MV32	\$999	1	ISA, MC	Υ	N	none	N	N	N	N
MICRO INTEGRATED	9600/PC	\$695	2	ISA	Y	N	none	N	N	N	Y
COMMUNICATIONS (MICC)	9600/SA 9610/SA	\$795 \$995	2	external	Y	Z	none	ZZ	Y	N	Y
	9620/SA	\$1195	2	external	Y	N	none	N	Y	N	Y
	14410/SA	\$1195	2	external	Y	Y	none	N	Υ	N	Y
MOTOROLA CODEX	3260/61 Data Modem	\$1195	2	external	Υ	Υ	none	N	Y	N	Y
MULTI-TECH SYSTEMS	MultiModemV32B	\$1099	2	external	Y	Υ	none	N	Υ	Υ	Υ
37 (2.49) (5.7)	MultiModemV32BL	\$1199	2	external	Υ	Υ	none	N	Υ	Y	Υ
NEC AMERICA	N9635E	\$1199	1	external	Υ	N	none	N	Υ	Υ	Y
OCTOCOM SYSTEMS	OSI 8196	\$1195	1	external	Υ	Y	none	N	Υ	N	Υ
PENRIL DATACOMM	Alliance V.32	\$1045	1	external	Y	N	none	N	N	N	Y
NETWORKS	Alliance V.32/14.4	\$1395	1	external	Y	Υ	none	N	N	N	Y
	Alliance V.32M	\$1145	1	external	Υ	N	none	N	N	N	Y
PRACTICAL PERIPHERALS	PM9600 Half-Card	\$599	5	ISA	Y	N	none	N	N	N	N
	PM9600SA V.32/V.42bis	\$699	.5	external	Υ	N	none	N	Υ	N	N =
PROMETHEUS PRODUCTS	ProModem 9600 EC	\$795	2	external	Υ	N	none	N	Y	N	Υ
	ProModem 9600 Plus	\$895	2	external	Y	N	none	Y	Y	N	Υ
	ProModem Ultima	\$995	2	external	Υ	Υ	none	Υ	Υ	N	Υ
RACAL-DATACOM	RMD 3222	\$1295	1	external	Y	Y	none	N	- 1	Y	Υ
	RMD 3232	\$795	1	ISA	Y	N	none	N	N	Y	N
Service of the Servic	RMD 3296	\$1095	1	external	Y	N	none	N	N	N	Y
STAR LOGIC	DM-9600V+	\$395	1	external	Y	N	none	N	Υ	N	N
SUPRA	SupraFaxModem V.32	\$399	5	LANCE THE PARTY OF	Y	Y	none	Y	Y	N	N
SWAN TECHNOLOGIES	SupraFaxModem V.32bis		5	external	N	N	none	Y	Y	N	N
SWAN TECHNOLOGIES TELCOP SYSTEMS	9600 bps External	\$449	2	external	Y	N	none	N	Y	N	N
TELCOR SYSTEMS	T/Card V.32 T/Card V.32bis	\$699 \$899	3	ISA ISA	Y	N	none	2 2	Z	Z	Y
TELEBIT	QBlazer	\$745	2	external	N	N	none	N	Y	N	N
TELEDIT .	T1600	\$795	2	external	Y	N	none	N	Y	N	Y
	T2500	\$1345	2	external	Y	N	P	N	Ÿ	N	Y
	T3000	\$1095	2	external	Y	N	none	N	Y	Υ	Y
TELEGLOBE	DA 3214	\$1295	1	external	Y	Y	none	N	Y	Υ	Υ
TELENETICS	TC9642	\$695	5	external	Y	Υ	none	N	Υ	N	N
UDS MOTOROLA	FasTalk Fax32	\$995	1	external	Y	N	none	Υ	Υ	Υ	N
	FasTalk V.32/42b Data	\$795	-1	external	Y	N	none	N	Y	Y	N
	Modem V.3227 Data Modem	\$950	1	external	Y	N	none	N	Υ	Y	N
Towns and the second	V.3229 Data Modem	\$1145	i	external		Y	none	N	Y	Y	N
U.S. ROBOTICS	Courier HST Dual	\$1295	2	external	-	Υ	Н	N	Y	Y	Y
	Standard Courier HST Dual	\$1249	2	ISA	Y	Y	Н	N	Ν	N	Y
	Standard (internal) Courier V.32bis	\$995	2	external	Y	Υ	none	N	Y	Υ	Y
	Courier V.32bis	\$949	2	ISA	Y	Y	none	N	N	N	Y

Extra-cost option.
P = PEP.

H = HST. M = MNP 10, For more information about all products in this table, circle reader service no. 903.

	Bundled software	Reader service number	
	Carbon Copy Plus 6.0	648	
	Carbon Copy Plus 6.0	648	
-	none	649	
	SDLC Dialer	649	
- 10	none	647	
	none	650	
	none	651	
	none	651	
	none	652	
	none	653	
		654	
	none	654	
	none	654	
	QuickLink II, CompuServe	655	
	CompuServe	655	
	Communications by Crosstalk	656	
	Communications by Crosstalk, fax	656	
	Communications by Crosstalk, fax	656	
	none	657	
	none	657	
	none	657	
	Bitcom	658	
	none	659	
	none	659	
	Flashlink	660	
	Telcor T/FT	661	
	Telcor T/FT	661	
	MTEZ	662	
	none	663	
	none	664	
75.7	Fax Talk Plus	77.0	
	none	665	
	none	665	
	none	665	
	none	666	•
	none	666	
	none	666	
	none	666	

(continues on page 242)

the UNIX world. The Hayes models we've listed all speak Hayes' Express 9600 protocol, so they can get top performance when linking with the V-Series modems. Compu-Com's SpeedModem Star talks CSP (CompuCom Speed Protocol) so it can hobnob with its little sibling, the increasingly popular non-V.32, 9600baud Champ, which sells for \$199. Finally, the Microcom modems support MNP 10, designed for cellular phones and very noisy phone lines.

FAX AND OTHER EXTRAS

Once you've decided on protocols, the main issue is whether to get an internal or external modem. Most high-speed modems are external so they can attach to a range of computers. Other advantages of external units: They are easily moved, and they don't take up a slot in your PC. External units also include status lights that allow you to monitor modem activity and troubleshoot problems.

Internals are usually \$100 to \$200 cheaper than externals, are more difficult to steal, and won't clutter your desk. They should have fewer problems losing data as it passes between the modem and the PC's bus-a glitch that can occur at high speeds, especially when running multitasking software such as Windows. However, with an external modem you can avoid data loss with a special highspeed serial interface such as Haves' ESP board.

Another feature to look for is built-in fax. While send-only fax is common on 2400-baud modems, the V.32 modems with fax listed here can all send and receive faxes at 9600 baud. Finally, we've noted a few smaller features that might affect your buying decision. A manual volume con-

trol lets you adjust the modem's speaker without typing awkward commands. A power switch means you don't have to pull the plug if you want to save power. A modem with callback security responds to an incoming phone call by accepting a password, hanging up, and dialing the caller back. Some modems have other extras not listed here, such as LCD displays and built-in ROM for storing phone numbers. But for most users, a good communications program will do a better job of controlling the modem and dialing calls.

Whether you download files or run software remotely, a high-speed modem is a must. Before long, you'll wonder how you ever lived without one.

Brett Glass is a contributing editor for PC World. Ruth Anne Ladue provided research.

WHERE TO BUY

Advanced Microcomputer Systems, Inc.

1321 N.W. 65th Pl. Ft. Lauderdale, FL 33309 305/975-9515, 305/975-9698 (fax)

AT&T Paradyne 8545 126th Ave. N P.O. Box 2826

P.O. Box 2826 Lorgo, FL 34649-2826 800/482-3333

ATI Technologies, Inc.

3761 Victoria Park Ave. Scarborough, Ontario M1W 3S2 Canada 416/756-0718, 416/756-0720 (fax)

Best Data Products, Inc.

9304 Deering Ave. Chatsworth, CA 91311 800/632-2378 (outside CA), 818/773-9600, 818/773-9619 (fax)

Cardinal Technologies, Inc. 1827 Freedom Rd. Lancaster, PA 17601 800/233-0187, 717/293-3055 (fax)

CMS Enhancements, Inc. 2722 Michelson Dr. Irvine, CA 92715 714/222-6000,

714/549-4004 (fax)

CompuCom Corp. 1180 J Miraloma Way Sunnyvale, CA 94086 800/228-6648, 408/732-4570 (fax)

Computer Peripherals, Inc. 667 Ranch Conejo

Blvd. Newbury Park, CA 91320 800/854-7600, 805/499-5742 (fax)

CXR/Anderson Jacobson

521 Charcot Ave. San Jose, CA 95131 800/537-5762, 408/435-1276 (fax)

DataTrek Corp. 4505 Wyland Dr. #400 Elkhart, IN 46516 219/522-8000, 219/522-0822 (fax)

Digicom Systems, Inc. 188 Topaz St. Milpitas, CA 95035

800/833-8900,

Dowty Communications, Inc.

408/262-1390 (fax)

9020 Junction Dr. Annapolis Junction, MD 20701 800/227-3134, 301/317-7220 (fax)

E-Tech Research, Inc.

3525 Ryder St. Santa Clara, CA 95051 800/328-5538 (outside CA), 408/730-1388, 408/730-2488 (fax)

Everex Systems, Inc. 48431 Milmont Dr. Fremont, CA 94538 800/628-3837, 510/651-0728 (fax)

FastComm Communications Corp.

45472 Holiday Dr. Sterling, VA 22170 800/521-2496

Forval America, Inc.

6985 Union Park Center #425 Midvale, UT 84047 800/367-8251, 801/561-8777 (fax) (continues)

HIGH-SPEED MODEMS

Manufacturer	Product	Price	Warranty (years)	Interface	V.32	V.32bis	Other protocols	Fax	Power switch	Volume control switch	Callback security
U.S. ROBOTICS	Sportster V.32	\$649	5	external	Y	N	none	N	Y	Y	Y
	Sportster V.32 (internal)	\$595	5	ISA	Y	N	none	N	N	N	Y
VEN-TEL	Ven-Tel 9600 Plus	\$699	5	external	Y	N	none	N	Υ	N	Υ
	Ven-Tel 9600 Plus II	\$899	5	external	Y	N	none	N	Y	N	Y
	Ven-Tel PCM9600 Plus	\$675	5	ISA	Y	N	none	N	N	N	N
WESTERN DATACOM	532/42bis	\$695	1 -	external	Υ	Y	none	N	Υ	N.	N
	532/42i	\$595	1	ISA	Y	Y	none	N	N	N.	N
X-ALT	V.42bis Probe	\$399	2	external	Υ	Υ	none	N	Υ	Y	Y
ZERO ONE NETWORKING	ZyXEL U-1496	\$650	3	external	Y	Y	none	Υ	Y	N	Y
AND COMMUNICATIONS	ZyXEL U-1496B	5449	3	ISA	Y	Y	none	Y	Y	N	N
	ZyXEL U-1496E	\$469	3	external	Y	Y	none	Y	Y	Y	N
ZOOM TELEPHONICS	Zoom/Modem V.32 Turbo	\$599	2	external	Y	N	none	N	Y	N	N
	Zoom/Modem V.32 Turbo PC	\$599	2	ISA	Y	N	none	N	N	N	N

For more information about all products in this table, circle reader service no. 903.

(continued)	Products, Inc.	800/822-8224,	Octocom Systems,	503/692-9600,	800/826-2938,
Galaxy Networks,	P.O. Box 105203 Atlanta, GA 30348	617/551-1968 (fax)	Inc. 255 Ballardvale St.	503/691-1101 (fax)	508/651-0065 (fax)
8921 De Soto Ave. Canoga Park, CA 91304	404/441-1617, 404/449-0087 (fax)	MicroGate Corp. 9501 Capital of Texas Hwy.	Wilmington, MA 01887 508/658-6050,	Racal-Datacom, Inc. 1601 N. Harrison	Telebit Corp. 1315 Chesapeake Terr. Sunnyvale, CA 94089
818/998-7851, 818/998-1758 (fax)	Intel Corp. CO3-07, 5200 N.E. Elam Young Pkwy.	Austin, TX 78759 800/444-1982,	508/658-0376 (fax) Penril DataComm	Pkwy. Sunrise, FL 33323-2899	800/835-3248, 408/734-3333 (fax)
Gandalf Systems Corp.	Hillsboro, OR 97124-6497	boro, OR		800/722-2555, 305/846-4942 (fox)	Teleglobe 600 McCaffrey St.
Cherry Hill Industrial Center #9 Cherry Hill, NJ	800/538-3373, 503/629-7000	20 Cabot Blvd. Mansfield, MA 02048-1193	Blvd. Gaithersburg, MD 20878	Star Logic, Inc. 238 E. Caribbean Dr.	Montreal, Quebec H4T 1N1 Canada 514/738-4781,
	Maya Computer Co. P.O. Box 680	508/261-4000	800/473-6745, 301/921-8376 (fax)	Sunnyvale, CA 94089 408/747-0903,	514/738-4436 (fax)
609/751-4370 (fax)	Bridge St. Marketplace Waitsfield, VT 05673	Multi-Tech Systems, Inc.	Practical	408/747-0954 (fax)	Telenetics Corp. 2491 E. Orangethorpe
General DataComm, Inc. 1575 Straits Tnpk.	800/541-2318, 802/496-8110 (fax) Micro Integrated Communications	2205 Woodale Dr. Mounds View, MN 55112	Peripherals, Inc. 31245 La Baya Dr. Westlake Village, CA	7101 Supra Dr. SW Albany, OR 97321	Ave. Fullerton, CA 92631 714/738-8092,
Middlebury, CT 06762 800/432-2228,		800/328-9717 (outside MN),	91362 800/442-4774,	800/727-8772, 503/967-2400	714/738-4565 (fax)
800/642-1023 (fax)	Corp. (MiCC) 3255-3 Scott Blvd.	612/785-3500, 612/785-9874 (fax)	818/706-2474 (fax)	Swan Technologies 3075 Research Dr.	5000 Bradford Dr.
GVC Technologies, Inc. 99 Demorest Rd. Sparta, NJ 07871	Santa Clara, CA 95054 408/980-9565, 408/980-9568 (fax)	NEC America, Inc. Data and Video Communication	Prometheus Products, Inc. 9524 S.W. Tualatin Sherwood Rd.	30/3 Research Dr. State College, PA 16801 800/468-9044,	Huntsville, AL 35805 800/451-2369, 205/830-5657 (fax)
201/579-3630, 201/579-2702 (fax)	Microcom, Inc.	Systems Division 110 Rio Robles	Tualatin, OR 97062 800/477-3473	814/237-4450 (fox)	U.S. Robotics, Inc. 8100 N. McCormick

(outside OR),

San Jose, CA 95134

408/433-1241 (fax)

800/222-4632,

Telcor Systems

4 Strathmore Rd.

Notick, MA 01760

Corp.

Blvd.

Skokie, IL 60076

Hayes

Microcomputer

500 River Ridge Dr.

Norwood, MA 02062

Hassle-Free Printer Sharing

for the HP LaserJet II, IID, III and IIID

Bundled software	Reader service number
none Communications by Crosstalk	667 667
 Crosstalk Communicator	668
Crosstalk Communicator	668
Crosstalk Communicator	668
none	669
none	669
none	670
Zfax	671
Zfax	671
Zfax	671
none	672
Qmodem	672

800/342-5877, 708/982-5235 (fax)

Ven-Tel, Inc. 2121 Zanker Rd. San Jose, CA 95131 800/538-5121, 408/436-7451 (fax)

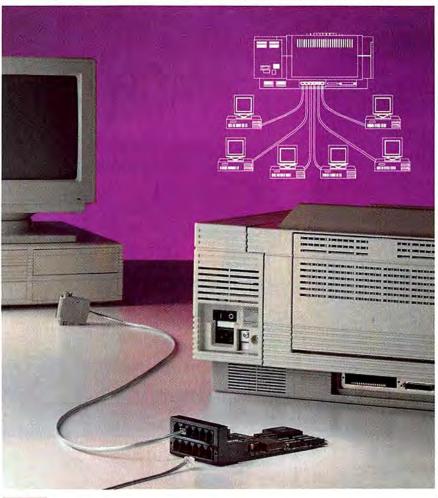
Western Datacom P.O. Box 45113 Westlake, OH 44145 800/262-3311, 216/835-9146 (fax)

X-Alt, Inc. 42 Digital Dr. Novato, CA 94949 800/899-9258, 415/883-9628 (fax)

Zero One

Networking and Communications 4920 E. La Palma Ave. Anaheim Hills, CA 92807 800/255-4101, 714/693-0705 (fax)

Zoom Telephonics 207 South St. Boston, MA 02111 800/666-6191





"The ServerJet is the smoothest and most practical way I know to share a LaserJet." Frank J. Derfler, Editor PC Magazine, 1/15/91

Here's how you and your coworkers can have your own HP LaserJets without breaking the corporate budget.

It's called SimpLAN ServerJet.

Simply plug the *ServerJet* into the 'Optional I/O' slot of your HP LaserJet. Stretch phone cable, up to hundreds of feet, to each computer. Then, 12 people can simultaneously *whooosshh* documents to the LaserJet at speeds as fast as 115,200 baud.

No more wandering down the hall with floppy in hand.

Or borrowing someone else's LaserJet.

Or wasting time waiting to print.

The ServerJet is available in a variety of models with up to 4MB of buffer memory. And because your office may have printers other than HP LaserJets, ASP Computer Products offers a complete line of printer sharing solutions.

To order your *ServerJet* or for more information call ASP at:

800-445-6190



160 San Gabriel Drive Sunnyvale, California 94086 Phone: 408-746-2965 • Fax: 408-746-2803

SimpLAN & ServerJet are trademarks of ASP Computer Products, Inc. / HP LaserJet is a registered trademark of Hewlett-Packard Co.

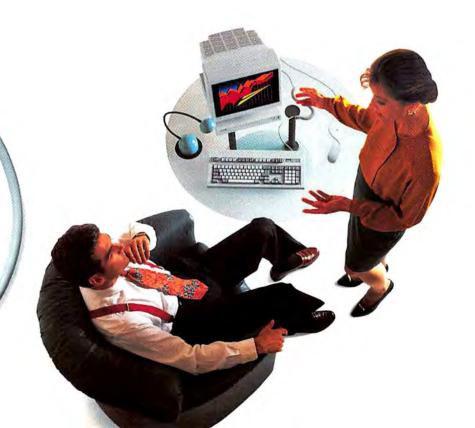
Circle 43 on reader service card





i386 and i486 are trademarks of Intel Corporation.
Microsoft Windows, and IAN Manager are trademarks of
Microsoft Corporation. NetWare is a registered trademark of
Novell, Inc. Banyan and VINES are trademarks of Banyan Systems,
Inc. SCO is a trademark of Santa Cruz Operations. ISC is
a trademark of International Systems Corporation. UNIX is a
registered trademark of American Telephone & Telegraph
Company.

Copyright © 1991 Zenith Data Systems Corporation.





NOW THE ZENITH DATA SYSTEMS DESKTOP PC LINE DOES MORE THAN EVER.

On any desk, PC power tends to follow a predictable path. Upwards. That's why maximum expandability is the idea behind the Zenith Data

Systems desktop PC line.

And our versatile new PC LAN products are choice examples. The Z-486/33ET LAN Server offers you a wide range of expansion options and comes ready to support all leading networking standards.* Pair it with our

Z-LS Diskless LAN Station for superior performance.

Or for expandability and advanced graphical computing right out of the box, choose our new Z-486SX/20E or Z-486/33E personal workstations with The Seamless Solution—pre-installed with Microsoft® Windows™ v. 3.0 plus

So connect with Zenith Data Systems. For more information and the name of your nearest Zenith Data Systems Medallion Reseller, call a Microsoft mouse.

1-800-523-9393 in North America.





Z-486SX/20E



OUP NEW PC LAN SYSTEM.

	Z-386SX/20	Z-486SX/20E	Z-186/33E	Z-486/33ET	ZAS
Microprocessor	/386™SX - 20/10 MHz	1486™SX - 20 MHz	i486DX - 33 MHz	1486DX - 33 MHz	i386SX - 16 MHz
Co-Processor	Optional 80387SX	Weitek 4167 socket 1486DX upgrade	Weitek 4167 socket	Weitek 4167 socket	Optional 803875X
Memory (Std./Board Max.)	2MB/16MB	4MB/32MB	4MB/64MB	8MB/64MB	IMB/8MB
Expansion Slots	4 open 16-bit ISA	3 open 32-bit EISA	3 open 32-bit EISA	8 open 32-bit EISA	2 open 16-bit ISA
Hard Disk Drive	40MB or 80MB IDE	80MB or 200MB IDE	200MB or 400MB IDE	340MB half-height SCSI; 6 open half- height bays	Diskless; 40MB IDE optional
Ports	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 1 parallel	2 serial, 2 parallel, 1 mouse	2 serial, 1 parallel
Disk Drive Controller	Combined IDE connector/ floppy controller	Combined IDE connector/ floppy controller	Combined IDE connector/SCSI/ floppy controller	EISA bus master SCSI mass host adapter	IDE connector/ floppy controller
Video	16-bit VGA card	16-bit VGA card	TIGA/VGA	16-bit VGA card	16-bit VGA on board
IAN Features				Optional RAID 5 disk array software	Dual level ROM-based password protection

Z-486/33E





Z-486/33ET and Z-LS





The Z-486/33ET has been tested for compatibility with Novell NetWare® and Microsoft LAN Manager® The Z-486/33ET has been submitted for testing and compatibility with Banyan® VINES™ and SCO™ and ISC™ UNIX®

POWER FROM A NEW PERSPECTIVE. YOURS

GATEWAY VS. COMPAQ

Four experienced PC users explain the pros and cons of buying systems from the David and Goliath of IBM compatibles: the mighty Compaq and its challenger Gateway.



Ithough Compaq is a giant in the PC-compatibles industry, fast-growing Gateway has targeted Compaq's weak spot—higher prices—and become a tremendous success with its low-cost systems and responsive service.

This month's road testers have spent months work-

This month's road testers have spent months working with these competitors' 20-MHz 386SX systems—today's commodity desktops. In evaluating the systems, our road testers were sensitive to price, but they believed that the true test of long-term customer satisfaction is vendor service and support. Like the majority of people who use PCs on the job, they can't afford any downtime.

GATEWAY 2000 386SX-20C

Michael McDaniel is in charge of microcomputer and communications support for his company's nationwide sites.

I was a little nervous at first about purchasing from a mailorder vendor, but I went ahead and bought two of the Gateway machines for our company. What initially caught my attention was Gateway's free on-site TRW repair service for a full year after purchase. They even gave us a discount beyond the advertised price when I explained that our company had to spend conservatively. Not bad for a mail-order firm that already offers low prices.

The only disadvantage to Gateway's support is that at first I had to go through a regular tech support line. They eventually gave me a different number to call as a corporate account, and now my questions are answered more quickly.

The computer's programmable keyboard is an especially nice feature: I programmed a key to automatically log me on to the LAN, which saves about 5 minutes. We've had some problems with the systems—mostly interrupt conflicts that were easily solved. One hard drive had to go back. I was impressed, though, by the absence of BIOS or compatibility problems. The systems are designed so you can easily get inside to service them.

Linda Graebel uses her Gateway computer to handle the bookkeeping and correspondence for her occupational and physical therapy practice.



BRUCE BINDON
Position: LAN administrator
Company: Heery Program Management, a construction firm based in
Baltimore
Hardware: 5MB RAM, 120MB
hard drive
Software: 1-2-3, WordPerfect,
Paradox, Primavera Project Planner,
Freelance Plus, PageMaker

LINDA GRAEBEL
Position: President
Company: Graebel & Associates
Industrial Health and Rehabilitation, Spokane, Washington
Hardware: 4MB RAM, 80MB
hard drive
Software: DacEasy Accounting,
WordPerfect, 1-2-3, Windows 3.0,
Norton Commander, patient-billing
application for Washington State

BILL ANGELL
Position: Staff assistant
Company: State Farm Life Insurance, Bloomington, Illinois
Hardware: 6MB RAM, 120MB
hard drive
Software: Ventura, Harvard Graphics, Charisma, 1-2-3

MICHAEL McDANIEL
Position: Communications
administrator
Company: Natco, a petroleumvessels manufacturer in Tulsa,
Oklahoma
Hardware: 4MB RAM, 80MB
hard drive
Software: WordPerfect, 1-2-3,
Windows 3.0, dBASE III, Paradox,
proprietary Natco engineering and
vessel applications

When I first got my Gateway computer, the monitor was dead on arrival. I needed the computer immediately because my other computer had gone down. I found Gateway's service quite accommodating; they shipped out another monitor the next day. I haven't had any other problems with the system.

The price was good, but price isn't everything. You have to be able to rely on the company if something goes wrong. That's why I was happy with Gateway's response to the bad monitor. Their service and support have been excellent.

COMPAQ DESKPRO 386S/20

Bill Angell uses his Compaq system to create charts for insurance analyses and to train other PC users in his department on graphics packages.

We're almost a straight IBM shop in this department, but I needed an industry-standard machine that could hook up to an 8-inch Bernoulli drive, and PS/2s weren't compatible at the time. Buying any machine other than an IBM or a Compaq was out of the question. In a big company like this, standardization is important because you have to swap components.

We've bought several of these Compaq models, and I can't say I see a big difference from the quality of IBM machines.

This model's a little pricey, or at least it was when I bought it a year ago. It's come down in price since then, but comparatively speaking it's still on the expensive side.

We've never had to go to Compaq for service or support we've always worked with our dealer, who's provided excellent service. But I think it's a definite improvement that you can now call Compaq directly for support if you want to.

Bruce Bindon's company primarily uses Compaqs. He uses his computer to do data base management and desktop publishing.

My company has had few compatibility problems with Compaq systems, which is important because we're on a Novell NetWare LAN and connectivity is essential.

I've had minor problems with Compaq machines over the past year. Not with this particular machine, though. I've had this one for 10 months, but problems generally don't surface for 14 to 16 months. Still, I was impressed with the company's response to something I mentioned on an owner registration

REPORT CARD

	Gateway 200	0 386SX-20C	Compaq Desi	cpro 386s/20
	Michael McDaniel	Linda Graebel	Bill Angell	Bruce Bindon
Performance	A	A	A	A
Fast RAM	*	*	*	A
Expandability	В	A	В	C
Design/construction	A	A	A	B
Reliability	A	В	A	B
Price	A	A	C	B+
Service/support	A	A	A	A
Overall	A-	A-	A-	B+

^{*}User did not use feature or test it fully.

card I returned. I said that I'd had problems with Compaq, and the company told me that they'd honor a warranty extension if I had problems in the future with a machine after its warranty had expired.

Alice LaPlante is a writer in Palo Alto, California.

ACT PLUS™ SERIES ACCOUNTING SOFTWARE

Field proven since 1982, the ACT Series of accounting software is recognized as being extremely powerful and flexible. Featuring an eight year unparalleled upgrade path, this software exhibits integrity, and an audit trail second to no other accounting package.

PACKAGE

General Ledger Accounts Rec. Check Recon. Purchase Order LYNX (ASCII)



INCLUDES:

Accounts Pay.
Payroll
Inventory
Invoicing

The package now features on line context sensitive help windows with a second help level that can be edited by the user. All modules are totally integrated, or can be operated as stand alone applications. Call for details on the hundreds of features included.

\$199.50 + S&H

Call for pricing on the eight-year, field-proven, DOS LAN & XENIX/UNIX Vversions. Easiest fastest upgrade path available. Also available: FUND Series, ReportWriter, Telemagic, TeleACT, Universal Bridge, and Job Cost 1,2,4.

All prices plus shipping and handling charges. Hardware required IBM PC or compatible, 640K RAM, MS DOS 3.0 or greater, and hard disk. 30 day money back guarantee. (15% restocking fee applies.)

STOREWARE™ POINT OF SALE

StoreWare[™] point of sale was developed for the retailer who needs sales functions tied directly to an accounting package. It features definable screens, supports bar code readers, credit transactions, cash drawers, etc. and runs on a P.C. without extra hardware.

STOREWARE

Point of Sale Accounts Pay. Check Recon. Inventory Invoicing



INCLUDES:

General Ledger Accounts Rec. Payroll Purchase Order LYNX (ASCII)

With point and shoot operation, on line context sensitive help, security passwords, and many more features, StoreWare™ with the ACT series accounting software is truly the retail package of the 90's. Get the sales information, and the back office numbers. Our package is unique.

STOREWARE™ SINGLE USER

Call for pricing on the eight-year, field-proven, DOS LAN & XENIX/UNIX V versions. Easiest fastest upgrade path available.

All prices plus shipping and handling charges. Hardware required IBM PC or compatible, 640K RAM, MS DOS 3.0 or greater, and hard disk. 30 day money back guarantee. (15% restocking fee applies.)



2609 Kootenai Box 6886 Boise, Idaho 83707

1-800-388-3038

To place an order or receive information.

Publish-It! Explodes the Myth

Myth: You Have to Spend a Lot to get a Lot in a Desktop Publisher.

Reality: Publish It[™] has All the Power at One-Third the Price!

hoever said you get what you pay for never used Publish It!
Because with Publish It!
you get a lot







Suggested Retail Price \$249.95

For those of you without an art degree, you need an affordable desktop publisher that's easy to use, a snap to learn and combines all the tools needed to create dynamic documents. In other words, you need Publish It!

Publish ◀ It! Version 2.0

The Affordable Desktop Publisher
That Packs A Powerful Punch

With Publish It! everything is included:

- ▶ Easy Page Layout
- ► A Built-in Word Processor
- ► A Built-in Graphic Toolbox
- ▶ 85 Sample Layouts
- ▶ 180 Graphics & Illustrations
- ► A Quick-Start Mini-Manual

- ► NEW 8 Scalable Fonts in 17 Type Styles
- ► NEW Special Text Flow Features -Wrap text around the contour of any graphic
- NEW Extended and Expanded Memory Support

FREE BONUS

Over 30 High-Resolution Clip-Art
Illustrations Included Free in Publish It!







Visit your favorite Dealer and find out why more people are making the switch to Publish It!.

TIMEWORKS

Circle 287 on reader service card

Own Pub	lish It!	for \$99	and Save	Over \$15	0
---------	----------	----------	----------	-----------	---

If you already own a desktop publisher add Publish It! for only \$99. If you don't love Publish It!, return the program within 60 days for a full refund. Check the box below, sign the coupon and return it with your \$99 check or credit card number plus \$5.70 postage and handling, to: Timeworks, 625 Academy Drive, Northbrook, IL 60062 Or call: 1 (800) 323-7744

Or call: 1 (800) 323-7744 (Ask for Operator 100)

Fax: 1 (708) 559-1360

Yes, I own another desktop publisher, but I'd like to try Publish It! for \$99.

□ Visa □ MasterCard □ American Express
Acct# Exp. Date

OFFER EXPIRES 12/30/91

Please print:

Name

Address

City State Zin

Signature

















































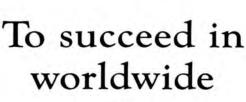


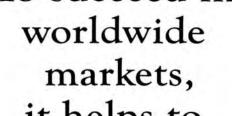












it helps to work with

someone who knows

the territory.































































































































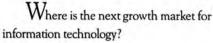












Everywhere.

The changes that are occurring every day, in every corner of the world, point to a pivotal decade that will change forever the way-and where - you do business. In fact, research shows international sales are expected to account for almost 80% of total worldwide sales by the year 2000.*

Where will you find the resources to compete worldwide?

Right here.

You see, no one knows the world of information technology better than we do. After all, we compiled the industry's first database on computer installations way back in 1964. And in 1972, were the first to launch an international publishing operation. Since then, our domestic titles have grown up to become leaders in their fields, as have our international books.

And we now publish nearly 150 titles in 50 countries, making us the largest information technology publisher in the world.

But we know you need more than ad pages. So we offer more.

Through our World Expo, we can send you to 58 different trade shows all over the world. Or, get you the information you need about emerging overseas markets through IDC research centers in 35 different countries.

You can even customize a total marketing communications program that includes ad space worldwide, direct marketing using select industry databases, international media buying help, a newswire connection to 800 editors around the world, and much more, through our Market Access Program.

Providing this kind of access is what we do best. So why not call us and find out how we can get you where you want to be? Contact your local IDG rep for information about how you can qualify for the Program.

Because when you get to as much of the world as we do, there isn't anywhere you can't grow.



The World of Information Technology *Source: International Data Corporation. © 1991 International Data Group

Circle 275 on reader service card











YOU'RE THE WINNER!

1,000,000 FREE COPIES OF THE LATEST IN WORD PROCESSING!

Join DeScribe today in its Bold Gold celebration of DeScribe® Word Processor 3.0 for Windows and OS/2. As part of the celebration, DeScribe is distributing 1,000,000 Bold Gold disks FREE OF CHARGE.

Bold Gold includes all the advanced features of DeScribe Word
Processor 3.0 except spell check, thesaurus, definitions, file
conversion, and the full set of documentation. That's right,
Bold Gold has everything else including unlimited saving,
printing, and DDE. This is your golden opportunity to
find out why MIS Week says, "DeScribe scores as the
greatest improvement in word processing since
the moveable cursor." And it's yours for the asking.

Your disk comes ready to install with natural-to-use pull-down menus, multiple windows, true printed-page display, and features unique to DeScribe — Text Toolbox, Unlimited Undo/Redo, automatic Snapshot save, and more!

Give us a try yourself and discover what companies like Citibank, IBM, and Motorola already know — DeScribe is the best yet! Write for your free Bold Gold disk or call 1-800-344-6531 today! We'll mail Bold Gold right away and automatically enter you in DeScribe's Bold Gold Sweepstakes.

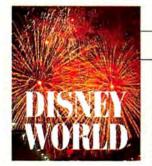


TAKE FLIGHT IN THE CHAIRMAN'S JET!

Win the gold and you'll go in the style worthy of VIPs — Very Indulged Partyers! The wining and dining begins as soon as you and your party step aboard a specially commissioned Gulfstream business jet, hosted by DeScribe's founder and Chairman James P. Lennane.

ENTER DESCRIBE'S BOLD GOLD

SWEEPSTAKES TODAY!



WIN THE TRIP OF A LIFETIME!

DeScribe's Bold Gold Sweepstakes Grand Prize isn't just the ticket! Take advantage of our Bold Gold offer and you can win a lavish trip for four to Orlando, Florida -America's favorite playground! You and your guests will enjoy four days of unlimited access to Disney's Magic Kingdom Park®, Epcot® Center, and the Disney-MGM Studios-Theme Park.

IMMERSE YOURSELF IN LUXURY!

When the wheels touch down at the airport, a private limousine will whisk you off to Orlando's most prestigious hotel, the Grand Floridian. You'll spend three nights in the opulent Concierge Suite — with complimentary continental breakfasts, afternoon tea, and evening hors d'oeuvres.

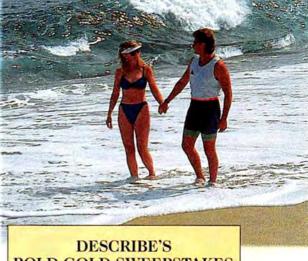




For fun and games, the finest in golf, tennis, and sailing is only moments away. And that's not all. DeScribe will give you \$1,000 in cash to spend any way you'd like!

WIN AN IBM PS/2® L40SX AND MORE!

One lucky person will win the First Prize, a fully loaded computer — IBM's hot new PS/2® L40SX with 6MB of RAM and an IBM PS/2® Trackpoint (mouse and trackball) with the latest version of IBM's OS/2 operating system and DeScribe Word Processor 3.0 installed and ready to run! Second Prize: 25 winners each receive a copy of DeScribe® Word Processor 3.0. Third Prize: 50 winners each get a DeScribe Bold Gold T-shirt.



BOLD GOLD SWEEPSTAKES

Send me a Bold Gold copy of DeScribe® Word Processor. And enter me right away in DeScribe's Bold Gold Sweepstakes!

Choose one of each:

Operating Environment

Disk Format

□ OS/2 ☐ Windows ☐ 3.5 inch ☐ 5.25 inch

NO THANKS. Don't send me a disk. Just enter me in DeScribe's Bold Gold Sweepstakes.

Company's Name Address ___

City _____ State ___ Zip ___ Daytime Phone _

DeScribe's Bold Gold Sweepstakes entry form must be received by December 31, 1991. Drawing will be held on or about

February 1, 1992 by an independent judging organization. To enter, you must be 18 years of age with your primary residence within the continental United States. Complete

sweepstakes rules may be obtained by writing to: DeScribe, Inc.; Bold Gold Sweepstakes Rules; 4047 N. Freeway Blvd.; Sacramento, CA 95834.

SEND OR FAX TO:

DESCRIBE, INC. 4047 NORTH FREEWAY BLVD. SACRAMENTO, CA 95834-9954

FAX (916) 646-5154



DeScribe®

WORD PROCESSOR

Sacramento, California, USA © 1991, DeScribe, Inc. All rights reserved.

DeScribe® is a registered trademark of DeScribe, Inc. IBM® and OS/2® are registered trademarks of International Business Machines Corporation.

Microsoft® is a registered trademark and Windows™ is a trademark of Microsoft Corporation.

Circle 83 on reader service card



Get more bytes without taking a bite out of your budget.

We've just increased the capacities of our ArchiveXL® backup systemsand reduced the price by \$100. So now you can get a complete, ready-to-roll, 250 megabyte system, without eating up your budget-for only \$499. Or, choose our popular 120 megabyte system, for only \$399.

Either way, you get something no other low-cost system can offer-Maynard® quality.

With ArchiveXL, all the extras are built-in-so you get more for your

ARCHIVE"

Model 340

Mini Data Cartridge

money. It's the complete

backup system, including software, connectors, mounting rails and faceplates, even a tape cartridge worth

\$28. Advanced data compression provides capacities from 80 to 250 megabytes. And features like high-resolution head positioning and rugged

metal mount construction deliver years of dependable performance.

Our state-of-the-art OICstream* software is a snap to install. Easy to use menus let you quickly choose from a wide range of file-by-file backup and restore options, giving you all the flexibility you need.

Automatic unattended backup lets you backup anytimeeven in your sleep. And

ArchiveXL systems support Novell, 3Com, Token Ring and other networks with PC's, PS/2's and compatibles. Our 250 MB unit also operates under SCO XENIX.

Maynard's 48-hour replacement policy*, toll-free product support and 24-hour, on-line bulletin board service are more reasons why we say we're backing you in every way. So now you won't have to bite the bullet to get more bytes. Get the mini-cartridge system PC World said "takes top honors for speed and convenience"-ArchiveXL. From the world leader in backup systems. Contact your dealer-or call Maynard.

(800) 821-8782

Maynard

An ARCHIVE Company

Maynard Electronics, Inc. 36 Skyline Drive Lake Mary, Florida 32746 (407) 263-3500 (USA) (44) 494-473-434 (UK)

*Restricted to U.S. installations. Archive, Archive Archive Archive Archive Corporation. Maynard is a registered trademark of Maynard Electronics, Inc. All other product names herein may be trademarks of registered trademarks of their respective companies.

Circle 303 on reader service card



FORECAST No. 100 Per 1

t's that time again—time to throw out the 1991 calendar and start planning for the year to come. 1992 promises to be a banner year for the PC buyer, who will be presented with an array of choices from a tempting banquet of new hardware and software. Depending on your situation, you can view this with alarm—"Again? So soon?"—or as a great opportunity—"Look at all this new stuff! And look at the wonderful prices!"

1991 was a year in which companies and strategies held center stage. IBM and Apple joined forces; Microsoft and IBM took the gloves off; Borland swallowed Ashton-Tate. All this was good for journalists, but frustrating for users. While expectations soared, deliverables seemed somewhere off in the distance.

But my crystal ball tells me that many long-promised products will finally become available in 1992. The biggest offerings will occur in four product areas: smaller, lighter, and more powerful portable computers; realistic color imaging tools;

If you think the industry has run out of surprises, think again. A renowned PC industry analyst predicts that 1992 will be a banner year.

easier network solutions; and friendlier Windows and OS/2-based software.

BETTER PORTABLES

1992 will be a busy year for hardware, with more powerful 386, 486, and RISC-based systems for the desktop and carrying case. In fact, because portables already equal desktop devices in speed, power, and storage, 1992 may be the crossover year when we start buying more portable PCs than desktop ones.

As portables' speeds approach 33 MHz and prices for 386 clones drop to \$2000 or less, look for more powerful 486—perhaps even 586—desktop PCs and featherweight portables with longer battery life or color VGA screens. Every systems vendor will be competing for your dollars, so portables' prices should fall.

Finally, you'll see more pen-based computers than you can shake a stick at, all priced in the \$4000 to \$5000 range and aimed mostly at

brave, early adopters in the sales force. Most of the applications for pen-based computers will be ports of existing programs. It may be a while before we see innovative software that converts handwritten notes to ASCII, provides instant information, and appeals to new classes of formerly computer illiterate users.

SEEING IS BELIEVING

All of us who were raised on color TV are also hungry for photo-realistic color in multimedia applications ranging from presentation management to videoconferencing. Unfortunately, it's tough for anything but a fast 386 or 486 to handle the data that makes up such an image. But as you upgrade your systems to 386s and higher during 1992, you may find the platform you need to process color bitmapped images, create animation effects, and incorporate video sequences.

More models with built-in CD ROM will arrive this year, so retrieving large color images for multimedia applications will be cheaper and easier. By the mid-1990s, rewritable optical storage (or its successor) will be a standard peripheral, and multimedia applications that include photo-realistic images will be part of everyday life.

In the meantime, look for a lot of fancy new peripherals. There will be more color scanners priced as low as \$1500, and suitable graphics software like Software Publishing Corporation's Harvard Graphics and Lotus's Freelance. And with much more variety in low-priced, 300-dpi color printers, color output will markedly improve.

LAN LAUNCHES

In the more mobile society of 1992, you'll need to be concerned about dialing in to the network from remote locations and integrating the information in the office systems with the system in your briefcase.

Packages such as Farallon Computing's *PhoneNet* will make it easy to plug in your roving portable; products such as *FastLink* will let you maintain and update information between your desktop and your portable; and notebook computers from companies such as Grid Systems will incorporate radio and cellular telephone technology.

You'll also see new approaches to LAN systems software, starting with Novell's plan to integrate NetWare with its newest acquisition, the highly acclaimed DOS clone *DR DOS*. This will result in LAN software that's easier to use and a LAN environment that's easier to manage.

In 1992, prices will drop, vendors will form alliances at an alarming rate, and products will appear and disappear overnight.

Finally, 1992 will be a big year for software that supports work groups, like Lotus's Notes. Groupware and LANs together create a whole new kind of work environment, where you can readily share information and keep track of deadlines with all your co-workers.

FRIENDLIER INTERFACES FOR EVERYONE

The main body of new and upgraded *Windows* software ships in 1992. If IBM gets its wish, these packages, as well as new OS/2 applications, will run smoothly on OS/2 2.0.

As a result of the growing acceptance of *Windows*, DOS users will crave a better interface. This is good news for vendors of DOS shells such as BrightBill-Robert's *Hyperpad* or Quarterdeck's *DesqView*, and better news for DOS users who want something more malleable than old-fashioned DOS.

We'll also see products that make it

easier to manage files. With Windows 3.1 shipping, OS/2 2.0 superseding Presentation Manager, and products such as Symantec's Norton Utilities for Windows safely installed, your staff will be able to navigate through their systems with much less training. And the graphical user interfaces of products such as Coordination Technologies' Together and Xerox's Rooms will offer new ways of thinking about and doing tasks, especially those involving joint deadlines and shared information.

New interfaces that ship with pen, voice, and video hardware will also be arriving in 1992, so learning new systems will be faster and easier. Interfaces that incorporate voice recognition, such as Go Corporation's PenPoint system, will have on-screen "buttons" with familiar stereo controls, making it possible for people who don't type to use computers easily. The built-in interface in pen-based systems will understand writing gestures like checking, circling, and crossing out. And video-based applications for creating multimedia presentations, such as Digital FX and MacroMind's Action, will use film and TV metaphors.

IT'S HOW YOU PLAY THE GAME

In the increasingly competitive market of 1992 prices will constantly drop, vendors will form new alliances at an alarming rate, and products will appear and disappear overnight.

Amy Wohl is an industry analyst based in Bala Cynwyd, Pennsylvania. She is also editor of Trends Letter, a PC industry newsletter.



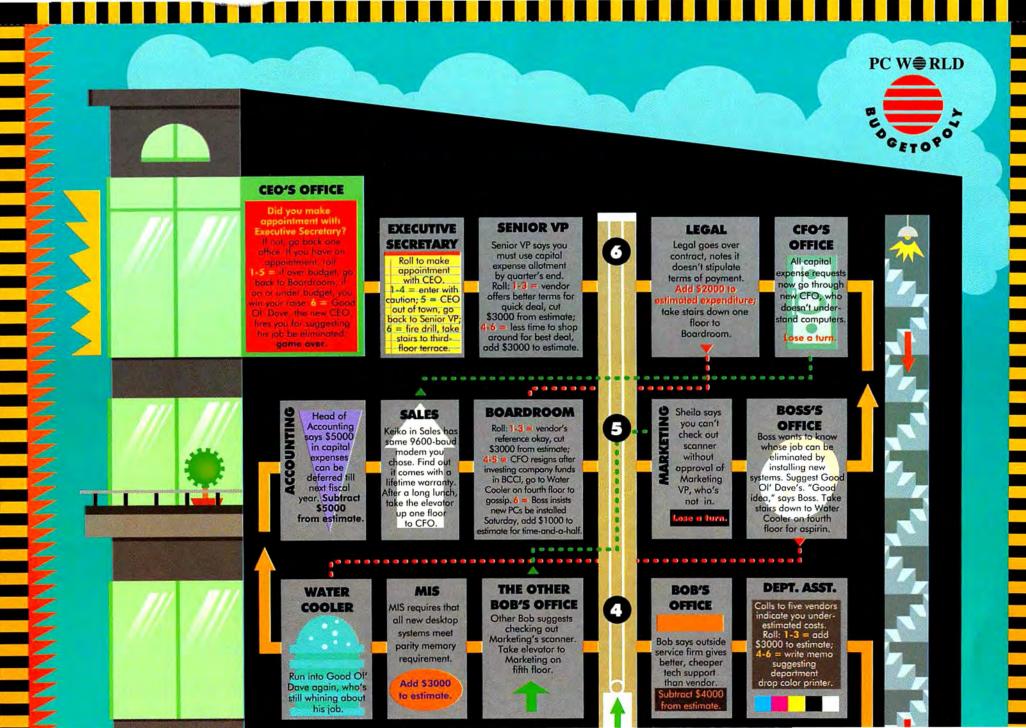
The Game of Getting the Hardware You Need with the Money You Have

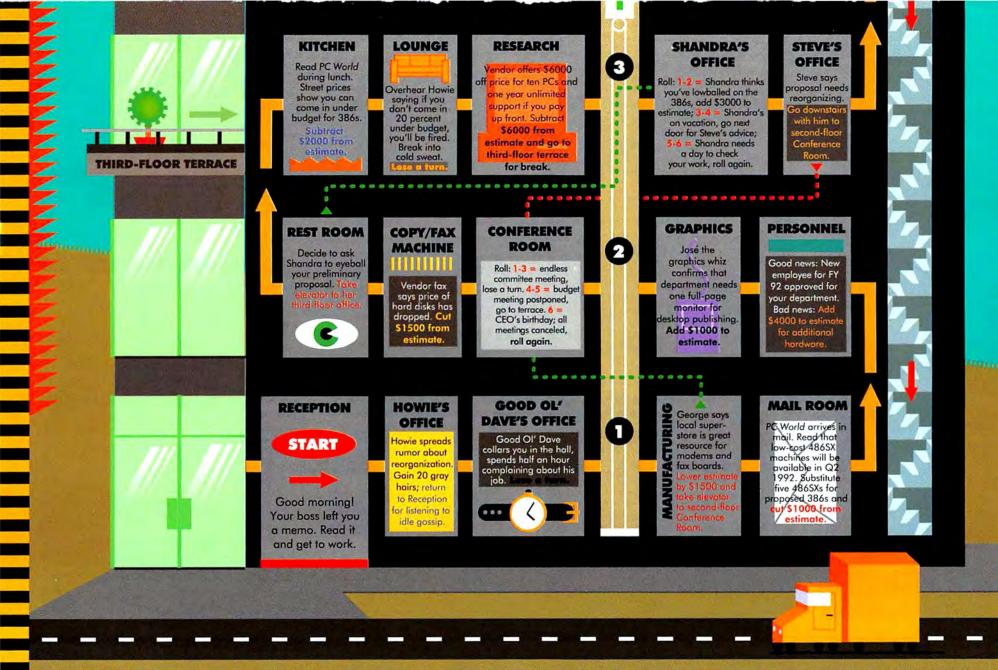
INSTRUCTIONS

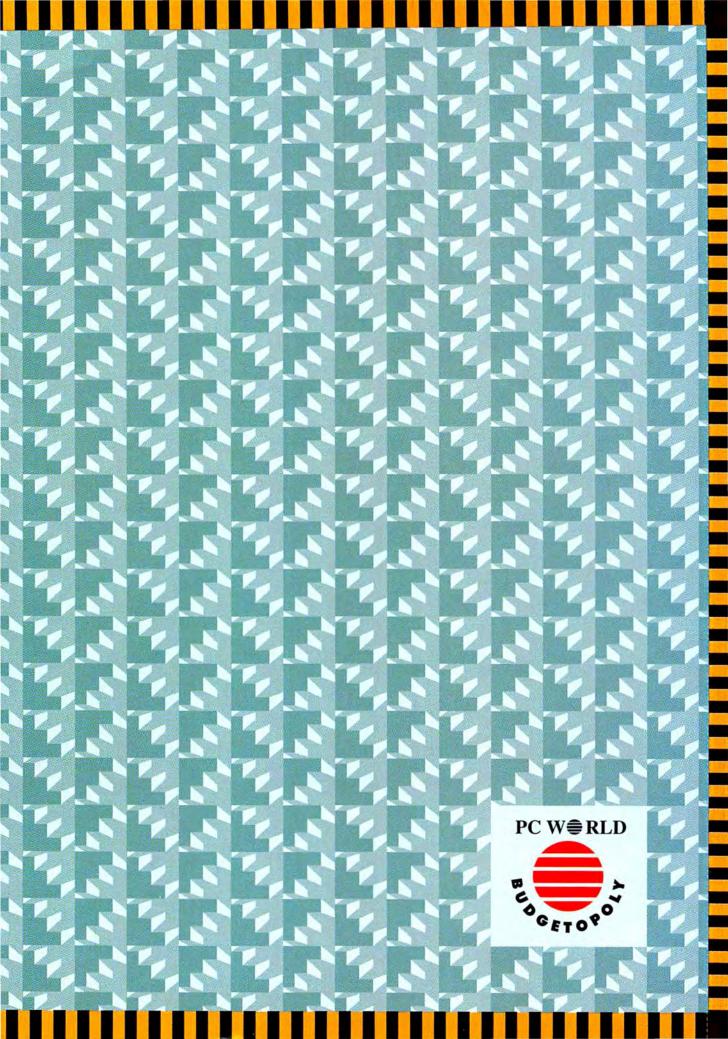
- Guess what. You have been chosen to recommend the department's 1992 hardware purchases. Fifteen of your staff have requested Windows-ready 386s. You'll also want to get bids on a new network laser printer, a color printer, a color scanner, seven 9600-baud modems, seven fax boards, and a new 486 server, but your research may reveal other needs.
- The CFO has given you a budget limit of \$100,000 for these items. If you manage to negotiate deals under this amount, get terrific support for all the hardware, and cost-justify your recommendations, the CEO will approve your raise. If not, you can kiss your raise goodbye.
- To play: Using a coin as a marker, start in Reception, roll one die, and advance that number of spaces. Follow the instructions posted in each area as you enter. (Once you reach Accounting, you may roll a higher number than you need to reach the CEO; in that case, proceed to the CEO's office and follow instructions.)
- Start with a \$100,000 estimate, and revise as you go; tally estimates on a piece of scratch paper. The first player to reach the CEO's office at or under \$100,000 wins.

Good luck!

By Bronwyn Fryer and Steve Fox Design and Illustration by Gordon Studer







It doesn't take a rocket scientist to figure it out. But one did.





© 1991, NewGen Systems Corporation. NewGen, NewGen Systems Corporation, NewGen logo, Image Enhancement Technology (IET) and Auto Recognition Technology (ART) are trademarks of NewGen Systems Corporation. PostScript is a registered trademark of Adobe Systems, Inc.

End User Inquiries
Circle 158 on reader service card
For Dealer Inquiries
Circle 159 on reader service card

Quite a few scientific types focused on the heavens above have found that NewGen™ high-resolution, PostScript®-compatible printers offer advances found nowhere else on earth.

Like Image Enhancement
Technology (IET)™, for character
quality that's out of this world. Plus
Automatic Recognition Technology
(ART)™, to select the right interfaces
and emulations for you. And
Program Updating with the latest
in controller technology to make
your NewGen printer virtually
obsolescence-free.

Resolution close up, 13 point Courier enlarged 500%



Yet, for all their innovation, you'll find they're offered at very down-to-earth prices.

Take our TurboPS Pro Series, delivering incredibly crisp, professional documents and superb performance at up to 800x400 dpi for single and work group users alike.

We also offer the compact and very affordable TurboPS Personal Series, for 300 or 400 dpi resolution at 4 pages per minute.

Then there's the new T Series, with exceptional 1200x600 dpi in 11"x 17" format for truly outstanding graphics capability.

You can add a second paper tray, IC memory cards, SCSI interface and other options as you like.

And with NewGen, you can count on solid customer and technical support as well.

All of which makes NewGen a leader in the printer technology race.

To learn more, or for your local NewGen Dealer, call today. We'll be happy to help you decide which of our machines is just right for your mission.



NewGen Systems Corporation 17580 Newhope Street, Fountain Valley, CA 92708 Telephone 714/436-5100 FAX 714/641-2800 Toll Free 1-800-756-0556 Dealer Inquires Welcome

PEACHTREE ACCOUNTING MAKES EVERY PENNY COUNT.

hen you're running your own business, every financial decision is an important one. Make sure you're getting the most out of your business dollar with the best value in accounting software, The Peachtree Double Bonus Bundle

Peachtree Software has been the leader in accounting software for over 13 years. Now we've combined two high-powered programs into one value-packed bundle—Peachtree Complete® III, a comprehensive accounting system, and Peachtree Data Query® III, a custom reporting and analysis tool

Peachtree Complete III has nine powerful modules, each loaded with features you'd expect to find in much higher priced packages:

- General Ledger
- · Accounts Payable
- Accounts Receivable
- Payroll
- Job Cost

Invoicing

Fixed Assets

Purchase Order

Inventory

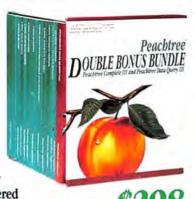
Easy to Use

The modular design of Peachtree Complete III makes it easy to implement the functions you need now, then add others as your business expands. Everything you need to start setting up accounts and processing your financial



Give every workstation the power of Peachtree with Peachtree Complete Network Accounting!

Now your entire staff can access the full-featured accounting power of Peachtree Complete III plus the custom reporting capabilities of Peachtree Data Query III in one multi-user package Peachtree Network Accounting. Multiple users may use a single module simultaneously. Most modules allow several operators to perform the same function at the same time for the same company. But don't worry — we've provided three levels of optional password security to protect your confidential accounting data. Peachtree Complete Network Accounting is available now for use with Novelle®, LANtastic™ and other NETBIOS compatible LANs.



\$298

information is included in the package. There's a Quick-Start Guide to help you load the program, as well as a DOS and Accounting Primer plus a nine-volume reference library. Each module has on-line tutorials that help you learn accounting as you install the program, and context-sensitive HELP is available any time you need assistance •



\$199

Flexible, Powerful Reporting

The management reporting capabilities of Peachtree Data Query III give you a unique view of the accounting data in your Peachtree Complete III files. Whether you choose one of the 50 pre-defined reports or customize your own, PDQ lets you get to the meaning behind the numbers with historical reports and complex analyses to give you a more complete picture of your business finances

With PDQ you can even read and report on data from your Lotus 1-2-3® spreadsheets, and export data to Lotus 1-2-3, dBASE® and other popular applications with no re-keying of data and no risk to your files ■

Best of all, you won't sacrifice ease of use to get the power and performance your business needs. There's an on-line tutorial in each module, so you can learn accounting as you set up your files. Context sensitive HELP is on-line at all times. Peachtree provides a

thorough reference library, including a quick-start installation guide and Accounting Primer to assure that you'll be up and running quickly. Errors are handled with understandable, plain English messages and suggestions

Highly Recommended

In a recent survey by Accounting
Today magazine, Peachtree was
recommended by accountants almost
twice as often as the nearest

competitor. When

Reseller Management
asked resellers which
accounting package they
recommend, Peachtree

came out on top again, with 25% of resellers recommending it

Most importantly, users recommend Peachtree! Based on reader response, Computer Shopper named Peachtree Software the Best Buy in Accounting Software for 1990, and Peachtree Complete III received the 1991 World Class Award from PC World. More than 400,000 small businesses trust their accounting to Peachtree

We're Not Satisfied Until You Are

Convenient technical support may be purchased from Authorized Support Centers in over 80 cities across the country or through prepaid support contracts directly from Peachtree. We stand behind our products with an unconditional 60-day money back guarantee. If you aren't satisfied with your Peachtree product, simply return it within 60 days for a prompt refund

Call now to order or for the name of a dealer in your area

1-800-247-3224 or to order by Fax 404-564-5888

Add \$12.50 shipping. In Georgia, add applicable sales tax.
Telephone number required on all orders.



Peachtree Software 1505 Pavilion Place • Norcross, GA 30093

Hardware Specifications: Requires PC/MS-DOS version 3.1 or higher (supports DOS 5.0) with 640K of memory and a hard disk. For use with IBMP PC, PC XT, PC AT, Personal System/ZTM and compatibles. Alternate media optionally available. Not copy protected. Product names referenced are trademarks and registered trademarks

Microtek Presents The Self-Feeding Scanner With A Real Appetite For Words.

OTEKS MS-II SCANN

It has often been said that a picture is worth a thousand words.

Yet in business, it's words that we use to commu-

nicate with most often.

Which is why Microtek has developed the MS-II scanner.

The first desktop scanner designed specifically for Optical Character Recognition (OCR).

It scans words into your computer with the same exact precision that ordinary scanners let your computer receive pictures.

The MS-II comes bundled with OmniType, a special version of Caere's award-winning OmniPage page PRETITE FOR WORDS WITHOU recognition software, providing a

complete OCR scanning solution. OmniType separates text from graphics while reading nearly any

non-stylized font from 6 to 72

points in size.

So instead of having to tediously retype reports, financial statements and other already printed



information, you can quickly scan them into your word processing, database or spreadsheet program. Up to fifty

pages at a time.

Of course, the MS-II also recognizes photos and other graphics

and scans them just as accurately. Simulating 64 shades of gray.

Best of all, the MS-II is designed for limited budgets. It's just \$995 if you're using an IBM PC. PS/2 or compat-

ible. And only \$1,195 if you have a Macintosh.

If you're working with words, you owe it to yourself to get a Microtek MS-II scanner. Call 1-800-654-4160 or in

California, 213-321-2121 for the Microtek dealer nearest you.

Do it today. Because we're sure you'll agree that the MS-II's appetite for words far exceeds your appetite for typing.





CLONES TOP KINGPINS

Mail-order mainstays Gateway and Dell take on the big boys at IBM and Compaq with outstanding prices, technical support, and service.



hen it comes to providing customer satisfaction, mail-order houses Dell and Gateway surpass industry kingpins IBM and Compaq. Not only do Dell and Gateway's prices and support rate highly, but their systems' reliability and performance outstrip their two major competitors'.

These are the opinions of the PC owners we surveyed by phone in September. We randomly selected a group of 100 people for each vendor, who had purchased a system (any model) from that vendor in the preceding 18 months. In rating their overall satisfaction, 95 percent of Dell customers and 88 percent of Gateway customers said they were either "extremely" or "very" satisfied—the two highest ratings on our five-point scale. Seventy-nine percent of IBM customers and 77 percent of Compaq owners rated their systems that highly.

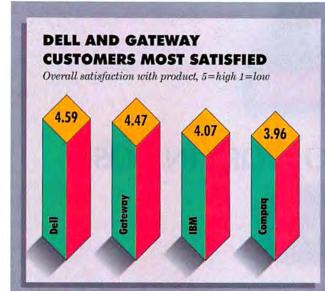
Either Dell or Gateway also came out on top when respondents rated their systems on seven evaluation criteria. Dell scored highest on reliability, performance,

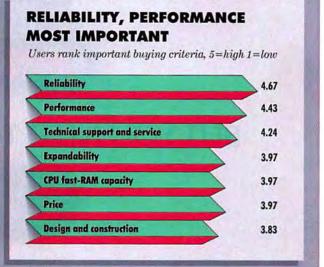
technical support and service, and design. Gateway was close behind on performance and led on expandability, fast-RAM capacity, and price. Respondents also ranked the importance of these evaluation criteria. They considered reliability, performance, and technical support and service to be most important, followed by expandability, fast-RAM capacity, and price. Design and construction were least important.

More Dell and Gateway purchasers said they would buy the same brand of PC again. More Compaq customers responded that they wouldn't buy their system again.

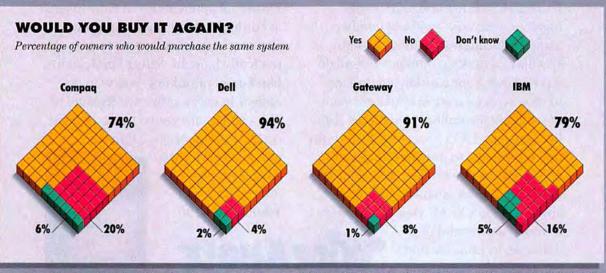
Dell purchasers who said they would buy their system again gave technical support and service, reliability, and price as their top three reasons. Price was far and away the leading reason why Gateway customers would purchase their system again, followed by technical support and service and reliability. Conversely, the reasons most often given by customers of all four vendors for not buying again were high price and poor support and service. \blacksquare

Christine Whyte is a freelance editor in San Francisco.





sfaction with key ures, 5=high 1=low	Querall	1	COMPOS	1	Dell	1	GOTENO	1	184	1
Reliability		4.41	7	4.28	1	4.55	1	4.38	1	4.44
Performance		4.40	5	4.34	1	4.57	5	4.54	1	4.17
CPU fast-RAM capacity		4.25	1	4.32	1	4.36	1	4.41	1	3.90
Design and construction		4.18	1	4.09	1	4.40	1	4.21	5	4.02
Expandability		4.18	7	4.01	1	4.37	5	4.48	5	3.86
Technical support and service		4.02	1	3.44	1	4.44	1	4.14	1	3.96
Price		3.86	1	3.08	1	4.22	1	4.78	1	3.35



Source: Data is based on a September 1991 random phone survey of 100 users each of Compaq, Dell, Gateway, and IBM systems (any model) purchased within the last 18 months. This data represents the opinions of the survey respondents.

IF YOU WANT TO WORK IN WINDOWS



BUT YOU NEED TO WORK IN DOS



CLICK HERE:



If you love Windows, but you depend on DOS, you need WideAngle 2.0TM. It makes Windows and DOS work together your way - without cumbersome application switching, window shuffling or desktop clutter. WideAngle 2.0 expands your windowing desktop to nine screen-sized workspaces, each of which holds multiple Windows applications or a DOS program. To go from one workspace to another, simply click on the interactive Power IkeTM icon, or use WideAngle's equally powerful hot keys. Click on XRAY View and 'see through' a screenful of windows to instantly find,

activate, tile or close any

application. You can customize WideAngle to the way you work. Distribute applications in workspaces according to your own workflow. Create groups of programs to automatically launch. Select applications, like E-mail or utilities, you want to appear in every active workspace. The choices are yours. If you depend on DOS, WideAngle 2.0 makes

moving to Windows easy. For more information, call **1-800-736-4198**.



Attitash Software, Inc., 20 Trafalgar Square, Nashua, NH 03063 WideAngleTM, Power IkeTM, WideAngle CompanionTM, XRAY ViewTM and Attitash SoftwareTM are trademarks of Attitash Software, Inc.



Overnight Account Ability.

Computerize your books in record time with One-Write Plus, the small business accounting system you already know how to use.

Before you strap yourself with accounting software that's a chore to learn and even harder to use, take a look at One-Write Plus-the full featured, affordable accounting system you can run in a matter of hours

In fact, if you can write a check, you can use One-Write Plus. That's because it's based on the one-write manual system you're probably using right now. With One-Write Plus, you'll be billing customers faster, collecting receivables sooner, balancing budgets better and producing more meaningful financial reports. Which helps keep your business in the black, and you out from under your books.

Full-tilt, fully integrated accounting software.

Not only is One-Write Plus easy to install and use, it's easily the most complete accounting program in

its price range. Everything you need for fast, easy accounting is right in the box:

General Ledger with Checks and Receipts, Accounts Receivable with Invoicing, and Accounts Payable. And they're all connected, so every time you write a check, send an invoice, or receive a payment, all other parts of the program are updated automatically.

You can keep records on up to 5,000 customers and vendors right at your fingertips. Using simple menus and screens, you can quickly compare vendor prices. Reveal purchasing patterns. And take advantage of vendor discounts. So you can hold onto more of your money, longer.

One-Write Plus even lets you create and override payment schedules, so you can pay who you want, when you want. Something most other accounting programs won't let you do.

In fact, you could pay hundreds more for accounting software and not get as many features, or this kind of performance. Good reasons why

34-97	RIOS	CASH SISTER	SEPTIS	Checking a	
DATE LINE #	PHID TO EXPLICATION	CHECK HERETA	CHECK HOUSET	Purchaser 1010	Admirtisin 5190
	BREEZY ABVERTISING BND10 VOICE)Ю п	237.00		237,60
10/15/90 2	ELECTRIC CD.	364 N	45.64	1111	17 1
Tire.	PRO DE SER LIMITA DE SER SELECTION DE L'ANNE	OHIX N	intiat Limit is	1,000,00	

One-Write Plus looks and works just like the manual one-write system you're probably using now. Only faster, easier, and far more accurate

accountants count on One-Write Plus. And recommend it for small businesses like yours.

Control job costs and inventory, and maximize your income with SuperTrack™

No matter what business you're in, One-Write Plus can help you manage it better, with SuperTrack. It's the

ultimate, customizable tracking feature that shows you precisely where your money's coming from. And where it's going.

With SuperTrack, you can quickly track income, commissions, expenses, inventory, projects and more. By customer. By hour, By employee. Any way you need to. Then produce comprehensive activity reports that let you look at your finances the way it makes the most sense for your business, your industry, your accountant, and your bank

It's a powerful tool that generates information every business needs. And you won't find it anywhere else.

Take 30 days and prove it to yourself.

Accounting is time-consuming enough. Why spend even more time with software you have to

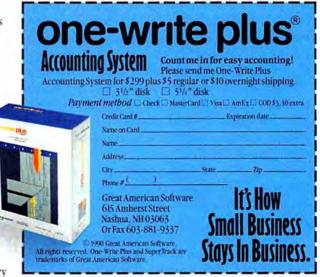
sweat over? Discover One-Write Plus. It's the proven accounting software you already know how to use. And it's guaranteed. If you're not managing your finances more effectively in 30 days, we'll send your money back. We'll even provide 30 days of free hotline support to ensure your success.

When we say overnight, we deliver.

Place your order by 3:00 pm (Eastern Time), and you can have One-Write Plus the next day. So you can spend more time making money and less time accounting for it. Starting tomorrow.

Ask for One-Write Plus at your software dealer in the US or Canada.* Or call to

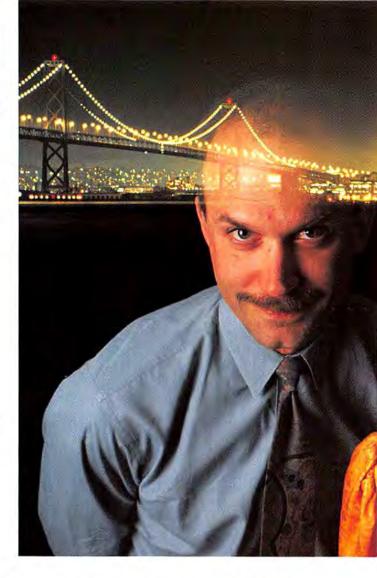
1-800-388-8000 Ext.412



*GST compatible

BUDGET TO WIN

When you want the top brass to approve a major purchase, you need a shrewd strategy. Here are six smart steps managers used to get the new hardware they were after.



f your company is like most, it probably started small and built slowly, adding PCs on an ad hoc basis. While the company grows, its PC technology ages. One day, you realize you have to convince senior management—who often don't use computers—to sign off on an expensive system upgrade. You'd sooner face a firing squad.

This was the situation confronting Ken Johnson, a senior project engineer at Geomatrix. Since the Loma Prieta earthquake in 1989, Geomatrix, a San Francisco-based firm that provides earthquake, foundation, and environmental engineering consultation for such clients as the Port of Oakland, has grown 40 percent, and it shows no sign of slowing down. Johnson states the company's quandary simply: "We're terribly busy. People need to work more efficiently, and our standalone, low-end PCs weren't cutting it. We needed a more powerful and efficient system than our 'sneaker net' for analyzing and sharing data."

The obvious answer to the company's problems was a local area network. But how could the employees convince the CEO, who doesn't like computers, to ask the board of directors to shell out \$100,000 for the network server, wiring, and software necessary to link 100 users? "The network is by far the largest and most expensive system we ever asked for," says Johnson.

SUSAN LUSTY

Because of the expense, Johnson and his team had to put together a solid strategy for selling the CEO.

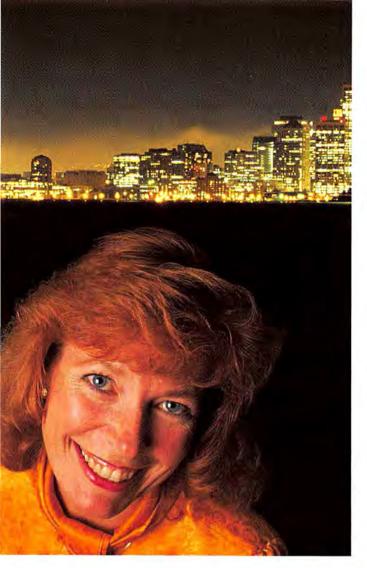
STEP ONE: THE CFO FACTOR

No individual Geomatrix manager had the expertise or the inclination to convince upper management of the need for such a complex new system. Instead, the managers and staff formed a computer committee made up of a representative from each of the three engineering groups and Jim Price, the company's chief financial officer. Including the CFO in the committee was a shrewd move. "Jim represents main management's ear, and he makes sure we answer questions about cost," says Johnson. "Because he was part of the committee's discussions from the beginning, Jim was ultimately able to make the harsh reality of spending a hundred thousand dollars more palatable to the CEO and the board."

STEP TWO: ENLISTING THE TROOPS

Next, the committee set about gathering evidence and enlisting the grass roots support of other employees.

The computer committee began to gather examples of productivity blocks in areas such as analysis, data sharing, and printing, compiling evidence that engineers' computers were inadequate. "We are mainly an IBM 286 clone office," explains



Ken Johnson and Christine Patton of Geomatrix helped convince their company's CEO and board of directors to go for a LAN.



Johnson. With only two printers and four 386 machines to handle larger analytical jobs, engineers had to do their number crunching early in the morning and on weekends.

A first attempt at dealing with the printing bottleneck involved a printer sharer connected to the PCs through the company's PBX phone lines. This method worked poorly, and staff complained of wasting time trying to print documents and transfer files to each other. "We had to copy our files onto a floppy and walk them over to co-workers on different floors," says Johnson. "Simple file transfers could turn into an extra hour of work. And we were losing hours of valuable time waiting in line for files to print."

STEP THREE: NEXT TIME, A SMARTER RFP

When the committee set out to locate a vendor that could install a network, they had to learn by doing. "Our original RFP wasn't much more than a wish list for a network server to support a 100-node network, including software, installation, and support," says Johnson. We were surprised when estimates came back somewhere in the \$150,000 range."

Although several vendors responded to Geomatrix's initial RFP, they still had to work with the committee to pin down the company's exact needs. As a result of this experience, says Johnson, the committee learned that a well-researched, de-

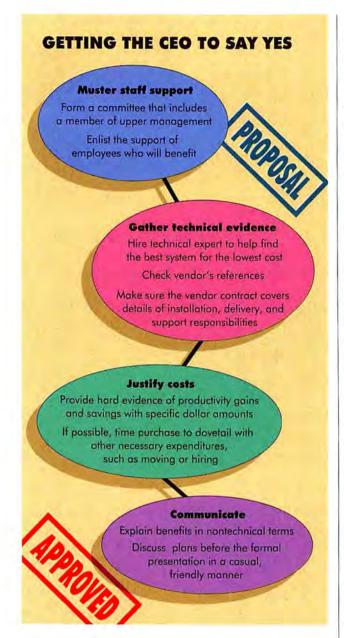
tailed RFP—including a background of the company's systems and processes and a detailed description of its technical, product, and service needs—would have saved time working out the fine print with vendors.

STEP FOUR: MARSHALING TECHNICAL SAVVY

The company had been looking for a technical support person to shepherd its diverse flock of hardware and software. When the company hired a systems administrator, Christine Patton, the committee requested her help with the details of their LAN proposal. After reviewing the RFP responses, Patton recommended that the committee ask to install a Novell 3.11 ethernet 10Base-T network to support 85 nodes, using a 33-MHz Compaq Deskpro 486 as a dedicated server. The Deskpro, she noted, should be loaded with a 650MB hard drive and 12MB of RAM.

Patton interviewed the network system vendors, refined and standardized the responses, and negotiated the contenders down to \$100,000. She helped the committee winnow nominees down to a final candidate and interviewed its references. Geomatrix's bank was a satisfied customer of the vendor, a fact that helped confirm the committee's choice.

Patton also visited the vendor's office and spoke with technicians, asking them tough technical questions and inquiring



about any failures they'd had. By doing so, she gained insight into the types of problems that could occur with the system and the technical support Geomatrix could expect.

STEP FIVE: JUSTIFYING THE COSTS

The committee got ready to make their case to the CEO, Mahmut Otus, after they knew exactly how much money they would be asking for. They prepared their arguments and compiled a list of existing problems and solutions, complete with dollar amounts.

Billing was a major factor. Because computing had been done on a stand-alone basis, and logging computer time was a hassle for employees, it was difficult for Geomatrix to track computing time to bill back to clients. A LAN would make it easy to record individual log-in and log-out times automat-

ically, thereby helping the accounting department bill computer time more reliably. The committee estimated that billings would increase by \$2000 per month.

They also argued that with 100 employees and a \$100,000 network, the company would recoup the cost of the network if each employee demonstrated just two days' increased productivity in a year.

The committee's ace in the hole was timing. Geomatrix would soon be moving into a new building so it would be much easier, cheaper, and less disruptive to install the wiring there before they moved in. "Time was on our side," explains Johnson. "The discussions with the CEO and the board went quickly because the decision had to be made quickly."

STEP SIX: YOU'VE GOT A FRIEND

Prior to the formal presentation to the CEO, several committee members casually discussed the proposal's progress with him around the water cooler and at the company picnic. By the time the committee sent Patton to make their case to him, Otus was eager to listen.

In these discussions, Otus voiced some concerns about service and support details in the vendor's contract draft: The payment terms, service responsibilities, and delivery plans were not clearly spelled out. Patton clarified these issues with the vendor to Otus's satisfaction. With the vendor contract firmed up, the CEO was ready to present the proposal to the board.

"Once Mahmut warmed up to the idea, he supported his staff," says Johnson. Distributing Patton's concise, easy-tounderstand summary of the proposal, Otus was able to convey the benefits of the LAN and use the financial justifications established with the CFO. The green light went on, the board approved the purchase of the LAN, and the contract was signed.

THE END OF THE ROAD

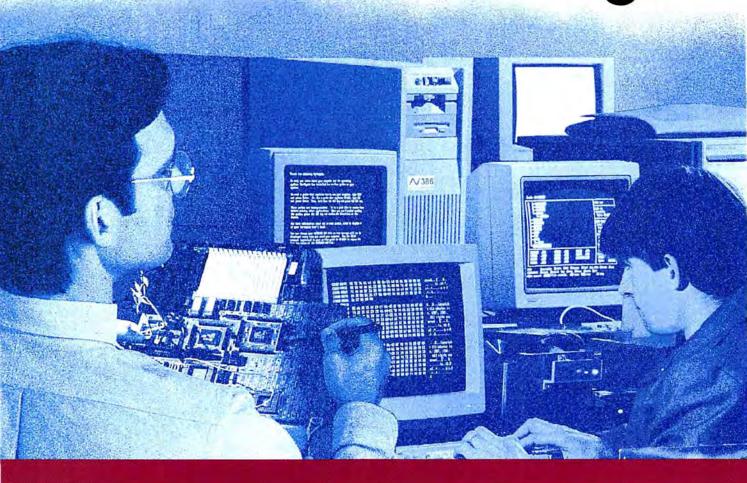
The bottom line for any company in need of an upgrade is that the need does not go away by itself. "If you have a known problem, it will keep rearing its ugly head until it's fixed," says Patton. "But the way you make your case to the people who have to approve the purchase is critical."

If they had to do it all over again, says Johnson, the committee would have prepared the RFP better and hired Patton earlier. Other than that, the committee's strategy worked. Johnson notes that the request for the LAN was filled because the committee supported clear communication with thorough research and careful timing.

Susan Lusty is an assistant editor for PC World.

Why Is Northgate Going Public With Confidential Information?

To Illustrate The Northgate



Take a behind-the-scenes look at Northgate quality.

It's no secret that Northgate makes some of today's finest computer systems. A room full of awards from major industry publications is proof of that. But the tour you're about to take will show you *how* Northgate achieved its worldwide reputation for quality.

The reason we're "going public" with this information is simple. People who already own a Northgate system know from experience that we make no compromises on quality. Now we want the rest of the world to know about the qualities that made Northgate a leading direct marketer of high-quality systems.

Complete line of systems.

 Latest technology. The Northgate systems you buy today won't become obsolete tomorrow.

- Complete product line. From lightweight notebooks to giant network file servers, Northgate makes a complete range of computers to handle every business application. Our newest products include low-priced 386SX,™ 386 and 486™ systems.
- Award-winning performance. Our most recent triumphs include InfoWorld and BYTE magazines' "Desktop Computer of the Year" awards. Seven PC Magazine Editors' Choice awards, eight Computer Shopper Best Buy and three other InfoWorld recognitions are added proof of Northgate quality.
- Customized, ready-to-run systems.
 Northgate custom configures every system to meet your specific requirements. We'll even rack mount or hard case your systems.
- Finest components. We test and use components from only the best manufacturers to ensure peak performance and reliability.

- Flawless software compatibility. Our systems are fully compatible with MS-DOS, OS/2, Novell and other operating systems.
- Product testing and burn-in ensures your system will work perfectly from day one.
- All systems are FCC Class B Certified for home and office use.

Network solutions.

 Northgate LAN specialists are uniquely qualified to configure and install high quality products that provide a solid foundation for networking.



Novell Certified Gold Dealer. We certify
and test all products to work perfectly
with Novell as well as OS/2, SCO/UNIX®
and Banyan® Vines. And our staff of Certified
NetWare® Engineers will help keep your
LAN operating at peak efficiency.

Commitment To Quality.



Customer service and support ensures your complete satisfaction.

- 24-hour toll-free technical support 365 days a year, for as long as you own your system.
- Free year of on-site service provided by NCR. Your complete satisfaction is our commitment. If necessary, we'll even send a skilled technician to your home or office.
- Free overnight shipment of replacement parts to minimize computer downtime.
- 30-day money-back guarantee safeguards your purchase decision.
- Full parts and labor warranties 1 year on systems, 5 years on keyboards.
- Customized service and support plans for corporate customers. Whatever you need in the way of service, Northgate delivers. We offer a variety of customized service options including disaster recovery planning.

Affordable quality is yours with Northgate.

- · Low Factory-Direct Prices.
- GSA/Government and VAR discounts.
- Leasing plans with low monthly installments and flexible terms up to five years.
- 100% financing with Northgate's Big 'N' Card.
 We can usually set up your account the same day you call.
- Other convenient payment options include MasterCard, VISA, American Express and Discover cards, wire transfers, personal and corporate checks, Corporate Purchase Orders and C.O.D.

Our promise: no compromises.

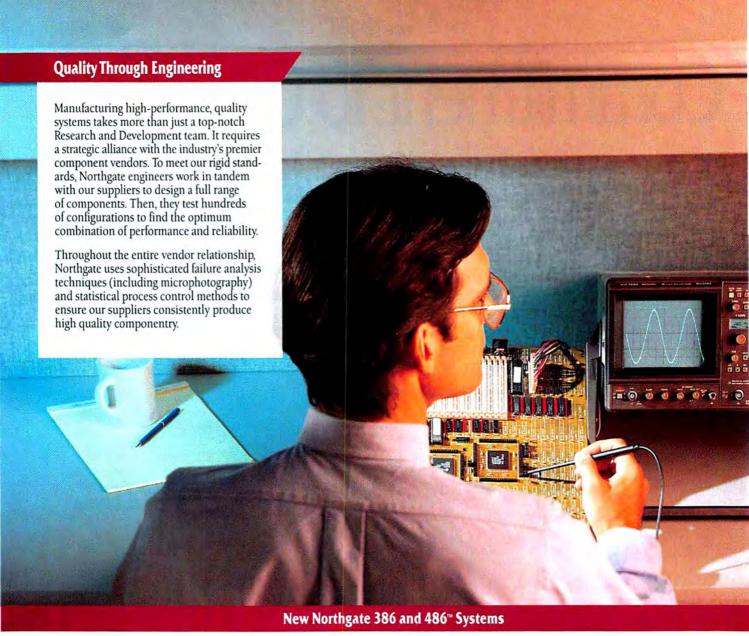
As you're about to see, our reputation for quality is built on a solid foundation of superior design, engineering, manufacturing, and service.

Turn the page to begin your tour of Northgate.

CALL TOLL-FREE 800-345-0188



"Smart Tools For Business""
7075 Flying Cloud Drive, Eden Prairie, MN 55344





Northgate 386SX 16 or 20

- · Intel® 803865X/16 or 20 MHz Processor
- . 1MB RAM (Expands to 16MB)
- . 52MB IDE Hard Drive with 17 ms Seek Time
- · Five-Bay Case; Three 5.25" and Two 3.5" Bays
- Six 16-Bit Expansion Card
- . Choice of 1.2MB 5.25" or 1.44MB 3.5" Floppy Drive
- · Exclusive OmniKey® Keyboard
- VGA 800 x 600 Card and Color Monitor
- · MS-DOS 3.3, 4.01 or 5
- · FCC Class B Certified



Northgate 386DX/25 or 33

- Intel 80386DX/25 or 33 MHz
- 2MB RAM (Expands to 32MB)
- . 52MB IDE Hard Drive with 17 ms Seek Time
- · 64K Cache
- · Choice of 1.2MB 5.25" or 1.44MB 3.5" Floppy Drive
- . Six 16-Bit and Two 8-Bit Expansion Card Slots
- Five-Bay Case: Three 5.25" and Two 3.5" Bays
- . Exclusive OmniKey Keyboard
- VGA 800 x 600 Card and Color Monitor
- . Microsoft® Windows™ 3.0 and Mouse
- MS-DOS 33, 4.01 or 5
- . FCC Class B Certified



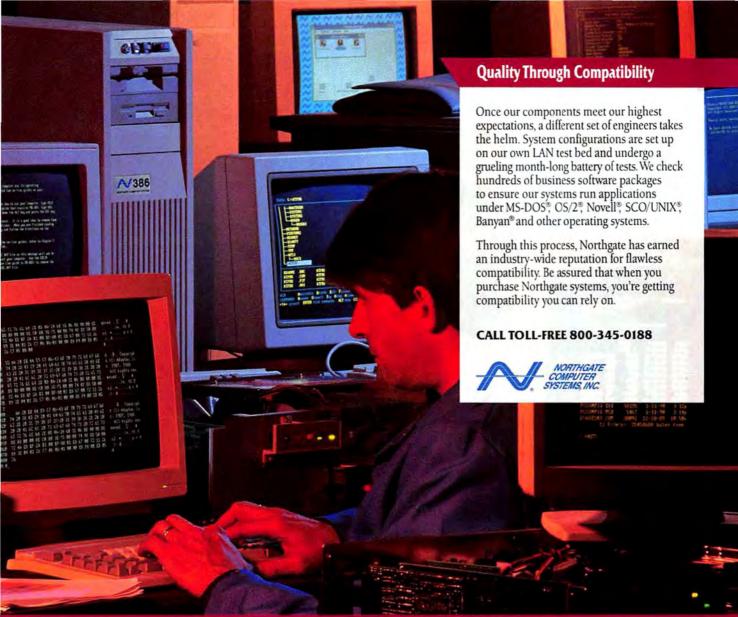
Northgate 486DX/33

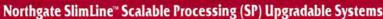
- Intel 486DX/33 MHz Processor
- · 4MB RAM (Expands to 32MB)
- . 52MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache
- · Choice of 1.2MB 5.25" or 1 44MB 3.5" Floppy Drive • Six 16-Bit and Two 8-Bit
- **Expansion Card Slots**
- Five-Bay Case; Three 5.25* and Two 35" Bays
- · Exclusive OmniKey Keyboard
- VGA 800 x 600 Card and Color Monitor · Microsoft Windows 3.0
- and Mouse MS-DOS 33, 4.01 or 5
- · FCC Class B Certified

\$2099°%\$2199°°

\$289900

\$1599°%\$1699°°







Northgate SlimLine SP™386/25 or 33

- · Intel 80386DX/25 or 33 MHz Processor on Power Module
- Fast, Affordable Upgrades —
- Simply Replace Power Module
- . 4MB RAM (Expands to 32MB) . 52MB IDE Hard Drive with
- 17 ms Seek Time · 64K Cache Memory
- . Continuous Edge Graphics Chip \$2799°%\$3099°°
- . 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- · Exclusive Omnikey Keyboard
- VGA 1024 x 768 Color Monitor
- · Microsoft Windows 30 and Mouse
- . MS-DOS 3.3. 4.01 or 5
- · FCC Class B Certified



Northgate SlimLine SP 486SX/20

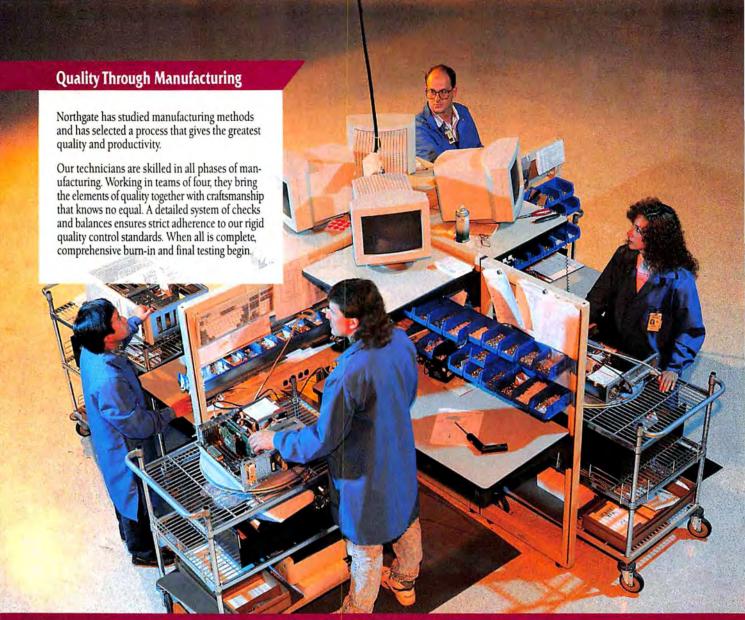
- Intel 804865X/20 MHz Processor on Power Module
- · Fast, Affordable Upgrades -Simply Replace Power Module
- · 4MB RAM (Expands to 32MB)
- . 52MB IDE Hard Drive with 17 ms Seek Time
- . 64K Cache Memory
- . 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- · Exclusive OmniKey Keyboard
- VGA 1024 x 768 Color
- Microsoft Windows 30 and Mouse · MS-DOS 33, 4.01 or 5
- - \$314900



Northgate SlimLine SP 486DX/33

- · Intel 80486DX/33 MHz Processor on Power Module
- Fast, Affordable Upgrades -Simply Replace Power Module
- · 4MB RAM (Expands to 32MB)
- . 52MB IDE Hard Drive with 17 ms Seek Time
- · 64K Cache Memory
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- · Exclusive OmniKey Keyboard
- VGA 1024 x 768 Color Monitor
- Microsoft Windows 3.0 and Mouse
- . MS-DOS 33, 4.01 or 5

\$332900



Northgate Elegance Scalable Processing (SP) Upgradable Systems



Northgate Elegance SP™ 386/25 or 33

- Intel 80386DX/25 or 33 MHz Processor on Power Module
- Fast, Affordable Upgrades Simply Replace Power Module
- 4MB RAM (Expands to 32MB)

\$3299°%\$3399°°

- 106MB IDE Hard Drive with 17 ms Seek Time
- · 64K Cache Memory
- · Desktop Case
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- · Exclusive OmniKey Keyboard
- VGA 1024 x 768 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- · MS-DOS 33, +01 or 5
- FCC Class B Certified



Northgate Elegance SP 486SX/20

- Intel 804865X/20 MHz Processor on Power Module
- Fast, Affordable Upgrades —
 Simply Replace Power Module
- 4MB RAM (Expands to 32MB)
 106MB IDE Nord Drive with
- 106MB IDE Hard Drive with 17 ms Seek Time
- · 64K Cache Memory
- · Desktop Case
- 1.2MB 5.25" and 1.44MB 3.5"
 Floppy Drives
- · Exclusive OmniKey Keyboard
- VGA 1024 x 768 Card and Color Monitor
- Microsoft Windows 3.0 and Mouse
- · MS-DOS 3.3, 4.01 or 5
- · FCC Class B Certified



Northgate Elegance SP 486DX/33

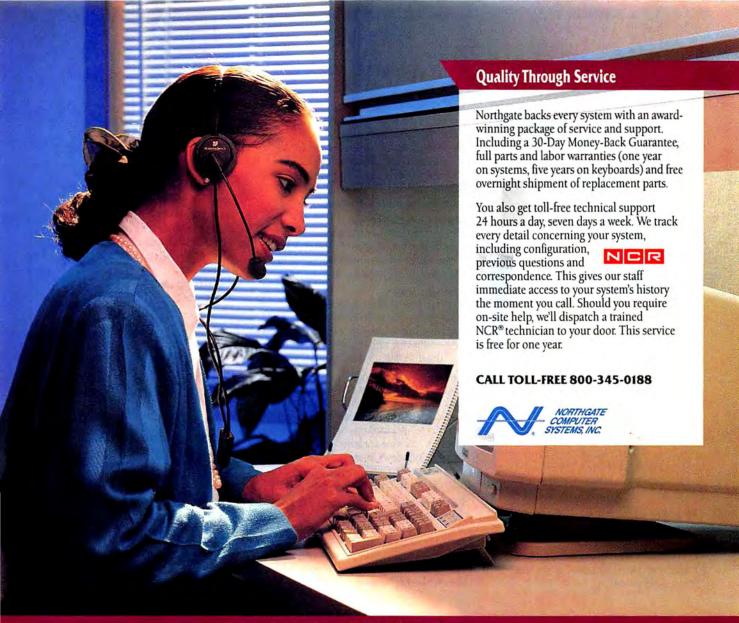
- Intel 80486DX/33 MHz Processor on Power Module
- Fast, Affordable Upgrades Simply Replace Power Module
- . 4MB RAM (Expands to 64MB)
- 106MB IDE Hard Drive with 17 ms Seek Time
- 64K Cache Memory
- · Vertical Power Case
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives
- Exclusive OmniKey Keyboard
 VGA 1024 x 768 Card and
- Microsoft Windows 3.0 and Mouse
- · MS-DOS 33, 4.01 or 5

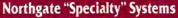
Color Monitor

· FCC Class B Certified

\$369900

\$399900







Northgate Elegance 486/25 or 33 EISA

- Intel 80486DX/25 or 33 MHz Processor
- . 4MB RAM (Expands to 32MB)
- · 200MB IDE Hard Drive with 15 ms Seek Time
- · 128K Cache
- · EISA Bus
- 1.2MB 5.25" and 1.44MB 3.5" Floppy Drives \$4599°%\$5599°°
- · Vertical Power Case
- · Exclusive OmniKey Keyboard
- VGA 1024 x 768 Card and Color Monitor
- · Microsoft Windows 3.0 and Mouse
- MS-DOS 3.3, 4.01 or 5
- · FCC Class B Certified



Northgate SlimLite™ 386SX/20

- · Intel 80386SX/20 MHz Processor
- . 1MB RAM (Expands to 5MB)
- 40MB Hard Drive
- 1.44MB 3.5" Floppy Drive
- 84-Key Keyboard Emulating 101
- 8.5" LCD Screen Supports 32 Shades of Gray; VGA 640 x 480 . 11.7" x 8.25" x 1.9"; 6.1 Lbs.
- · AC Adapter
- · Stacker™ Software (Provides up to 80MB of Storage)
- Magic Cursor™ for Windows or No-Squint II™ for DOS
- MS-DOS 4.01 or 5
- · FCC Class B Certified



Northgate OmniArray™

- RAID-3 Parallel Drive Array with 1.1GB to 4GB Data Storage
- · Four Data Drives with 512K Total Cache; One Redundant Drive with 128K Cache
- · Fast SCSI Engineering Delivers 10MB/Second Performance
- · ISA/EISA SCSI Adapter for NetWare® File Servers
- Novell Certified for NetWare 386 3.11
- Failed Drive Supports Keeps Unit Operational with Single Drive Failure; Rebuilds Data on Replacement Drive
- · SCSI Cable and Terminator
- · Vertical Power Case

\$239900

Call For Pricing

Circle 191 on reader service card

Quality Custom Configurations



Northgate custom configures every system to meet your most demanding needs. We offer a comprehensive range of top quality components, giving us the capability of tailoring a system over 3,000,000 ways. To find out which is best for you, call one of our Systems Consultants toll free.

Hard Drives

Options include IDE hard drives with capacities of 52MB, 100MB, 200MB or 340MB. Also available are ESDI and SCSI hard drives with capacities as high as 1.2GB. Call for other drive size options.

Memory Expansion

Northgate systems have a variety of memory expansion capabilities. Our Systems Consultants can help you decide how much memory you need for both current and future applications.

Monitors

Northgate offers 12" VGA monochrome, 14" monochrome (amber), 14" VGA monochrome, 14" VGA color, 16" VGA color and 19" VGA color monitors. Resolutions include 640 x 480, 800 x 600, 1024 x 768, and 1280 x 1024. NEC 15", 17" and 21" flat-screen, low-radiation monitors also available.

Math Coprocessors

Speed up processor-intensive business applications with an Intel or Weitek® math coprocessor. A Northgate Systems Consultant can help you select the right one for your system.

Tape Backups

To protect your valuable data, Northgate offers an array of high-speed tape backup devices. Choose internal or external designs in the following capacities: 40/120MB, 80/304MB, 80MB, 150MB, 300MB and 1.3GB.

Communications

Northgate has the right equipment to link your system to other computers or fax machines. Products include internal and external MNP-5 modems in 2400 and 9600 baud speeds. Also available is Northgate Faxlt for Windows, a revolutionary fax card designed to work from within your Microsoft Windows applications.

Printers

The best thing to have beside your computer is a printer from Northgate. Printer options include low-cost 9-pin and 24-pin dot matrix printers as well as laser printers and PostScript-compatible laser printers for the very best print quality.

Floppy Drives

Floppy drive options include 5.25" models in 360K and 1.2MB designs and 3.5" models with capacities of 720K and 1.44MB.

CD-ROM & Other Hardware

We can also configure your Northgate system with many other hardware options, including CD-ROM drives, high end video cards, and I/O cards. Call and ask a Northgate Systems Consultant for the latest options and prices.









CALL TOLL-FREE 24 HOURS EVERY DAY 800-345-0188

Major corporations, volume purchasers and government agencies call National Business Accounts: **800-345-0031** Fax your order! 800-323-7182

Notice to the Hearing Impaired: Northgate has TDD

Notice to the Hearing Impaired: Northgate capability. Dial 800-535-0602.



"Smart Tools For Business" 7075 Flying Cloud Drive, Eden Prairie, Minnesota 55344

Northgate OmniKey Keyboards — Quality Designs No System Should Be Without!



OmniKey/101NI

- 12 F-Keys On Top
- Alps Click/Tactile Key Switches
- Independent Inverted T Cursor Control And Numeric Keypads
- * Rate Select From 3-120 CPS

\$8900

- Period/Comma Lock
 Key Locks out < > Even
 When Shifted
- Interchangeable CTRL, ALI, CAPS LOCK Keys
- Unmatched IBM® Compatibility
- . FCC Class B Certified

OmniKey/102

- 12 F-Keys On Left
- Alps Click/Tactile Key Switches
- Independent Inverted T Cursor Control And Numeric Keypads
- . Rate Select From 3-120 CPS
- Period/Comma Lock
 Key Locks out < > Even
 When Shifted
- Interchangeable CTRL, ALT, CAPS LOCK Keys
- Unmatched IBM Compatibility
- . FCC Class B Certified

OmniKey/ULTRA

- 12 F-Keys On Left And Top
- · Alps Click/Tactile Key Switches
- Independent Inverted T Cursor Control And Numeric Keypads
- * Rate Select From 3-120 CPS
- Period/Comma Lock
 Key Locks out < > Even
 When Shifted
- Interchangeable CTRL, ALT, CAPS LOCK Keys
- Unmatched IBM Compatibility
- · FCC Class B Certified

\$8900

\$12900

Copyright Northgate Computer Systems, Inc. 1991. All rights reserved. Northgate, Omnikey, Uegance, Omnikey, SimLine, SlimLine and the Northgate. N logo are trademarks or registered trademarks of Northgate Computer Systems. 803865X, 804865X, 804865X, 804866X, 804866X, 804866X, 80486X, 8



ERGONOMICS

Prevent injury with a well-designed work space—and relax.

he most important hardware purchase you make in 1992 may not be a 486 desktop or a high-speed modem, but rather a simple wrist pad. As workers' compensation claims increase for repetitive-motion injury and other ergonomics-related ailments, businesses are taking the issues of pos-

KRISTIN KUETER

Kristin Kueter is an assistant in the president's office at PC World.

Understanding proper ergonomics is as easy as listening to your body. Here are some typical ergonomic ailments that plague the modern office worker, and what you can do to cure them.

ture and lighting more seriously.



Symptom: Pain in the wrists, possibly the onset of carpal tunnel syndrome or wrist tendonitis.

Cure: Check the height and angle of your keyboard, and invest in a wrist pad. Try lightening your touch on the keyboard—many users trained on typewriters pound the keyboard unnecessarily.



Symptom: Sore back.

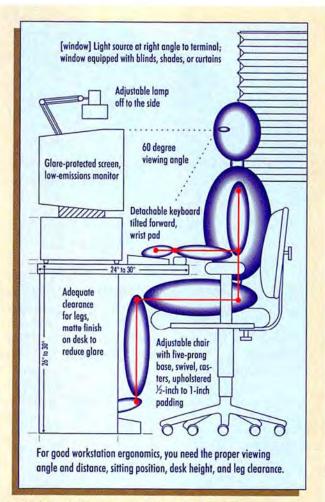
Cure: Adjust the position of your chair or tilt and swivel your monitor. Make sure your chair has good lumbar support.



Symptom: Eyestrain.

Cure: Adjust the light source or your computer so light shines at a right angle to your screen. If you can't adjust the light angle, buy a glareproof screen. Take at least a 5-minute break after every hour or two at the screen.

Another solution is to upgrade to a multiscan monitor and super-VGA board with a refresh rate of at least 70 Hz, which reduces screen flicker. While you're at it, consider a low-emissions monitor, designed to minimize possible health risks associated with electromagnetic radiation.



Source: The Space Management and Design Group, a San Francisco architectural/interior design firm that counsels on ergonomics and legal compliance.

There's only one word processor that's as easy to pick up as ours.



Forget everything you've heard about word processing software.

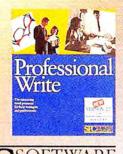
That the software takes too much time to learn. That they have all sorts of features you'll never use. That it's a lot easier to pick up a pen and start writing.

Professional Write* from Software
Publishing Corporation can do everything
from a simple memo to a complex report.
Yet all you do to start using Professional
Write is to turn it on. You don't need

to spend hours poring over manuals or sitting in classes. And, there are simple on-screen menus to take you from start to finish.

Professional Write wasn't just named for professionals, it was designed for professionals. No wonder it's the best-rated, best-selling executive word processing software.

What proof? Put down your pen and call.



For a free Professional Write 2.2 trial disk, call 1-800-336-8360, Operator 580.

Runs on IBM PC and MS-DOS compatibles. Professional Write is a registered trademark of Software Publishing Corporation. © 1991 Software Publishing Corporation. 1901 Landings Dr., Mountain View, CA 94039-7210



STAR-DOT-STAR *.*

A global exchange of personal computer discoveries

Edited by Brett Glass

Finding Your Way Back Home

Many batch files change the current directory on one or more of your system's drives. Unfortunately, there's no way for a batch file to know what directory you're in when you run it, and therefore no way for it to return to its directory of origin.

That is, until now. I've written a short assembly language program, BACK.COM, that lets batch files do just that. The program saves the current directory's path in a directory-changing batch file. By putting this command at the beginning of a batch file and—via the CALL command—running the batch file it creates at the end, you'll ensure that your batch file will always start and end in the same directory, regardless of where it goes in between.

Charles N. Jackson III Silver Spring, Maryland

Editor's note: I rewrote BACK.COM to make it smaller and more bulletproof, then added it to some of my batch files, where it worked wonderfully. At that point, I realized I wanted a second, similar utility; one that would return me to the drive I was logged on to before the batch file ran. I created another program, BACKD.COM, which generates a batch file to accomplish this. As with BACK.COM, you put BACK-D.COM at the beginning of your batch file and the file it creates at the end.

The DEBUG script in LISTING 1 creates both programs in one easy step. Copy the listing to a text file called BACK.DAT, then double-check the code for any errors; I recommend checking by reading down the columns rather than across. Note that the file has no occurrences of the uppercase letter O; any character that looks like an O is a zero. At the DOS prompt, type DEBUG < BACK.DAT. Two program files—BACK.COM and BACKD.COM—will appear in the current directory. Move both to a directory listed in your path command.

LISTING 2 shows how to use both

N back.com E100 B4 19 CD 21 00 06 20 01 E108 FE CO 8A DO BE 23 01 B4 E110 47 CD 21 72 07 B4 09 BA E118 1D 01 CD 21 C3 43 44 20 E120 41 3A 5C F123 162 20 E163 OD OA 24 RCX 0066 N backd.com E100 B4 19 CD 21 00 06 10 01 E108 B4 09 BA 10 01 CD 21 C3 E110 41 3A 0D 0A 24 RCX 0015 W Q

LISTING 1: Run this script through DEBUG to produce BACK.COM and BACKD.COM, two programs that let you restore original directories and the original drive.

@ECHO OFF **REM Save the current drive** BACKD > D:\DRIVE.BAT **REM Save current directories of drives** REM C: and D: C: BACK > D:\CBACK.BAT BACK > D:\DBACK.BAT REM Do something (like run a program) that REM will change your drive and directory CD \DOS D: CDI **REM Restore everything** CALL D:\CBACK.BAT CALL D:\DBACK.BAT CALL D:\DRIVE.BAT **REM Clean up** DEL D:\CBACK.BAT > NUL DEL D:\DBACK.BAT > NUL DEL D:\DRIVE.BAT > NUL

LISTING 2: Run BACKTEXT.BAT, or a batch file like it, to see how BACK.COM and BACKD.COM return you to your original drive and directory.

ECHO ON

BACK.COM and BACKD.COM. Note that you can use BACK.COM several times to restore the original directory on any number of drives. On the other hand, you need to use BACKD.COM only once—to restore the original drive before the batch ends.

Retrieving Your Precious Prompt

Many programs have commands that allow you to "shell out" to DOS and then return to your work by typing EXIT. The problem we encountered was that users were forgetting to type EXIT and loading the program again, thus running out of memory.

Some programs, such as *WordPerfect* 5.1, change the DOS prompt to remind you to type EXIT; others, like 1-2-3,

don't. If your program's in the latter group, here's a simple way to add the right instructions. This sample batch file [see LISTING 3] changes your prompt, loads 1-2-3, then restores your original prompt after you exit the spreadsheet. If you invoke DOS from within 1-2-3, you'll see a two-line prompt:

[Enter EXIT to return to 1-2-3] C:\123>

The batch can be modified to load almost any program.

Since the new prompt is stored in the environment and may be bigger than your original one, make sure you have enough space to hold it. You may have to add the line SHELL=C:\COMMAND.COM /E: XXXX /P to your CONFIG.SYS file, where XXXX is the amount of environment space you want. A setting of 1024 should be more than sufficient.

Douglas J. Nakakihara Simi Valley, California

Am I Weally in Windows?

I frequently want my batch files to know whether a DOS program is running from within a Windows DOS virtual machine or from the DOS prompt alone. According to Microsoft, it's dangerous to run certain programs, such as CHKDSK, while you're in Windows. I also need to write batch files that display a message telling the user how to switch back to Windows with a hot key.

I discovered that when *Windows* is running, it creates an environment variable with the name 'windir' that points to the *Windows* directory. Normally, one can test for variables with the '=='

@ECHO OFF
ECHO Loading 1-2-3....
SET : FIND "PROMPT=" > C:\OLDPROMPBAT
PROMPT [Enter EXIT to return to 1-2-3]\$—
SPSG
123
CALL C:\OLDPROMP
DEL C:\OLDPROMPBAT

LISTING 3: This sample batch file shows how to change your DOS prompt temporarily for shelling out of an application. N InWinEQ1.com
E100 A1 2C 00 8E C0 BF 00 00 26 8A 05 3C 00
74 25 BE
E110 3D 01 8A 1C 80 FB 00 74 16 26 8A 05 3A
C3 75 04
E120 47 46 EB EE 47 26 8A 05 0A C0 75 F8 47
EB D9 C6
E130 06 3C 01 01 B4 4C A0 3C 01 CD 21 00 00
77 69 6E
E140 64 69 72 3D 00
RCX
45
W

LISTING 4: Run this script through DEBUG to get InWinEQI, a Windows-testing program.

operator, but '==' assumes that variable names are all uppercase, and 'windir' is lowercase. (Microsoft probably did this so the SET command couldn't create or change the variable.) Any reference to 'windir' in a batch file actually looks for a variable named 'WINDIR,' which isn't the same thing.

To circumvent this problem, I wrote a small assembly language program [see LISTING 4] that searches for 'windir.' If it's found, the program returns an ER-RORLEVEL of 1; otherwise it returns an ERRORLEVEL of 0. I called the program InWinEQ1, which is a mnemonic for "In Windows Equals 1." CHKDSK.BAT [see LISTING 5] shows how you can use InWinEQ1 to prevent users from running CHKDSK from within Windows. First, put CHKDSK.BAT and INWINEQ1.COM in a directory listed in your PATH command and rename your DOS directory's CHKDSK.COM to CHKDSKI.COM (depending on your DOS version, CHKDSK may be an EXE program). When a user types CHKDSK, the batch file will check to see if Windows is running. If it is, InWinEQ1 will return an ERRRORLEVEL of 1, and the batch file will go directly to the :INWINDOWS line, skipping the CHKDSK! command. You can easily modify this batch file for other purposes.

Christopher J. Stein Durham, North Carolina Editor's note: The Windows documentation says that running CHKDSK, SUBST, JOIN, FASTOPEN, or ASSIGN in a Windows DOS virtual machine can cause major problems, but Microsoft does nothing to prevent this from happening. Mr. Stein's technique makes sure you don't lock up your machine—or worse, corrupt your disk.

To create the program, type the code in LISTING 5 into an ASCII text file called INWINEQ1.DAT. Double-check the code for any errors; again, I recommend checking by reading down the columns rather than across. And again, there are no occurrences of the uppercase letter 0 in this file; if you see something that looks like one, it's a zero. Next, at the DOS prompt, type DEBUG < INWINEQ1.DAT. Move the resulting program file, INWINEQ1.COM, to a directory listed in your PATH command for easy access.

Launching what I hope will become an annual tradition, April's Star-Dot-Star will include a few "fun" tips: humorous utilities, harmless pranks, and programs that create unusual sounds and graphics (nothing destructive, please!). As always, Star-Dot-Star pays \$25 to \$200 per tip used. If you have a tip you think will tickle readers' funny bones (or that someone might find useful), send it to Star-Dot-Star, PC World, 501 Second St. #600, San Francisco, CA 94107; CompuServe 74055,412; MCI

@ECHO OFF
InWinEQ1
IF ERRORLEYEL 1 GOTO INWINDOWS
CHKDSK! %1 %2 %3
GOTO DONE
:INWINDOWS
ECHO You cannot run CHKDSK
ECHO from inside Windows!
:DONE
ECHO ON

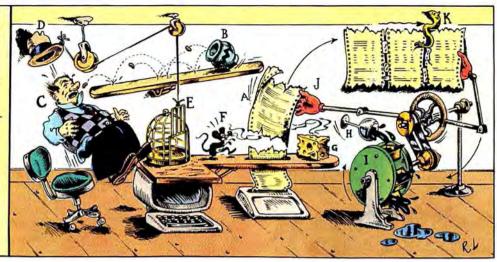
LISTING 5: This sample batch file uses
InWinEQ1 to make sure that users don't run
CHKDSK from within Windows.

MISING SPREADSHEET (A) KNOCKS
MEXICAN JUMPING BEANS (B) INTO
MOUTH OF NEUROTIC MANIC) WHO
IS SO DISCOMBOBULATED THAT HIS
HAIR STANDS ON END, DISCODEING
HAT(D) WHICH OPENS CAGE (E)
AND RELEASES EPICUREAN MOUSE
(F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHESS., GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (6).

IN A FITOF PIQUE HE SPILLS VINTAGE WINE (H) INTO WATER-WHEEL (I) WHICH TURNS PULLEY THAT CAUSES GLOVE (J) TO GRASP SPREADSHEET AND MOVE IT TO TAPING AREA.

SHEET IS TAPED SECURELY IN PLACE BY TRAINED ADHESIVE TAPE WORM(K),



New Sideways takes all the fun out of printing your 1-2-3 spreadsheets.

Introducing new Sideways version 3.3.

What do you do when your spreadsheet's too wide for your printer?

Simple. Just get out your scissors. Get out your stapler. Get out your glue and tape.

Or simpler yet, get Sideways.* It's everyone's favorite way to make high-quality, one-piece printouts with no assembly required.

Nothing's as straightforward as Sideways.

Sideways runs as an add-in to 1-2-3 Releases 2 and 3. As well as Symphony. So printing is fast and easy.

Done creating your spreadsheet? Just pop up Sideways from your 1-2-3 menu, highlight a range and print. With a wide range of printing options.

Mix bold, underlined, and expanded type, all on the same page. Print through or skip over perforations. Add borders, change page size, adjust margins just the way you want. With Sideways, it's simple.

Add just the right twist to your other printing, too.

Sideways is the right way to print with other spreadsheets, too. Like Quattro, Twin, Microsoft Works and LotusWorks. As well as databases, word processors, and project planners.

You get nine different typestyles to choose from. Plus bold, underlined or expanded type. Even foreign language and line drawing characters. If your software can create it, Sideways can print it. All in one piece.

New Sideways version 3.3 for the IBM PC and all popular printers. Available for just \$89.95 at software dealers worldwide, or directly from Funk Software with your check, Visa or MasterCard.

So stop fooling around

with your wide spreadsheets. And get down to business with Sideways.





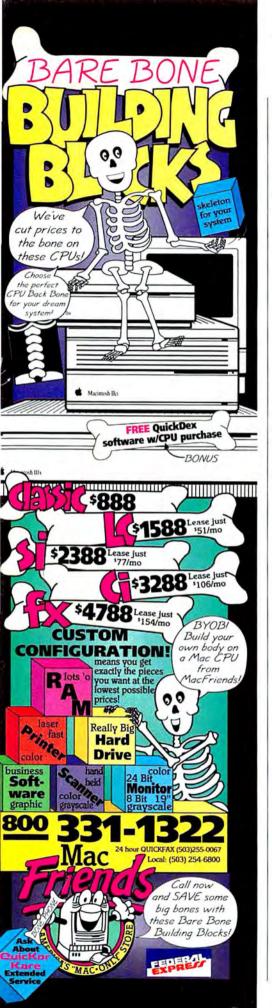
Funk Software, Inc., 222 Third Street, Cambridge, MA 02142

© 1990 Funk Software, Inc. Sideways is a trademark of Funk Software, Inc. Other product names are trademarks of their respective owners. Sideways version 3.3 works with all releases of 1-2-3 as well as other software. Add-in capability requires 1-2-3 Release 2, Release 3, or Symphony.

To order call 1-800-822-3865, Ext. 228 (617-497-6339 in MA)

THE RIGHT WAY TO PRINT

SPREADSHEETS



Mail PC World Editorial; or 415/422-1891 (fax). Sorry, we cannot acknowledge submitted materials.

■

Brett Glass is a contributing editor for PC World.

POWER TIP NO. 229

Collecting Windows 3.0 Icons

Windows 3.0's Windows Setup utility puts program icons in various group windows and group icons. This makes running applications located in far-flung directories as easy as clicking a mouse button or pressing a few keys. The default groups (Games, Accessories, Non-Windows Apps, and so forth) arrange icons by application type. But after you've worked with Windows 3.0 for a while, you'll want to transfer the applications you use regularly into a single, accessible group. From Program Manager, select File New Program group OK to create a new window. Enter a name of your choice as the Description. Then open the default-group windows, and drag the icons you want into the new window. Don't worry if icons overlap. When you're done, select each empty window and press < Delete> to remove it. Adjust the new window's size to fit your needs, and arrange the icons alphabetically to make individual programs easy to find. Finally, select Window Arrange icons from the Program Manager menu to put the icons into neat rows.

> Brian Livingston New York

PC WORLD GIVES YOU A WINNING HAND!



Tired of flipping through user manuals?

Can't find the user manual?

Need lightning-quick access to key commands and features?

Need a software reference you can take anywhere?

PC WORLD'S NEW INSTANT REFERENCE CARD IS YOUR BEST BET.

This monthly pullout card gives you a full house of tips on using essential applications. One side provides basic commands that get you started; side two raises the stakes, with advanced pointers to help experienced users squeeze every bit of productivity out of their software and hardware investment.

LOOK FOR THESE INSTANT REFERENCE CARDS:

WordPerfect
Microsoft Word
Windows 3.0
Procomm Plus
Ventura Publisher
Paradox
Excel
PageMaker
1-2-3
DOS
CombuServe

... and more!

PC W\(\beta\)RLD

Instant Reference Card #19

For use with PC World Instant Reference Card Portfolio

BASICS: HARVARD GRAPHICS

What to do: You select a menu option by typing the number or letter to its right (shown here in bold), using the cursor keys to highlight an option and pressing <Enter>, or moving the mouse pointer to an option and clicking the left mouse button. To complete most tasks, you need to press <F10>.

GETTING STARTED

Open Main Menu Cancel task and close menu Get context-sensitive help Display Help Index menu Display "Speed Keys" list

<F6>

<Esc> or click the right mouse button

<F1>

<Shift>-<F1> <Ctrl>-<F1>

CREATING AND MODIFYING A CHART

Start new chart Save chart

Create chart from gallery

Display chart Enter or edit titles and footnotes

Add note to title chart Add note to any other chart

<F6>. Create chart 1, select chart type <Ctrl>-5 (<F6>, File 4, Save chart 4), type directory and file name <F6>, Create chart 1, From gallery 6,

select chart type, select options <F2>

<Ctrl>-T (<F8>, Titles/Footnotes 1), select item, type or change

<Ctrl>-N (<F8>, Notes 3), type note <Ctrl>-N (<F8>, Notes 4), type note

Text Charts (continued)

Change character attributes

Insert blank line Delete current line Swap current line above/below

Change bullet style

Change all bullets Remove bullet

Select text. <F10>, select attribute.

<F3>, select option <Ctrl> < Insert> <Ctrl>-<Delete>

<Ctrl>-<Up>/<Ctrl>-<Down> Move to bulleted line, <F9>, select item, <F3>, select option

<F8>, Bullet options 5, select option Move to location, <F9><F3>. None

Tip: You can use special characters as "secondary-level" bullets, but you have to create (and delete) them individually, and they're not affected by <F8>5 and <F9> bullet commands.

Ple Charts

Note: Pie charts can have up to six pies, each of which can contain up to 24 slices. In charts with only two pies, you can link the second pie to one slice of the first pie. Blank-, negative-, or zero-value slices are ignored. Slice labels can have up to 22 characters. There is only one legend per chart.

Create pie chart

Separate slice Change slice's color Create additional pies

<F6>, Create chart 1, Pie 2, type titles, type label and value for each slice Move to Cut, Y<Enter> Move to Color, <F3>, select color <Ctrl>-<Page Down>, type title, type

labels and values

Fold

Select text Select text line Check spelling

Add a special character

Edit current chart in memory Get existing chart from disk

Clear current chart's data Clear current chart Change date/time/currency format Change text attributes of title

chart Change text attributes of any other chart

Change chart appearance of title chart

Change chart appearance of any other chart Import data

Export current chart

Print chart

<F5>, highlight text with mouse/cursor <5hift>-<F5>

<F7>, Spell check chart 1, select option if word not found in dictionary Move to location, <Ctrl>-B (<F7>. Special character 2), select character

<F6>, Edit chart 2 <Ctrl>-G (<F6>, File 4, Get chart 1), select or type directory and file name

<F6>, Create chart 1, Clear values 7 <F6>, Create chart 1, Clear chart 8

<F7>, International format 3, select item, <F3>, select format

<F8>, Text attributes 1, select line, select attribute, <F3>, select option <F8>, Text attributes 2, select line,

select attribute, <F3>, select option <F8>, Appearance 2, select item,

<F3>, select option <F8>, Appearance 3, select item,

<F3>, select option Create/get chart, <F6>, File 4, Import 7, select type, select directory, select file name, select graph/range/field name and/or highlight data

< F6>, File 4, Export 8, select type, type directory and file name, select options Create/get chart, <F6>, Output 5, select output device, select item, <F3>, select options

Text Charts

Note: You can create text charts in three fixed formats: title charts, bullet charts, or columnar table charts. You can also create free-form text charts with the Draw function. Titles, subtitles, bulleted lines, and faotnotes are centered by default and can be up to 100 characters long. In bullet charts, bullets are added automatically to lines under blank lines. Table charts can have up to 24 rows and 24 columns and up to 50 characters per cell, except row 1, which can have two 50-character lines per cell.

Create text chart

<F6>, Create chart 1, Text 1, select format, type text

Move between multiple pies

Set chart options Set individual pie options/formats

Link first and second pies

Change pie chart to XY chart

<Ctrl>-<Page Up>/<Ctrl>-<Page Down> (<F9>, select pie) <F8>, Style 5/Legend 7, set options <F8>, Pie options 6/Slice values 8/ Slice percents 9, set options Move to slice to explode, set Cut to Yes, <F8>, Style 5, set Link pies 1&2 to Yes Create pie chart and save it, <F6>, Create chart 1, XY 3, select type, set Keep current data to Yes

XY Charts

Note: XY charts have one x-axis series and up to 16 y-axis series, which can be displayed as bars, stacked bars, lines, areas, high/low/close indicators, or combinations of these. Each series can have up to 1000 points, but high/low/close charts in area style will display only the first 500 points

Create XY chart

Change x-axis data type

<F6>, Create chart 1, XY 3, select type of chart, <F3>, select X data type, type titles, type x-axis and series (y-axis) data <F9>, Set X data type 1, <F3>, select data type

Tip: To automatically generate x-axis data, select X data type and enter starting, ending, and increment values.

Add or edit x-axis data

Set chart options Set individual series options Set axis frame style and color Set axis scale options Hide, show, and format labels Set data table/labels options Enter formulas Use calculator to enter value

Change XY chart to pie chart

Move to first line to change, <F9>, Quick X entry 2, enter values <F8>, Style 5/Legend 7, set options

<F8>, Series 6, set options <F8>, Axis frame 8, set options <F8>, Axis options 9, set options

<F8>, Format A, set options <F8>, Data table/labels B, set options

<F9>, Enter formula 3, type formula Move to data point, <F9>, Use calculator 4, type calculation Create XY chart and save it, <F6>. Create chart 1, Pie 2, set Keep current

data to Yes

DECEMBER 1991 PC WORLD 281

PC W\(\beta\)RLD

Instant Reference Card #19

For use with PC World Instant Reference Card Portfolio

ADVANCED: HARVARD GRAPHICS

Organization Charts

Create organization chart

Move from titles to box Move from box to titles Move from box to box Add text to current box

Add subordinate box below current box

Add staff position below box Move box and subordinates/ subordinates only

Switch box with left/right box

Delete box and all subordinates

Undelete the last deletion Change chart top

Hide/show subordinates of current box Change box style, color, contents, arrangement <F6>, Create chart 1, Organization 4, type titles

<Tab>

<Shift>-<Tab>
Use cursor keys

Move to box, <Enter> or <Ctrl>-Z, type text

<Ctrl>-<Insert> (<F9>, Add subordinate 2)

<F9>, Add staff position 3 Move to box, <F9>, Move box/group 4,

Move to box, <F9>, Move box/group 4 select group or subordinates only, use cursor keys to reposition <Ctrl>-L/<Ctrl>-R (<F9>, Switch

left 5/Switch right 6)
Move to box, <Ctrl>-<Delete>

(<F9>, Delete box/group 7) <F9>, Undelete 8

Move to desired chart top box, <F9>, Set top of chart 9

<Ctrl>-H/<Ctrl>-U (<F9>, Hide subordinates A/Show subordinates B) <F8>, Box Options 5, select item, <F3>, select option

BUILDING AND USING A PRESENTATION

Note: A presentation contains up to 175 chart, PCX, PCC, or other presentation files. You cannot include presentation files that already include presentation files.

Create presentation

Add file(s) below selected file

Add new chart to presentation

Add blank chart Save presentation

Preview part or all of current presentation Get saved presentation

Print presentation/file list

<F6>, Presentation 6, Create presentation 1

<Ctrl>-<Insert> (<F7>, Add file 1), select or type directory and first file name, <F5> to select additional files/

<Enter> to finish

Create new chart, < Ctrl>-5 (< F6>, File 4, Save chart 4), type directory and file name, set Add to current presentation to Yes

<F7>, Add blank chart A <F6>, Presentation 6, Save Presentation 5, type directory, type file name, type description

Move to first file, <F2>, press any key to see next chart/<Esc> to stop <F6>, Presentation 6, Get Presentation 4, select or type directory and file name Create/get presentation, <F6>, Output 5, Presentation 5/Presentation list 6,

Presentation 5/Presentation list select output device, set options

Fold

USING DRAW

Create drawing chart

Add drawing to chart

Edit data chart from Draw Magnify/shrink screen image

Magnify rectangular area

Return chart to original size Display chart at printed size

Scroll magnified chart

Display rulers
Display grid
Select grid options, including
snap to grid
Save Draw settings
Add note to drawing
Add text

Edit text

Create an object

Constrain box to square Undo Select object Select multiple objects

Select All/None/Similar objects

Group/ungroup selected object(s) Modify an object

Change drawing appearance

<6>, Draw 3 (<6>, Create chart 1, Drawing 5), add objects (text, line drawings, symbols, and images)
Create/get chart data form, <6>, Create/get chart data form, <6</p>
Celect Zoom tool, select Zoom in/Zoom out icon, click center of area
Select Zoom tool, select Zoom in icon, drag rectangular area
Select Zoom tool, select Full page icon
Select Zoom tool, select Full page icon, click center of area
Select Zoom tool, select Pan, drag status box rectangle

<F8>, Rulers 3, set Show rulers to Yes <F8>, Grid 2, set Show grid to Yes <F8>, Grid 2, select item, <F3>, select option

option
<F8>, Save Draw settings 6
<Ctrl>-N (<F8>, Notes 7)
Select text tool, click starting point/drag text box, type text

Select text, select Edit text tool, select Edit text icon, edit Select desired tool, click start point, click

intermediate points, click end point Hold **<Shift**> while drawing box **<Ctrl>-U**/click Undo tool Select pointer tool, click on object Drag selection box ground objects/hold

<Shift> and click on objects <F9>, Select Objects 3, <F3>, select option

Select Group/Ungroup tool
Select object, select attribute icon, select
or type option
<F8>, Appearance 8

Remove file

Duplicate file Remove/duplicate consecutive files

Move file up/down

Move consecutive files up/down

Jump to a file

Edit chart from presentation list

Display any saved presentation on screen

Add transition effects

Set default transition effects

Assign key/button to a file

Set default key(s)

<Ctrl>-<Delete> (<F7>, Remove file 2)

<F7>, Duplicate file 3
Move to first file, <F5>, move to last

Remove file 2)/<F7>, Nove to last file, <F5>, <Ctrl>-<Delete> (<F7>, Remove file 2)/<F7>, Duplicate file 3 Move to file, <Ctrl>-<Up> (<F7>, Move file up 4)/<Ctrl>-<Down> (<F7>, Move file down 5)

Move to first file, <F5>, move to last file, <F5>, <Ctrl>-<Up> (<F7>, Move file up 4)/<Ctrl>-<Down> (<F7>, Move file down 5)

<Ctrl>-J (<F7>, Jump to file 6), type number

Move to chart, <Ctrl>-E (<F7>, Edit chart data 6), edit and save, <Ctrl>-E <F6>, Presentation 6, Display Screen Show 3, select or type directory and file name, press any key to see next chart/ <Esc> to finish

<F4>, move to chart, <F3>, select Draw effect, use <Tab> and <F3> to set other Draw parameters (direction, speed, and time) and Erase parameters

(effect, direction, and speed)
Add transition parameters on line above
list of files on Effects view of Edit Presentation screen

Move to chart, <F9>, Edit keys 1/Edit buttons 2, type name of key/select button, <Tab>, type the file number or action (Next, Prev, Last View, First, Last, Notes, Chart, Template, Nextpal, Prevpal, Exit) to be assigned

Prevpal, Exit) to be assigned Move to line above list of files on Effects view of Edit Presentation screen, <F9>, Edit keys 1, type key(s) and default(s)

For use with PC World Instant Reference Card Portfolio

Rule ine Desert Crioch

Look
for an F-117A
Stealth Fighter Demo
in specially marked
packages of TDK Micro
Floppy Disks.

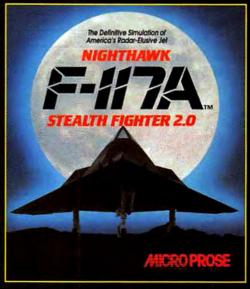


Like some sleek, metallic bird of prey, it slices through the thin air of the desert night. Below, the enemy's radar frantically scans, searching for a sign. But the only warning is the deafening roar of ordnance demolishing its target. Before fighters can scramble, this airborne apparition vanishes, like a ghostly dream.

It's the Persian Gulf, January, 1991. And the F-117A has just come calling.

Now you can fly the Stealth Fighter that ruled the desert skies, thanks to MicroProse, the acknowledged leader in air combat simulation. Slide silently through the Kuwaiti Theatre, or any of 8 other worlds. Test yourself against challenging enemy artificial intelligence. Tangle with battle-hardened pilots, using the exclusive MicroProse option that allows you dogfighting action. Feel your adrenalin surge as you penetrate dense threat environments, destroying high value targets with pinpoint accuracy.

F-117A Nighthawk Stealth Fighter 2.0. Find out how it feels to own the night.



**EEEE PROSE **

ENTERS ANNUAL SOLUMNAS |

180 Lakefront Drive - Hunt Valley, MD 21030

For IBM-PC/Tandy/compatibles. For the latest information on release dates and availabilities, call MicroProse Customer Service at 301-771-1151, 9 am to 5 pm EST, weekdays. © 1991 MicroProse Software, Inc.

CATALEWORLD

Shop The PC World Catalog for fast solutions to your PC needs.

295 ■ Health HARDWARE ■ Inventory Control/Management 295 295 ■ Languages _____ ■ Accessory Boards 285 ■ Mailing Programs _____ 295 ■ Bios Chip ______ 285 ■ Maintenance Management _____ 295 285 ■ Manufacturing _____ 295 ■ CD ROM ■ Communications/Modems ______286 ■ Medical _____ 295 ■ Computer/Systems ______286 ■ Music _____ 296 ■ Disk Drives ____ 286 ■ Networking 296 286 ■ Public Domain/Shareware 296-297 ■ Equipment Leasing ■ Peripherals ______287 ■ Real Estate ______ 297 297 ■ Security _____ ■ Sports _____ 297 ■ Statistics 297 ■ Surveys _____ 298 MISCELLANEOUS ■ Time Management 298 ■ Training _____ 298 288 ■ Utilities _____ 298

ADVERTISING SALES STAFF

Sandra Wade - Catalog Manager Duane Hampson - Eastern Account Manager Elizabeth Maffly - Catalog Coordinating Manager

ADVERTISING RATES & INFORMATION

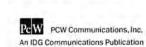
The PC World Catalog serves as a cost-effective monthly meeting place for advertisers and volume purchasers. Our readers don't want to shop, they want to buy! And your message can reach them in two formats—display or text. Both are arranged by product category for easy reference.

Display ads are sold by the column-inch (2-inch minimum). You must supply camera-ready type and artwork. Standard red is available as a second color.

Text ads are sold at a minimum three-time rate of \$645 per issue for a total of \$1,935. You supply copy. We set type.

For further information regarding the Catalog, space closings and material deadlines, please call Toll-Free 800/435-7766. Within California, call 800/435-7760.

PC World 501 Second Street San Francisco, CA 94107



Accessories	200
■ Bar Coding	288-289
■ Books	289
■ Business Opportunities	289
■ Catalogs	289
Computer Insurance	290
■ Data/Disk Conversion	290
■ Data Recovery	290
■ Disk Copy Service	290
■ Disk Duplication Software	291
■ Disks	291
Re-inker Systems	291
■ Slides	291
Supplies	291

SOFTWARE

■ Accounting	292
■ Business Applications	292
■ Church Applications	292
■ Construction_	293
■ Database Publishing	293
■ Data Entry	293
■ Development Tools	293
■ Educational	293
■ Employment	293
■ Entertainment/Games	293-294
■ Financial	294
■ Flow Charting	294
■ Genealogy	294
■ Graphics	294-295

HARDWARE/ Accessory Boards

Convert your 286 To a powerful 386SX!



Evergreen 386 SuperChip II can convert your 286 IBM, Compaq, or AT compatible to a 386. Run Windows 3.0 in the enhanced 386 mode, $utilize\,MS\,DOS\,5.0's\,Load high\,and\,Device high\,programs.$

Speed up your processor (increase on an AST Premium ergreen 286 using Norton SI version 4.5 goes from 11.2 to 15.6!). Math accelerator board also available for your 287 Math Coprocessor.

> 1325 N.W. Ninth Street Corvallis, OR 97330-4508

VOICE MAIL

CALL PROCESSING

TELEMARKETING

Let Powerline transform your PC/XT/AT/386 into a multi-line voice processing command center. Have your computer intelligently process your sales, inquiries and messages. Complete package.

Single Line (BorrOuth) . . \$295.00

Call: (415) 522-3800

TALKING TECHNOLOGY INC.

CIRCLE 521 ON READER SERVICE CARD

Mufti-Line .



1-800-733-0934 FAX: (503) 737-7350

CIRCLE 599 ON READER SERVICE CARD

Bios Chip

AN AWARD BIOS CAN RECYCLE YOUR COMPUTER!

Add These Features: Windows 3.0 Support 3.5" 1.44Mb Floppies User-Definable IDE HDs Call for FREE Catalog KOMPUTERWERK

Authorized Distributor Orders 800 423-3400 Technical (412) 782-0384

CIRCLE 478 ON READER SERVICE CARD

ROM BIOS Upgrades AMI & PHOENIX & MR. BIOS.

Upgrade your IBM PC,XT,AT, or compatible, 386sx &386 also. Supports 2 user defined hard drives, expanded hard drive tables 101/102 KB, 360,720, 1.2 &1.44 floppies, Complete set-up In ROM, All Video, Windows 3.0. *ROM diagnostics: AMI 286&386. Reasonable prices & full 30 day money-back Guarantee! Don't Settle For Less-Call us. ADVANCED SOFTWARE 4 1/2 Marlboro Road Suite 2R Derry, NH 03038 800-835-2467 603-432-1532

1-800-266-1733 EXT. 140 Tel:(818) 706-1733 Fax:(818) 879-2643

CIRCLE 435 ON READER SERVICE CARD

CD Rom

CD ROM NEWS

CD ROM Drive (complete kit)....

Bandled with Educational Superpack:

- Illustrated Encyclopedia Toolworks Reference Library
- National Geographic's Mammals
 Languages of the World
 U.S. History
 Atlas Pack
- •U.S. History

SUPER SPECIALS!

Educational Superpack and get the Library of the Future for	\$199
Front Page News	5 99
Magazine Rack	5 79
Aircraft Encyclopedia	5 19
Sporting News - Baseball Guide	
U.S. Presidents	5 49
Coates Art Review: Imressionism.	5 69
Bible Disc	5 99
New England Journal of Medicine	\$299
The Family Doctor	5 99
Voyage to Planets (3)	Call
Library of the Future	
CIA Fact Book	
Publique Art (clip art)	
Zip + 4	
Speed Dial	
Shakespeare	
Sherlock Holmes	
Birds	
Gainess Book of Records	
Game Pack	5 69
Shareware	
Time Compact Almanac	

CIRCLE 567 ON READER SERVICE CARD

Adult Graphics on CD!

Huge collection of the Hottest Adult Files Anywhere! Now on CD-ROM!!! Enjoy the Best & Own the Most.

- Over 450 Megs of VGA/SVGA pics in 2 500+ GIF Files
- Organized for easy selection & viewing!!!
- · Photo-quality scenes for every

Special intro price only \$99.95! Call (213) 943-9878, 24 hrs/7 days. MC/ VISA/AMEX, Ck/MO. \$3 s/h. Must state 21 or over.

PC CompoNet, Inc. 2060 Emery Ave., Suite 216 La Habra, CA 90631 213 943-9878

Last year PC WORLD Catalog ads generated over 329,000 inquires. And 27% of our readers have bought or plan to buy a product in the catalog. That's millions of dollars in buying.

Are you getting your share?

PC WORLD subscribers are some

of the most influential buyers in the market. 7 out of 10 subscribers are involved in the purchase decision process for PCs and peripherals, while almost 9 out of 10 are involved in the PC software purchase decision.

Now that's a lot of purchase power. Call the PC WORLD CATALOG today! 800/435-7766 or 800/435-7760 (CA)

Communications/ Modems

PhoneBoot by cybex



Far away and your computer is off! PhoneBoot lets you "be there" . . . all you need is a PhoneBoot and modem to power up your computer system.

- 8 ring pickup lets you share a voice line
 8 Buill-in hardware security code
 5ix outlets, 10 Amp capacity
 Surge protection for both AC and Telephone line

Only \$395, includes utility diskette with examples for

CYBEX CORPORATION 2800 H. Bob Wallace Ave Huntsville, AL 35805 (205) 534-0011

CIRCLE 469 ON READER SERVICE CARD

Computer Systems

Equipment Leasing

BEST PRICE BEST SERVICE BEST QUALITY

386SX16 286-12 \$1275 \$995

NAME BRANDS FOR LESS Call for thems Not Lated

EVEREX MAXTOR SEAGATE
IBM MICROSOFT SONY
INTEL MITSUBISHI TOSHIBA
IRWIN NEC WANGTEK APPLE CONNER IRWIN NEC CYRIX LOTUS OKIDATA

MICRO BASE TO CARGA CALL FOLL FINE 800-345-4479 (408)727-6276 CA (408)727-7307 FAX 3000 Scott Blvd Suite 203 Santa Clara Ca 95054

CIRCLE 423 ON READER SERVICE CARD

100% Computer **Equipment Financing**

Strike your best deal with the vendor of your choice

EXAMPLE: 36 months \$5,500 price 197/mo true lease

Call Mt. View Leasing for your best leasing options 800•676•2521

CIRCLE 401 ON READER SERVICE CARD

Computer Systems

Our corporate clients have been saying that for over eight years. As we expand to the general public, It's still true today - More than ever. RTI CON-TEX & PSY-TECH computers- A tradition of building reliable, hardworking computers for reliable, hardworking people.

CHECK OUR TOP-LINE PSY-TECH SYSTEMS:

Blazing 128-256K Cache; 8MB RAM; 234MB Hewlett Packard Drives (with 5 yr. guaranteel); Enhanced Super VGA Monitor & TMB video card; Super Fast Math Coprocessor; elegant, eponomically designed keyboards; super strong Tower & Desk-Top cases; 4 & 6 ply Fast motherboards; Hi-Tech integrated fan cooling system for long & reliable performance; RAM expandable to 64MB; 8 expansion slots; and more – all representing the utmost stateof the art technology at MOST AFFORDABLE prices. (Always call for most current pricing) 486/33 System \$3,500 386/40 System \$4,000

486/33 EISA System \$5,000 386/33 System OR OUR EXCELLENT STANDARD CON-TEX SYSTEMS:

With: 1MB RAM, 40MB Hd. Drive, VGA Monitor, built in the same tradition of performance. 80286's Under \$1,000 386's Under \$1,500 486/33's 386/33's Under \$2,000 Under \$2 500 You can't get better quality anywhere at anything close to the price!

© Central Computer Center (We take M.C. Visa, Discove Rt's 80 & 139, Central Plaza, N. Branford, CT 06471 Call (203) 483-8700 in CT • (800) 729-8708 elsewhere

CIRCLE 480 ON READER SERVICE CARD

We Custom Build PC's

- * 386SX-20Mz MB W/CPU \$190 386-33Mz W/CPU \$449
- * 286-16Mz W/CPU \$82
- * Tower case w/200W PS \$75
- Color SVGA monitor w/card \$309
- * 40 meg HD (28ms) \$169
- * 1 meg Simm (80ns) \$42
- * 2400 baud/9600send/receive Faxmodem \$90

Guaranteed pre-tested parts. Call for low prices. Do-it-yourself tutorial available.

Owl Systems Co. 7650 US. HWY 287 Arlington, TX 76017 1(800) 256-8488

386/486 at WHOLESALE!

\$3,000

386-25 1mb ram/42m hd *Sale \$1140 386-33 64k-c/1mb ram/42m hd \$1290 486-33 64k-c/4mb ram/85m hd \$1999 486-33 256k-c/4mb ram/85m hd \$2120 All systems include: * FREE MOUSE*

- · SVGA color mon 1024 w/1mb card 1.2 & 1.44mb fd • 2slplg • 101kb
- · 1yr warranty · Upgrades call
- **BEST QUALITY & SERVICE ** STARLIGHT COMPUTERS CO.

2828 W. Parker Rd. #202C Plano, TX 75075 1-800-878-8198 214-596-4785 Fax 214-596-4887

Disk Drives



Add a diskette drive without horsing around inside your computer — just plug Backpack into your parallel port! Connect your printer to the Backpack drive. No tools. No hassles. No interface cards. Backpack works with IBM and compatibles includi PCs, XTs, ATs, PS/2s, PS/1s, and laptops. It's available in 5.25

with everything you need. So don't horse around inside your computer, add an external drive the easy way—plug in a Backpack! Hard Disk models and tape backup available soon.

MicroSolutions Computer Products

132 W. Lincoln Hwy., DeKolb, IL 60115 815-756-3411 Fax: 756-2928

CIRCLE 536 ON READER SERVICE CARD

Shop The PC World Catalog for fast solutions to your PC needs.

Peripherals

9-Track Tape Subsystem



Now you can exchange data files between your IBM PC/XT/AT and any mainframe or minicomputer using IBM compatible 1600 or 6250 BPI 9-Track tape. Unit can also be used for disk backup. Transfer rate is up to 4 megabytes per minute on PCs and compatibles. Subsystems include 7" or 10½" streaming tape drive, tape coupler card, cables and software.

IJualstar

9621 Irondale Avenue Chatsworth, CA 91311 Telephone: (818) 882-5822

CIRCLE 527 ON READER SERVICE CARD

Never buy another ribbon!



MacInker™, the Automatic Ribbon Re-inker, re-inks any PC printer ribbon or typewriter (black & color) for 5 cents. Lubricating ink cools printhead, extends its life and yields betterthan-new printout. Avge. reinkings per cartridge: 60-100. Universal MacInker (spec. cartridge

or speet) \$75.00. Epson or Imagewr. \$45.00. Adapters available for any multicolor cartridge, \$40.00. We have a complete range of black, color, heat transfer, special ink cartridges. Satisfaction or 30 day refund. Free key-beeperflashlight for orders >\$100.00. Order toll free or call to get full information.

(800)547-3303

resional Accounts accepted tel. (503)626-2291 ng \$5.00 cod add \$3.30 fax (503)643-5379

Computer Friends 14250 Science Pk. D Portland OR 97229 tel. (503)626 2291

CIRCLE 483 ON READER SERVICE CARD

MAINFRAME

IMPROVE PRODUCTIVITY AT THE KEYBOARD The only product tested & approved at the

WRIST-EZE is an ergonomic tool designed to help prevent and relieve the painful symptoms of Repetitive Stress Injuries, e.g. Carpal Tunnel Syndrome (CTS).



WRIST-EZE : the ONLY product...

- Approved by healthcare professionals and ergonomic specialists
- Recommended by Doctors, Chiropractors, and occupational therapists
- Hand Crafted of the finest materials
- Will not lose its ergonomic shape or form
- Flame Retardant Anti-Static
- Will comply with upcoming OSHA standards (The wrong product can cause irreparable damage)

To order call 1-800 841 WRIST

NCL INTERNATIONAL PO BOX 27 FARMINGDALE NY 11735-3600 MASTERCARD & VISA ACCEPTED

BASIC MODEL \$19.95 +\$2.50 s/h LAP TOP \$34.95 +\$3.00 s/h
PLUS APPLICABLE SALES TAX
QTY DISCOUNTS AVAILABLE

CIRCLE 576 ON READER SERVICE CARD



9-Track Solutions for Today's PC Desktop

Come to Overland Data for modern PC 9-track solutions:

- Space-saving, low weight 1600 bpi subsystems with durability backed by a two year warranty.
- High capacity 6250 bpi subsystems with speed to match
- The latest software for data interchange and backup, with a friendly, intuitive interface
- OSSP, the most comprehensive customer support program in 9-track. It's the best insurance for your invesment.

We bring you state-of-the-art 9-track solutions for today's PC desktop. Because for the modern PC user, nothing less will do.



1-800-PC9-TRAK U.S. & CANADA

1-800-729-8725 • Bus. Phone: 1-619-571-5555 • FAX: 1-619-571-0982

CIRCLE 531 ON READER SERVICE CARD

FREE MARKETING INFORMATION

Call your PC WORLD representative for actual response numbers our advertisers have received in your Category.

See how well the CATALOG performs.



9-TRACK for MICRO's 6250 3200 1600 800 Fastest, Most Reliable Drives made for Micro's

HAUPPAUGE, NY • 516/273-5900 CIRCLE 497 ON READER SERVICE CARD

800/842-0708

PERIPHERALS

MISCELLANEOUS/ Accessories

164 page guide to computer furniture. supplies and accessories

Dial Toll-Free 1-800-8-GLOBAL

ŒLOBAL COMPUTER SUPPLIES

11 Harbor Park Dr., Dept 91 PCW Port Washington, NY 11050

CIRCLE 508 ON READER SERVICE CARD

Mouse Pads

Custom Printing Available. Cloth: 13 Colors

8x74 8x94 8 %x 11 Size: 12 Pads 3.25 3.50 3.75 3.00 3.25 3.50 72 2.85 3 00 144 3.25

PLASTIC: Blue, Platinum, Gray, Red & Black, Size: 8 1/2 x 11. 12 Pads 6.50 36 6.00

5.75 144 5.25 ASK US ABOUT OUR WRIST RESCUE! Precision Line Inc.

14505 21st Ave. No. Ste. 206

Plymouth, MN 55447 612-475-3550, 1-800-328-0077

Anti-LOCK-UP Product!

The answer for any unattended PC in use 24 hours a day, SYSOP's - VOICE MAIL, etc. Checks CPU every 30 seconds and reboots upon no signal. Includes board, software & cables. (board does not use PC slot) TWENTY MINUTE INSTALLATION, Requires internal re-set switch \$159 VISA/MC (vol. prices avail.) STREETWISE SYSTEMS 1600 S. Dixie Hwy. Boca Raton, FL 33432 1/800-654-0910

Page Holder/Rear-View

If you want to get the whole picture, you need a Monitor Rear-View™ page holder. The 3 1/2 x 2 1/4 mirror fully adjusts. The telescoping handle easily removes from the stick-on mount. The BEST page holder is a Monitor Rear-View™. Introductory price \$8.95 + \$3 S&H. IL res. add 7%. Send check or M.O. to

Tom Johnson Products P.O. Box 59373 Dept. A Chicago, IL 60659 No phone orders.

Bar Codina



- Cey Imprinting to your color specs
- Keytop Labels for most popular software
- Templates for most popular software Custom Templates to your specs
- Custom Labels to your specs
- Relegendable Keys—IBM*, Cherry* Key Tronic*, Wyse*
- Flexshield Keyboard Protectors Express Turn-around services on Custom

CIRCLE 518 ON READER SERVICE CARD





Attaches as 2nd keyboard

No software changes needed

2of5, UPC/EAN, 128, MSI, Code 39

ORTHINGTON

Magstripe, laser, or wand input Complete with steel wand - \$399

DATA SOLUTIONS

417 Ingalls Street



2 Yr. Warranty on Readers Direct from manufacturer

30 day \$ back guarantee!

408-458-9938

Bar Code Reader for PC, XT and AT

- Reads all popular bar codes
- Rugged aluminum housing
- · No software/hardware modifications
- Stainless-steel wand
- 2-Year Warranty (one year for wand)
- MS-DOS Bar Code Print Software \$150
- · Works with any program or operating system
- Withstands 6ft. Drop to Concrete

Portable Bar Code Reader for PC or Macintosh

- 36-Key Alphanumeric Key-Pad
- 32K RAM expandable to over 1 Meg
- Easily programmable screen prompts
- Complete with Hewlett-Packard wand
- Data stored in ASCII Text Format
- Communications Software and Cable Included



800-526-5920 Call Toll-Free U.S. & Canada

FAX: 415-856-3843

All TPS products carry 30-Day Money-Back Guarantee







4047 Transport Street, Palo Alto, CA 94303 Phone: 415-856-6833

CIRCLE 522 ON READER SERVICE CARD

PC WAND BAR CODE READERS DELIVER BAR CODE READERS WAND/ LASER/ MAGNETIC CARD CONNECTIVITY CARD CONNECTIVITY * Keyboard wedges lithernal External) for IBM PCIXTIAT PS/2 and portables. * RSS232 wedges for MYSE, Link, Kimton terminals. * Autoboscrimnate between codes 3 of 9, UPC, EAN,12 OF 5. Codeabar, Code 128 * Interface with wands, Symbol Technologies, Metrologic and Photographic Sciences lasers * Bat code and table printing software * Full two year warranty. * 30 Day Money Back Guarantee * Extensive VAR Dealer Discounts

MORE FEATURES MORE AFFORDABLE



Starting at \$279 with wand! • Transparent operation. . No software required . PC,

XT, AT, Mac, PS2, others. Look into our our full line of reliable, competitively priced readers, keyboard and serial wedges, portable data collectors, multi-drop

readers, wands, laser scanners, mag stripe readers, and bar code printing software . OEM and reseller discounts. We provide solutions to systems! Custom application software for Data Collections available. Call for details.

INTERNATIONAL **TECHNOLOGIES** & SYSTEMS CORP.

655-K North Berry St., Brea, CA 92621 (714) 990-1880 • FAX (714) 990-2503 13 Welwyn Ct., Richmond, VA 23229 (804) 741-6725

CIRCLE 501 ON READER SERVICE CARD

Books



Finally, the desktop reference books you need are available direct to you at DISCOUNT!

Hundreds of titles from major publishers, beginner's guides to advanced programmer's manuals.

Here's a sample from

McGraw-Hill LIST COST \$29.95 \$24.95 Borland C++ Hndbk DOS 5: Complete Ref 29.95 24.95

Hrvd Grph 3 Made Easy 20.95 Liskin dBaselV 1.1Hndbk 34.95 PC User's Guide 29.95 24.95 WP 5.1 Complete Ref 24.95 20.95 FREE Catalog Available

800-READMES 800-732-3837

MasterCard, VISA or COD 10 am - 6pm EST Mon-Sat

CIRCLE 578 ON READER SERVICE CARD

Business Opportunities 4 1

The American Dream

"Own Your Own Business" We train you to run and operate Medical/Dental Billing Centers. Earn \$60,000 to \$100,000/year. Operate from Home, Initially Hi-Tech Management Systems 131 W. Green Street Pasadena, CA 91105 1-800-832-4008

Own a Billing Service!

Great part time PC based business. Provide invoicing and accounts receivable services to small businesses, \$500-\$5000 income monthly. \$289 for complete set-up incl; Software, proven marketing plan, promotional materials, and ongoing support.

Bluejay Systems 2579 Clematis Street Sarasota, FL 34239 (813) 365-3357

Catalogs

IBM PCjr Specials

Full line of IBM PCjr hardware accessories including: Memory expansions, Second floppy drive, Hard drives, Cables, Larger keyboards, Modems, Printer expansions, Manuals, & software. Many more items are available. Send today for the complete catalog. Computer Reset Dept. PW, Box 461782 Garland, TX 75046-1782 214/276-8072

Free Games - All Orders!

- : Top 100 software titles for less
- Fast service; Fully guaranteed
- Full technical support
- 30 day "no hassle" money back gtd.
- WordPerfect V5.1 \$238.00
- PC Tools V7.0 \$99.00
- Wing Commander \$41.00 : Cashier Check, M.O., C.O.D - S&H\$8,00
- : Call for price list/news letter 1-800-221-6721 7am - 5pm PST

ONEWAY DESIGNS

Redding, CA 96002 May the Lord Bless You!

20 BUSINESSES YOU CAN RUN FROM YOUR HOME WITH A COMPUTER!



FREE CBS 386 SX Computer!

FREE Cassette Tape: This free, 2 hr. cassette will explain how you can start several or all of these 20 turnkey businesses parttime and still retain the security of your present position. Training and financing available.

To receive a free cassette and color literature, call:

1-800-343-8014, Ext. 535 (In Indiana: 317-758-4415) Computer Business Services

CIRCLE 404 ON READER SERVICE CARD



HARDWARE, ACCESSO-RIES AT DEEP DISCOUNTS. IOIN OUR FREQUENT BUYERS PROGRAM

AND WIN FREE GIFTS. ASK US ABOUT OUR LOWEST PRICE AND MONEY BACK GUARANTEES. AD # A91C the

computerm 800. ÇLR. MI IN CAUF: 510.623.8843

8 - 7 M - F, 10 - 5 SAT, PST

CIRCLE 499 ON READER SERVICE CARD

response by 41%

Two Color

ads increase

CIRCLE 468 ON READER SERVICE CARD

Shop The PC World Catalog for fast solutions to your PC needs.

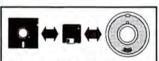
Computer Insurance

SAFEWARE

Insures your computer. Full replacement of hardware, media & purchased software. As low as \$49 yearly. Covers theft, fire, accidental damage and more-even power surges! One phone call does it all! Call for immediate coverage or information.

1-800-848-3469 SAFEWARE, The Insurance Agency Inc. 2929 N. High St., PO Box 02211 Columbus, OH 43202 Local (614) 262-0559

Data/Disk Conversion

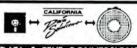


We transfer files between incompatible computers. computers. Thousands of formats supported among dedicated word processors, DOS, DEC VAX, UNIX. XENIX, Apple and Macintosh.

- Cartridge tapes (incl. TK-50, TK-70) 9-track tape (800 to 6250BPI)
- 3.5", 5.25", 8" floppy disks and Syquest

For cost effective quality conversions, call Disk Interchange Service Co. 2 Park Drive . Westford, MA 01886 (508) 692-0050

CIRCLE 525 ON READER SERVICE CARD



DATA & TEXT CONVERSIONS

We convert to or from 14,000 formats-CPM-DOS DEC-Display Write-Lanler Mac-NBI-WANG and 1000's more * 9-Track Tape (all BPI's)
* 3.5', 5.25' and 8'
Mini / Micro / Maintrame
Word Processors * Data Bases

CD-ROM Publishing

Call West Coast's Largest Conversion Center 1-800-972-DATA

CIRCLE 595 ON READER SERVICE CARD

DATA CONVERSION

If you want the most complete conversion services in the (800) CONVERT industry, just Capabilities include over 3000 formats

PIVAR COMPUTING SERVICES, inc.º

165 Arlington Heights Rd. #W Buffalo Grove, IL 60089 (708) 459-6010

RGA DATA CONVERSION CENTER

Tape, disks, micros, minis, mainframes, word processors, typesetting, and more.

- Database Management
- IBM 4381 on premises
- · Conversions to/from all systems
- Hundreds of conversion programs
- · Keying, labels & laser letters
- Carrier route & Qualifications

(212) 779-7667

Ralph Garner Associates, Inc. 99 Madison Avenue, New York, NY 10016 Professional services since 1967

CIRCLE 408 ON READER SERVICE CARD

Disk Copy Service

SOFTWARE DUPLICATION

All Formats & Mediums Complete Turnkey Service In House Printing & Packaging

TRACE MOUNTAIN

Duplication Equipment Diskette & Tape Sales & Service

SPECIAL DATA

214 E. Jackson St. - Front Royal VA 703-635-1787 FAX 703-635-2992

CIRCLE 506 ON READER SERVICE CARD

Data Recovery

The Leader in Data Recovery Services

- 95% Success Rate
- Fast Turn Around
- Professional Clean Room
- · Expertise with Novell, DOS, Macintosh, OS/2, Unix, Xenix, Bernoulli, Sun and more!

1-800-872-2599

Int'l: 612-937-5161 • FAX: 612-937-5750



CIRCLE 464 ON READER SERVICE CARD

Disk Copy Service

DUPLICATION FROM \$.59 HIGHEST QUALITY MEDIA

MSDOS duplication from \$.59(5.25) and \$.89(3.5"). Prices go even lower as you continue to order!

- Duplication + 100% Verification Custom Labels/Sleeves/Mailers Custom Packaging & Assembly Colored Media Available Special Rates For Demo Software & Site Licensing

- Educational Discounts Available 24 Hour Turn-Around Guaranteed Products

800-255-3142

Diversified Systems Group, Inc. PO Box 1114, Issaquah WA 98027

CIRCLE 422 ON READER SERVICE CARD

Duplication Services

Providing the highest quality disk duplication through state-of-the-art equipment, quality media and attention to detail:

- •All 3.5" & 5.25" Formats
- 100% Verification
- · Label Print & Assembly
- •NO Minimums per run •24 Hour Turn-Around
- Customized Services

Duplication Services Corporation Scottsdale, Arizona (800) 322-8392 or (602) 451-4648

CIRCLE 425 ON READER SERVICE CARD

MIRROR IMAGES MIRRUR IMAGE

DISKETTE DUPLICATION

Superior duplication . . .

Your reputation depends on it. Our reputation assures you of it.

. FAST 24 HOUR TURNAROUND EXCEPTIONAL PRICING AND SERVICE

Call for more information and quotation.

800-322-0577

Make PC WORLD your #1 advertising buy.

Once again, PC WORLD's unique editorial blend makes advertisers the winners. Evidence from both MRI and Fairfield Research proves it. PC WORLD is now indisputably the #1 choice for advertisers who want to reach business buyers of PCs and software.

Call your PC WORLD sales representative for all the evidence.

Shop The PC World Catalog for fast solutions to your PC needs.

Disk Duplication Software

Duplicate with EasyDupe

Save money and time on duplication runs of 1 to 1000 copies. EasyDupe formats/copies/100% verifies all standard formats.

- Up to 6x faster than DOS
- · Read Master once to hard drive. make unlimited copies
- Two drive copy for fast throughput
- Head Cleaning Utility
- Money Back Guarantee

\$49.95 plus S+H Advanced World Products 44106 Old Warm Springs Blvd. Fremont, CA 94538 (510) 226-9062

Disks

FORMATTED DISKETTES BASF, VERBATIM, SONY

FORMAT	QTY 250 MIX & MATCH	WITHOUT					
\$.44	5.25° DS/DD	\$.39					
\$.69	5.25° DS/HD	\$ 59					
\$.65	3.50° DS/DD	\$.56					
\$1.19	3.50° DS/HD	\$1.09					

- FREE FORMATTING on First Order
 TYVEC SLEEVES & Labels Included
 COLORED MEDIA Please Add \$ 05
 PRIVATE LABELING Available
 SAME DAY Shipping
 MONEY BACK GUARANTEE

800-255-3142

Diversified Systems Group, Inc. PO Box 1114, Issaquah WA 98027

CIRCLE 448 ON READER SERVICE CARD

Last year PC WORLD Catalog ads generated over 329,000 inquires. And 27% of our readers have bought or plan to buy a product in the cataloa. That's millions of dollars in buying.

Are you getting your share?

Re-inker Systems

Grove Re-inker System

For the hp family of DeskJet and DeskWriter printers. With our low prices it's like getting 10 Desklet Cartridges FREE! Available in permanent Black ink and 7 colors, including the 3 Process colors, Cyan, Yellow & Magenta. Call for information!

Grove Enterprises, Inc. Phone/FAX# 708-966-2723

Slides

Slides fast from \$3.00.

100 programs supported. PC, Windows, Postscript

Elegant Graphics 750 Princeton Avenue Steamboat Spgs, CO 80477 (303) 879-4334

CIRCLE 491 ON READER SERVICE CARD

Supplies

SAVE 30-60% RIBBON & LASER CARTRIDGES

Return • Reload • Reuse

- NEW and REMANUFACTURED RIBBONS TONERS and INK JETS for OVER 2000 PRINTERS
- FINEST QUALITY U.S.A. MADE MONEYBACK GUARANTEE
- SERVING INDIVIDUALS, SMALL BUSINESSES and CORPORATIONS

Drop 'em in the mail, not the trasht

FREE CATALOG BEST IMPRESSIONS

(800) 798-2345

16042 N. 32nd St., #B6 • Phoenix, AZ 85032

CIRCLE 580 ON READER SERVICE CARD

Supplies



CIRCLE 535 ON READER SERVICE CARD

▶BEST because we TEST! NEW! Remanufactured Epson 7000 & NEC SW II-90 \$54.95* IBM LaserPrinter 4019 & 4019E \$99.95* ONER Cartridges ALL H-P LaserJets* \$39.95* ALL Canon "PC" Copiers \$39.95* DISCOUNT Except H-P IIIS LASER SUPPLY

1-800-786-2270



CIRCLE 466 ON READER SERVICE CARD

Cartridges

Remanufactured

Delivery & Pickup!

Laser Renew of CT ALL MAJOR BRANDS!

· Visa, MC, Amex

- 100% Money Back Guarantee
- Ask about our GOLD Service!
- Full line of DISCOUNTED SUPPLIES
- We Buy Empties!

203 Wildemere Dr., South Bend, IN 46615

800-347-422

PC WORLD subscribers are some

of the most influential buyers in the market. 7 out of 10 subscribers are involved in the purchase decision process for PCs and peripherals, while almost 9 out of 10 are involved in the PC software purchase decision.

Now that's a lot of purchase power. Call the PC WORLD CATALOG today! 800/435-7766 or 800/435-7760 (CA)

Shop The PC World Catalog for fast solutions to your PC needs.

SOFTWARE/ Accounting

dBASE Business Tools

- · General Ledger
- · Accounts Payable
- · dInvoicer & A/R
- · Sales Analysis
- · Order Entry
- · Purchasing/Invnty
- Payroll
- · Lazr-Forms
- · Job Costing
- · Job Estimating · Bill of Materials

\$99 ea, incl. Source Code M/C-AMEX-

Visa-Check-COD Datamar Systems 8586 Miramar Place San Diego, CA 92121 800/223-9963, 619/452-0044

Tear into a test drive of our most popular accounting software for \$19.95. BusinessWorks handles everything from General Ledger, Receivables & Payables to Inventory & Payroll. Quickly. Efficiently, Painlessly.

1-800-447-5700

BusinessWorks, Winner of PC World's Best Buy and InfoWorld's Best In It's Class Awards.



CIRCLE 451 ON READER SERVICE CARD

What do more than 1400 Government and Nonprofit Organizations Know?

When You Need Fund Accounting Software... You Need American Fundware.

American Fundware provides powerful software solutions – written specifically for the government and nonprofit sectors – that solve your fund accounting needs. Easy to Learn. Easy to Use. Easy to Produce Results.

CALL AMERICAN FUNDWARE TODAY. 1-800-551-4458 or Fax: 1-303-879-6850 P.O. Box 773028, Steamboat Springs, CO 80477

CIRCLE 502 ON READER SERVICE CARD

DATASMITH™ Payroll

SO MANY WAYS TO PAY...your choice of 12 check styles (including "Stub Only"), or use DATACHECK option to create MICR-encoded checks on laser printer. Direct Deposit available, too. Ready for the 90's with Split FICA/Medicare. Order demo today!

LPI Information Systems 10020 Fontana Overland Park, KS 66207 913-381-9118

Retail Store Management

The complete software system for Retail Multiuser/Network ready. Supports cash drawers, barcode, receipt printers, customer displays, scales and online credicard authorization. Controls all types or retail stores. Multistore, size-color matrix parts explosion and serialized items. Field proven in thousands of installations.



CIRCLE 470 ON READER SERVICE CARD

Business **Applications**

Do You Ship by UPS*?

If you do, the Aristo Parcel Shipping System (APSS™) is for you! Meets all UPS requirements. Prints COD & regular labels, Pickup Manifest, etc. Saves customer list. Calculates zones & charges. Flexible setup menu to suit your needs. On-line help. Optional scale interface & other carriers. (RPS. Airborne, Fed EX, USPS, LTLs, etc). 60 Day \$ back Gtd. UPS acceptance gtd. Full featured demo disk: \$4 s/h. Aristo Computers, Inc. 6700 SW 105th Ave. #307-J Beaverton, OR 97005 800/3ARISTO, 503/626-6333

BizPlanBuilder M

Organize ideas, coordinate plans — convince others to support you. Intuitive, logical business & marketing plan template on diskette for launching a new product, service, or company, 90+ pages of outlines, headlines, written texts, tables... formatted into 33 ASCII text files.

Follow tutorials, fill in the blanks, edit into a finished plan. 126-page reference includes info about getting money from banks, SBA, inves-tors. Integrated financials in Lotus 2.01(convert or modify): detailed Budget, Income Statement.
Balance Sheet (w/ 16 ratios), Cashflow, BreakEven Analysis. Dazzle your boss, banker or
investors. 37,000+ sold! v 4,0 \$129 +shipping

Leverage Your Time & PC

800/ 346-5426 415/941-9191 MC•Visa•AX 30-Day Guarante

CIRCLE 564 ON READER SERVICE CARD

Pay less to ship UPS!

Automate UPS shipping, save time and money with the Parcel Shipping Program (PSP). Prints UPS labels and COD tags. Maintains customer list. Calculates UPS charges and UPS Manifests, ensures accurate billing. Supports residential & commrcl, rates. UPS Approval & \$ back gtd. \$299. \$5 Demo

East Hampton Industries, Inc. 81 Newtown Lane, Drawer 5069 East Hampton, NY 11937 800-645-1188, 516-324-2224 FAX 516-324-2248

UPS Shipping Software

Use stand-alone or integrated with your accounting software as a pop-up window. No need to retype information. Computes zones & charges. Prints Manifest, COD tags, labels, etc. Also provides batch processing & customer database. Optional 100 wt. groundsaver & RPS. Single user, \$249, Network, \$449, Demo \$10. V-Technologies P.O. Box 4321 Waterbury, CT 06704 (203) 879-6960

Church Management

CMS Software is flexible, integrated and easy to use. Get immediate productivity with outstanding reporting capabilities and superior support. Free preview. Over 1300 users know CMS is the best long term investment. Contact us today!

800-247-8044

TSL - The Software Library 3300 Bass Lake Road #304 Brooklyn Center, MN 55429 Fax 612-566-2250

Membership Software!

Finally there's an easy way to organize your church & alumni memberships! Customize up to 100 fields on one screen!

- Contribution system with bar code available
- General ledger, accounts payable & budgets.
- Computer systems available.
- Great for Catholic census & envelope Authorized IBM business partner.

Call or write today. Angel Systems, Inc. 323 N. Wisconsin Avenue Massapequa, NY 11758 800-237-0375, 516-420-0000

Church Partner

Written by Computer professionals involved in church management. Skilled users love its power, depth and flexibility. Novices love its ease of use. 13 optional modules with support and upgrades. For IBM compatibles, LANs, Macintosh, XENIX. We understand computers and churches. New Release: School Partner, for church-related dayschool and child

Summit Systems, Inc. Suite 121, 16 Berry Hill Rd. Columbia, SC 29210 803-798-9749, FAX: 803-731-0349

Church **Applications**

CHURCH SOFTWARE

Discover for yourself why more churches are choosing Power Church Plus.® Try out the leading membership and accounting package. Call today for your FREE full-working DEMO.

F1 SOFTWARE, 6300 Variel Avenue, Suite H, Woodland Hills, CA 91367 (800) 486-1800 (818) 888-1800

CIRCLE 562 ON READER SERVICE CARD

Construction

COST ESTIMATING

Contractors, Builders, Estimators, A/E's, Do-it-yourselfers

Comprehensive, <u>stand-alone</u> estimating systems. Easy to use, pull-down menus, <u>Lookup</u> windows. All systems include built-nindustry-standard cost database with unit prices. Over 4000 systems in use.

PC-Estimator. General construction estimating. Supports work assemblies. \$99 Remodel Estimator. Home improvement and remodel estimating. \$89

Electrical Estimator. Plumbing Estimator and Painting Estimator. Specialty construction estimators. Features text file for

Demo package for any of above. \$10

VISA,MC,Check,MO,COD, S&H \$6.50. CA residents add sales tax, COD add \$5.00 CPR,Inc.P.O.Box 3465,Berkeley,CA 94703 (Dealer inquiries welcome)

Call: (510) 654-8338

Database Publishina

Viking Data Entry

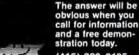
Professional Quality Software

- · Used by U.S. Census
- Advanced Validation
- Sequential/ISAM files · MS/DOS, UNIX, XENIX, VMS, AIX
- Technical support
- · Re-key verify

Viking Software Services 4808 E. 67th St., Ste. 100 Tulsa, OK 74136 918/491-6144 FAX: 918/494-2701

DATA ENTRY

Why have over 85% of the largest companies in the U.S. selected the RODE/PC Data Entry System?



(415) 323-8195

DPX • 490 California Avenue Palo Alto, CA 94306

CIRCLE 55B ON READER SERVICE CARD

Employment

JOBHUNT™ Software!

"JobHunt Helps You Get a Job"- Byte. Helps Career Services increase their revenues. Gives names, addresses, phone/fax of leading employers. Displays by region or job function. Quickly mail-merges and prints personalized cover letters and labels for targeted mass-mailing of resumes. 30-day money back guarantee. Only \$39.95 + \$4.95 S&H. Free Update. Order Today!

Scope International (call 24 hours) P.O. Box 25252, Dept. 1091 Charlotte, NC 28229-5252 1-800-THE JOBS or 1-800-843-5627 Phone &Fax:704-535-0614

Entertainment/ Games

Sports Handicapping

Thoroughbred shareware system \$8.00. Commercial horse racing & greyhound handicapping software \$32.95, \$52.95, \$67.95, \$77.95 each, Up to 17 entries analyzed: class, speed, times, odds, track, post, stretch, & finish. Pro Football software - \$42.95. Handicap races & games in minutes. MC/VISA accepted. Free info. SOFTWARE EXCHANGE PO Box 250002-PW W. Bloomfield, MI 48325 313/788-3342. Orders: 1-800/527-9467

ADULT LOOPSCANS

- VGA/SVGA 256 COLORS
- 4 Disks per SET-\$10 (+\$1.50 s/h per SET)
- SET #7A Awesome SET #7B - Dazzling
- SET #7C Outrageous SET #7D Torrid

- SET #7E Breathtaking SET #7F Exquisite Orders shipped at once.

Sample Disk-\$5 (deduct \$5 from first order) Must state age over 21. LOOP PREMIUM GRAPHICS P.O. Box 597186 Chicago, IL 60659

Directories In An Instant!

Use INSTANT DIRECTORY to create company directories, client lists, white pages & more. With INSTANT DIRECTORY'S easy-to-use database and 30 preset reports, you can print your undated directory in an instant. No desktop publishing skills needed. SAVE \$70 off list, buy now for \$79. DIGITAL COMPOSITION SYSTEMS 1-800-527-2506 ext. 6251

CIRCLE 505 ON READER SERVICE CARD

Data Entry

eplace dedicated data input systems

Front-end mainframe applications

ATTENTION! Visual Basic™ Users

ButtonTool creates VISUAL buttons and EditTool creates formatted input fields. Give your application that professional 3-D look and feel. Loads into the VB tool palette. No royalties.

Just \$49.95 each plus \$4 s&h or both for only \$89.95 plus \$7

OUTRIDER SYSTEMS, INC.

1-800-845-0386 FAX: 713-523-0386

Development Tools

s&h Visa/MC/Amex.



3701 Kirty Dr., Sta 1196 Houston ,TX 77098 Dept G

CIRCLE 420 ON READER SERVICE CARD

Educational

KeyEntry III

- → LAN or stand-alone environments
 → ScreenPainter and MenuManager included
- → Batch Control System and Reformat utility □ Spanish, German, and French version
 □ Outstanding customer support
 □ Thousands of users worldwide
- JOS/2 version

800-533-6879







FREE DEMO DISK AVAILABLE TO OUALIFIED COMPANIES!

SOUTHERN COMPUTER SYSTEMS, INC. (205) 251-2985 FAX (205) 322-4851 In UK: SCS Europe, Ltd 10753-36550/ FAX (075) 36763

BS & MS in Comp Sci

The American Institute for Computer Sciences offers an in-depth correspondence program to earn your Bachelor of Science & Master of Science in Computer Science at home. BS subjects covered are: MS/DOS, BASIC, PASCAL, C. Data File Proc. Data Struct. & Operating systems. MS includes SW Engineering, AI and other topics American Inst. for Computer Sciences 2101-WO Magnolia Ave. So. Ste 200 Birmingham, AL 35205

800/767-2427, 205/323-6191



Adult Software

Must State Age Over 21

Disk #1 - An unbelievable visual encounter MUST SEE!

Disk #2 - NEW! 3 encounter games for friends and lovers guaranteed to shed both clothes and inhibitions.

Disk #3 — An anatomical arcade game with unusual ammunition.

Disk #4 - 2 more incredible visual encounters — impress your friends.

Disk #5 — Create your own fantasies about friends and lovers.

Disk #6 - NEW! View, print, or edit ten sizzling pictures including celebrities

\$7 each, any 3 for \$17, or all 6 for \$32. for IBM & compat. CGA, EGA or VGA graphics regid.

CONNOISSEUR COLLECTION ALL NEW! In 256 Color VGA!! Disk #CC1 - * YOU BE THE STAR *

The FIRST CUSTOMIZABLE movie allows you to write the dialog and the title. You can star with the partner of your choice. Incredible scenes display with your dialog ONLY AVAILABLE FROM US!

Disk #CC2 - THE FIRST SOUND MOVIE! The first computer movie with SOUND. See the incredible 256 color VGA graphics while hearing the actual dialog. OURS EXCLUSIVELY

Disk #CC3 - THE BEST MOVIE! The best computer movie available. Only for the serious collector. 256 stunning VGA colors

1 Movie \$29, 2 Movies \$49, 3 Movies \$65 All CC Disks Require VGA monitor and hard disk - over 1 MB of action.

eXXcapedes — The FIRST adult game with TRUE SOUND and 80 sizzling color VGA scenes! Options for gender preference and game intensity • Play with 2-8 close triends • Over 5MB of pure action! . Fulfill your carnal passions with new experiences . Find out how you and your partner can better relate \$79 — Special offer: \$69 with purchase of any CC1, CC2, CC3 disks above — OURS EXCLUSIVELY!

ADD \$3 S/H • 3.5" OR FOREIGN ORDERS ADD \$2 PER DISK • IN PA ADD TAX. VISA/MC Orders only 800-243-1515 Ext. 600 BR 24 HRS./7 DAYS • Or check/MO to: SeXXy Software, 2880 Bergey Rd, Dept. 600 BR, Hatfield, PA 19440

CIRCLE 523 ON READER SERVICE CARD



MS Windows or LYOS For the Businessman on the "Go"!

Learning to play Go well is tantamount to a senior-level course in strategic thinking." United Feature Syndicate 12/12/90

'[Go Junior] Best introduction to Go yet developed." Mac World 2/91 Toyogo, Inc. P. O. Box 25460-W. Honolulu, HI 96825-0460

(800) TOYOGO-9 (808) 396-4126 fax \$35 Go Junior \$69 Go Master \$139 Deluxe Toolkit + \$6.50 S&H

CIRCLE 565 ON READER SERVICE CARD

Entertainment/ Games

Adult VGA Software

Visualize the full potential of VGA and SVGA.

Hi res, 256 color images

Vol. 1 Swimsuit (6 disks per vol.) Vol. 2 Au Naturel Vol. 3 Daring Vol. 4 Adults Only \$13.95 \$13.95

Hi-res VGA animation. Just like the movies!!! Vol. 5 Adult VGA Movies
Vol.11 Hot Italian Movies
Vol.12 Long Length Movies \$13.95 \$13.95 \$13.95

Special Order 4 volumes, select 5th free! Choose from six 51 a* 0D disks, three 514* HD (bes-deal), three 312* 0D, or two 312* HD for each vol. Al disks are full. Vol. 12 available in only HD disks.

Get more great software for less. Guaranteed. Fact service. Order today, Include \$3.584. Must state age 21 or over. Send check or MO to. 16 orders ast \$1.05 kms. cm, MCV/SA orders or free. Dept. CW, P.O. Box 36 catalog call (309)452-7760.

CIRCLE 496 ON READER SERVICE CARD



Quality Computer-Assisted Number Analyzer

You make your analysis and choose your game-play numbers from computer calculated displays and re ports. Data is based on your state's winning number using hi-tech statistical methods. You update Min. 256K. Programs, manual, one state's data, \$44.95 + \$4.00 shipping and handling Each additional state \$10.95. Credit card. 800.992-4045 ext. 439, (CA) 800/777-8814, ext. 439. Check/M.O.

The LOTTO EDGE, ODDS UNLIMITED,

PLAY TO WIN LET YOUR PC DO THE WORK!

CIRCLE 549 ON READER SERVICE CARD

Financial

Loan-Amortization

EXEC-AMORT. Replace Desktop Financial Calculators, Avoid Inaccuracies, Quit Using Your Spreadsheet, Store Loans to Disk, Solve for PV,FV, I, PMT, N. Easy to read amortization reports, fixed & ARM's, APR's per Reg Z, Points & Fees, Balloons, irregular & skipped payments. \$149.95 US + \$5 s/h. Int'l add \$15. ELECTROSONICS 36380 Garfield, Suite 1 Fraser, MI 48026 USA 800-858-8448, 313-791-3010 fax Int'l phone: 313-791-0770

DEBT COLLECTIONS

Collect those old receivables. THE IN-HOUSE COLLECTOR is a powerful collection tool that can recoup those otherwise lost profits. Major features include Pull Down Menus for ease of use, Sophisticated Tickler System for dating accounts, Customizable Correspondence, and Automatic Series of Dunning Notices. \$149.95 + \$5.00 SH. 30 Day \$ Back Gtd. TALLAC DEVELOPMENT 13911 NE Airport Drive Vancouver, WA 98684 (206) 254-0299

Graphics

3 Free Slides from your PC

COMPUTER SLIDE EXPRESS converts your graphic files into 4000 line full color slides, overheads or printouts. All popular programs supported. 24 hour service by modem or disk. As low as \$6.50. Call or FAX for your FREE valuable (\$27.00) coupon & FREE 48 page catalog. Visual Horizons 180 Metro Park Rochester, NY 14623 Phone: 716/424-5300 FAX: 716/424-5313



Explore "Chaos" science DXF and .PCX file compatible FREE BROCHURE: 802-888-5275

Cedar Software Box 5140-R1, Morrisville VT 05661

CIRCLE 519 ON READER SERVICE CARD

Flow Charting

Windows Flowcharter \$129

RFFlow 2.0 is a professional drawing tool for flowcharts and org charts. Requires Microsoft Windows 3.0. 100 shapes auto adjust in size. Diagonal lines and curves. Auto line routing and re-routing. Click on a shape to bring up a sub-chart. Move charts to other apps. via the Clipboard, Call for free trial

RFF ELECTRONICS 1053 Banyan Court Loveland, CO 80538 303/663-5767 FAX: 303/669-4889

Explore Chaos Graphics

Recent findings in the field of chaos math have yielded dazzling computer designs.

Introducing - "CHAOS GRAPHICS" Create original chaos designs.

- · Hercules mono. to 256-color super-
- Write pictures to disk or printer.
- For IBM-PC and compatibles. Introductory Offer \$29.95 Send check to: Systems Development Group P.O. Box 336 Marlboro, New Jersey 07746 (908) 536-7688

Genealogy

Family Roots™

Do it YOUR way! Huge variety & capacity for your family history. Make pedigree charts & descendants charts, group sheets, person sheets, indices, histories, address lables, searches, & much more. Call for FREE information, Satisfaction guaranteed, Any PC or compatible, MC/VISA/AmEx welcome.

QUINSEPT Box 216 Lexington, MA 02173 800/637-ROOT, 617/641-2930

My Family Record

Users say this is one of the most versatile and powerful Genealogy Programs they've seen, yet still the easiest to use! All the popular features of other programs, Plus MULTIPLE LINEAGE-LINKED DATA BASES. Includes My Family History & GEDCOM for \$175 (volume discounts avail). Full-featured Demo \$10. VISA/ MC

MY FAMILY PRODUCTS 1446 Bluegrass Circle Salt Lake City, UT 84121 1-800/658-7688, 801/292-1150

"Say It With A Disk"

Birthdays, Holidays, any occasion, don't send a card, send a disk with an exciting space shuttle program, see it blast off into orbit. Your message will fly out of the cargo bay. The message has 3 parts, each part has 4 lines with 20 characters. Needs VGA/EGA. Send check/money order for \$15. Specify disk size.

Pegasys Inc. 59 Hunting Ridge Road Newark, DE 19702 (302) 292-0908

MathEdit lets you put

$$\mathbf{Z} = \frac{(\overline{X}_1 - \overline{X}_2) - (\mu_1 - \mu_2)}{\sqrt{\frac{\sigma_1^2}{2} + \frac{\sigma_2^2}{2}}}$$

into WordPerfect, Word. WordStar, & other documents without learning any codes!

- A display window lets you see your equation as you type it MathEdit is \$199

30 West First Ave. Ste. 100 Columbus OH 43201 (614) 294-3535

CIRCLE 447 ON READER SERVICE CARD

Computer **Images**



Use toll-free 800 # to sign up with credit card. Once verified use same 800 # to download files

1-800-GO-MODEM

Or use direct dial 64 Line BBS at (503) 697-5100 8/N1

SuperVGA 1024x768x256

ASTRONOMY . HUGE ADULT AREA SCENIC • GRASP • ANIMATOR • 3D STUDIO MOVIES • SOUND • GAMES GIRLS • UTILITIES • IMAGE CONVERTERS

Event Horizons Commercial BBS, thousands of images and movies. Must be 21 to download from adult areas. Quality Color SuperVGA/VGA /EGA. 1200/ 2400 bps \$10/hr., 9600 bps \$40/hr., 800# \$6/hr. extra. Also Professional Image Scanning from prints or slides to

No Modem? Order our Mail Image Library with samples \$9. Worldwide shipment. Info voice line 503-697-7700. All credit cards accepted. Same day shipment.

Event Horizons

311 Ave. B, Ste. 209 Lake Oswego, OR 97034 Voice 503-697-7700, BBS 800-466-6336, or BBS 503-697-5100

CIRCLE 507 ON READER SERVICE CARD

Graphics

FREE CLIP ART 50+ OF OUR BEST IMAGES

TRY US! Get 50+ of our best selling images - FREE Credit Cards only!



SMC

SOFTWARE PUBLISHERS 619 931-8111

CIRCLE 539 ON READER SERVICE CARD

Health

Eat Healthier- Get FIT !!



Top-Rated software has best data available for 2400 foods, 30 nutrients. Plan diets, menus, recipes; shows nutrient excess. deficiency, ratios, graphs. Used by thousands: USDA, fitness colleges, hospitals, & home-users Send Now: FREE Demo Disk !!

PO Box 13028-B Salem, OR 97309 Ph: (503) 585-6242

CIRCLE 573 ON READER SERVICE CARD

Last year PC WORLD Catalog ads generated over 329,000 inquires. And 27% of our readers have bought or plan to buy a product in the catalog. That's millions of dollars in buying.

Are you getting your share? Inventory Control/ Management

POINT OF SALE INVENTORY

Inventory Control is... MONEY IN THE BANK \$189 - \$489 FREE demo



Maintains Inventory Writes Invoices Uses Cash Drawer, Receipt: Printer, Barcode Scanners 50 different programs Receivables & Gen. Ledger

Freeman Software - Garland, Texas 800-426-6598 214-270-0625

CIRCLE 445 ON READER SERVICE CARD

Mr. QuarterMaster

Providing the IC needs of business, govt. & institution stockrooms since 1983. Features include receipts & issues updating, report generation, issue slip, etc. Price \$140, Manual alone with demo: \$30 deductible toward later purchase. Also available: Sales reporting, PO, Estimating, Retail IC & Multi-whse IC systems. 106 New Haven Avenue Milford, CT 06460

Languages

Fortran Compilers

203/878-0376

Whether you are developing new code or moving large mainframe programs to the PC, we have the Fortran Language Systems to meet your needs. Winners of PC Magazine's Editor's Choice and Technical Excellence

LAHEY COMPUTER SYSTEMS Box 6091 Incline Village, NV 89450 800-548-4778, FAX 702-831-8123

Mailing Programs

Today's PC Mail System

Fast! Accurate! Large volume mailers use PostWare software programs to: Standardize/correct addresses

- · Add ZIP, ZIP + 4, Car. Rt.
- · Presort 1/2/3 Class
- · Detect duplicates
- Generate Postnet bar codes
- Palletize 2/3 Class
- Qualify for postal discounts CASS-Certified. Reported throughputs over 100,000/hr.

Postalsoft, Inc. 4439 Mormon Coulee Rd. La Crosse, WI 54601-8231 800/831-6245

The Mail Order Wizard

Complete management system for a catalog, inbound telemarketing, or mail order company. Order processing, inventory mgt, ad forecasting, sales/banking, list mgt, modem charge approval, EDC, UPS manifest w/scale interface. Single and Multi User Systems. Inbound/Outbound Editor's Choice. Haven Corporation 802 Madison St., Dept W1291 Evanston, IL 60202 800/782-8278, 708/869-3434

FREE Catalog!

Zip Code & Mailing Software Catalog ...

- · ZIP +4 & Barcodes
- · Carrier Routes
- List Correction
- · Postal Presort
- Duplicate Elimination ZIP Selection within a Radius
- · Nearest Dealer Locator
- Zip Code & Phone Location Databases
- Save on Postage, Time, Money! Call for your FREE Catalog today! MELISSA Data Corporation 32122 Paseo Adelanto San Juan Capistrano, CA 92675-3600 800/443-8834 FAX: 714/661-5002

THE "Mail Order Master"

Software Program contains all the routines you need to run your Home or Office mail order business. Easy to use features include Powerful Database, Invoicing, Inventory Control, UPS Manifesting, Sales & Income Report, Sales Tax Report, Product Sales & Profit Report, Statements, Credit Card Voucher Printout, Bulk Mail Sort plus lots more. IBM compatible. Single User System. Priced at \$499.00 Hands-On Demo \$20,00 The Marshall Weiner Corp. 1700 Catalina Ave. Seal Beach, CA 90740 800/874-4656 USA & Canada

Maintenance Management

Maintenance & Inspection

An integrated maintenance management system, including parts inventory, with clients in Fortune 500 companies, utilities, hospitals, schools, manufacturing & service industries etc. The online system provides operational, planning & analytical reports such as work orders, schedules, skill & inventory requirements, budget reports & reports that summarize history of work performed.

Penguin Computer Consultants PO Box 20485 San Jose, CA 95160 408/997-7703, Fax: 408/927-0570

Manufacturina

Advanced SUMIT

Manufacturing-BOM, WIP, MRP, Mfg.Eng., Labor Performance, Shop Scheduling, Inv. by Location, Lot Control, Just in Time, Cost Accounting, Quality Assurance, Preventative Maint. Materialle-Inv. Control, Order Entry, PO Mgmt., Sales Analysis. Accounting AP, AR GL. Strong QBE. Customizeable by you, Multi-User DBMS. T.L. Creates, Inc. 345 N. Yosemite, Suite 200 Stockton, CA 95203 209-946-0105, 209-946-0150 fax

Medical

Medical Systems with ECS PPM offers a complt, line of med, SW

from simple ins. claims proc. to comprh. A/R mgt. PC CLAIM PLUS - claims proc. w/ECS to 100+ major ins. carriers - 30 day MB Guar

THRESHOLD - complete A/R, Pt. Bill, comprh. practice mgt stats. CLAIM NET - Nationwide eletrne claims clearinghse transmits to 100+ ins, carriers, SW starts at \$459. Dealer inquiries welcome. Physicians Practice Management

350 E. New York Indianapolis, IN 46204 800/428-3515, 317/634-8080

Shop The PC World Catalog for fast solutions to your PC needs.

Music

Beautiful

L·M·P Laser Music Processor

WYSIWYG desktop music scoring on your IBM PC/AT for the HP-LaserJet/Epson FX/IBM Proprinter printers, VGA/EGA/MCGA/Hercules/CGA/AT&T displays, MIDI transcription, full mouse support and options for PCX files & DeskJet emulation, and much more! TEACH Services (518)358-2125

182 Donivan Rd, Brushton, New York 12916 BBS (518) 358-3352 (SHIPPING \$5,00 US, NY - 7% TAX)



CIRCLE 500 ON READER SERVICE CARD

\$1995 Test Drive

Don't buy any PC MIDI products before trying the full-line from the industry leader. It's a risk-free way to learn about PC music. Apply the cost if you buy software from us.

Dept PCD, 333 5th Ave.

Dept PCD, 335 5th Ave.

**Dept PCD, 3 Orders/Free Catalog:1-800-233-9377

CIRCLE 476 ON READER SERVICE CARD

SongWright V

MUSIC PROCESSOR prints professional sheet music, songs, scores with text, chords, dynamics. Compose, edit, record, play, transcribe, copy, transpose, extract, import, publish - all in standard notation. Symbol editor/librarian. PC, MIDI or SMF entry & playback. Matrix/laser printers. \$99.95 + \$5 s/h. Free sample output. SONGWRIGHT SOFTWARE 7 Loudoun Street, S.E., Ste. 5B Leesburg, VA 22075 1-800-877-8070, 703-777-7232

Networking

The \$25 Network

Try the 1st truly low cost LAN

- Connect 2 or 3 PCs, XTs, ATs, PS/2s
 Uses serial ports and null modem cable
 Runs at 115K baud, in only 15k of ram
 Runs in background, totally transparent
 Share any device, any file, any time
 S25/network, Not Node!

Skeptical? We make believers!



Information Modes Drawer F, Denton, TX 76202 817-387-3339 Technical 1-800-628-7992 Orders

CIRCLE 407 ON READER SERVICE CARD

FREE IBM 51/4" Disk with FREE GAMES. **UTILITIES** and CATALOG



Just to get acquainted with our shareware.

1-800-845-8902

. Software

CIRCLE 409 ON READER SERVICE CARE

FREE - 15 DISKS - FREE **FULL OF SOFTWARE**

TRY US! Get 15/5.25" or 6/3.5" disks of best selling NO VIRUS software for IBM Games•Utilities•Education Business Publishing-FREE Credit Cards only!

PAY ONLY \$5.00 SHIPPING **SMC SOFTWARE PUBLISHERS** 619 931-8111

CIRCLE 585 ON READER SERVICE CARD

Software

Catalog

Over 700 of the best IBM P/D and S/W Software Programs

Public Domain/

Shareware

As low as 90 cents per disk We will not be UNDERSOLD

CALL NOW !!!

1-800-950-4366

Software International Exchange 6540 W. Atlantic Blvd. Margate, Florida 33063

CIRCLE 533 ON READER SERVICE CARD



Public (software) Library

The best organized, most comprehensive, most up-to-date... - PC Today

...Extravagant service ...

- Whole Earth Review

Call for a free newsletter:

800-2424-PSL 713-524-6394

Member - ASP

CIRCLE 503 ON READER SERVICE CARD

FACT: 23%

of PC WORLD's subscribers purchased PC Software from mail-order companies last year.

SOFTSHOPPE, INC.

ASP Member

Selected Programs □ Latest Versions As Low as \$1.50

> FREE CATALOG IBM PD/SHAREWARE

POB 3678, Ann Arbor, MI 48106

Call 800-829-BEST (2378) or 313-761-7638 Fax 313-761-7639

CIRCLE 436 ON READER SERVICE CARD

FLAKEY JAKE'S 47¢ HITS for IBM® 5.25" or 3.5" disks

ACTIVE LIFE AMY'S FIRST PRIMER AS EASY AS BAKER'S DOZEN BASS TOUR BROTHER'S KEEPER BUSINESS & HOME LEGAL CHARTS UNLIMITED COMMANDER KEEN CROSSWORD CREATOR DOS TUTOR

FAMILY TIES FORMFILL FORMGEN **GALAXY LIGHT** HOME HELPER FINGER PAINT KEY DRAW IDEA TREE KID GAMES KINDERMATH

METZ WINDOW TOOLS NAMES AND DATES ORDER PRO PC BRTOWSE PC CALC PC FILE PC WRITE PHARAOH'S TOMB

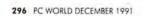
PRINT PARTNER PROCOMM **QMODEM** READABILITY PLUS RESUME SHOP RUBICON PUBLISHER SEESPELL SHARESPELL TAXIN' CARE OF BIZ VIRUS SCAN

POINT/SHOOT BACKUP

Get 'em while they're hot! This is our latest best selling shareware. Nobody would dare match these prices! I may be Flakey, but I'm not nuts. Tell your friends about Flakey Jake. Shipping and handling extra! Satisfaction Guaranteed. Credit cards only!

Flakey Jake's Shareware 619.931.8111 ext 511

CIRCLE 413 ON READER SERVICE CARD



Public Domain/ Shareware

FREE - KIDS SOFTWARE FOR IBM R

TRY USI Get 15/5.25" or ... 6/3.5" disks full of educational software and games

- FREE! Credit cards only!

PAY ONLY \$5.00 SHIPPING **SMC SOFTWARE PUBLISHERS** 619 931-8111

CIRCLE 579 ON READER SERVICE CARD

Real Estate

Property Mgt Plus/91

New version which looks up tenants & posts rent by Tenant Name. Prints., Bank Deposit Slips, Rent Statements, & Automatic Checks. Reports. Late Rents, Vacancies & Expired Leases. Posts Management Fees, Pays Owners & does 1099s. Saves up to 80% of accounting time & is the EASIEST system to use! Realty Software 133 Paseo de Granada

Redondo Beach, CA 90277

2.5 MILLION

ADVERTISE IN

REACH

BUYERS.

213/372-9419 or 801/649-6149

Property Managers

Easy-to-use software:

- · Rental Manager general purpose accting for apartments, storage units, etc. Built-in gen. ledger.
- Condo Manager for community associations. Member payments & charges. Accounting reports.
- Resort Manager for units rented on behalf of many owners. Timeshare, reservations, statements. Coleman Business Systems 3654 Arcadian Drive Castro Valley, CA 94546 510/581-7125

Property Management

Comprehensive software for managing residential, commercial, condos & more. Three versions: Basic PM for owner/manager-\$495, Deluxe PM for professional management-\$1,195, Multi-User with Novell network compatibility-\$2,395. Includes check writing, recurring expenses, G/L, management reporting. Yardi Systems, Inc. 819 Reddick Street Santa Barbara, CA 93103 805/966-3666

Property Management

Since 1978 over 7,000 users of our software have found it comprehensive, flexible & easy to use. We offer systems to manage the following types of properties: COMMERCIAL/ RESIDENTIAL/CONDOMINIUM/ HOME OWNERS ASSOC./MINI-STORAGE FACILITIES. For more information & sample printouts call: Realty Automation, Inc. 11365 Eastshore Drive Hayden Lake, ID 83835 208-772-3259

Property Management

Professional software since 1983. Menu operated - easy to learn and use. We have the system for you and your special needs.

- Residential/Resort rentals
- Commercial/Office Park rentals
- Motels *RV Parks *Campgrounds
- Accounting for Condos and HOAs Call or write for information packet

and demo diskette. BOCAR Systems, Inc. 4837 Swift Rd., Ste. 211 Sarasota, FL 34231

- Condominium/Time Share rentals

813-922-7050

Property Management

Rental-Ease. State of the art software. Extremely fast and easy to learn and use. Everything is included: tenant tracking, repairs and maintenance. income and expense, check writing and recurring bills. No extra modules to buy. The ultimate in property management, \$695 complete. Free brochure, Demo \$10. Strategic Office Systems 688 North 500 West #61 Mt. Pleasant, UT 84647

800/942-6784 or 801/462-2130

Security



PROGRAM \$\$\$'s!

Since 1986, companies worldwide have been choosing Az-Tech security products. If you demand the strongest protection available. why not choose one of these proven leaders'

- EVERLOCK Copy Protection EVERLOCK Software Security
- EVERKEY II "The Lock"

For IBM and Compatibles. 30 day money back guarantee Free info and demo disk available



Az-Tech Software, Inc. AZ 201 East Franklin, Ste. 11 Richmond, MO 64085

0644 (816) 776-2700 FAX (816) 776-8398 (800) 227-0644

CIRCLE 593 ON READER SERVICE CARD

Sports

BALLCARDS!TM

Professionally developed IBM/Tandy/ compatible software for all sports cards! Simple to use inventory system including FREE data with current values!

- Over 200 user definables
- Unlimited reports
- 3 FREE utility programs SPECIAL: Purchase BALLCARDS direct and \$AVE only \$39.95 + \$3.00 shipping. Call 1-800-473-3137 [Dealer inquiries welcome] BOB-KIT Software Company P.O. Box 13717 Dept . 1 Detroit, MI 48213 313-372-2669

Statistics



The Standard for Survey & Marketing Research Software.

A comprehensive PC package for questionnaire design, sampling, data management, CRT and telephone interviewing, statistical analyses and presentation quality graphics. Free brochure.

StatPac Inc. SalRc 3814 Lyndale Ave. 5. Minneapolis, MN 55409

Tel: (612) 822-8252 Fax: (612) 822-1708

Europe Periternalia, Alken, Belgium Tel: (32) 11 313754 Fax: (32) 11 591100

Hearne Marketing Software Pty. Lt., Melbourne Tel: (03) 866 1766 Fax: (03) 866 3318

CIRCLE 586 ON READER SERVICE CARD

NCSS 5.x Series - \$125

Easy-to-use menus & spread sheet. Multiple regression. T-tests. ANOVA (up to 10 factors, rep. measures, covariance). Forecasting, Factor, cluster & discriminant analysis. Nonparametrics. Cross Tabulation. Graphics: histograms, box, scatter, etc. Reads ASCII/Lotus. Many new add-on modules. NCSS

329 North 1000 East Kaysville, UT 84037 Phone: 801-546-0445 Fax: 801-546-3907

StatPlan IV

Only \$199. Easiest to use statistics program available. Statistics include: curve fitting, crosstabs, correlation, multiple regression, stepwise regression, ANOVA, t-tests, time-series analysis, etc. Graphics with printer/ plotter output. Handles up to 30,000 data points. Interfaces directly with Lotus and ASCII files. Demo \$10. The Futures Group 80 Glastenbury Blvd. Glastonbury, CT 06033 203/633-3501

33% of PC WORLD's subscribers purchase computer products from mail-order firms

In CA: 800-435-7760

The PC World Catalog.

CALL 800-435-7766

Shop The PC World Catalog for fast solutions to your PC needs.

Surveys

The Survey System

Petaluma, CA 94952 707/765-1001

A complete, easy-to-learn package for the entry, editing, processing & presentation of questionnaire data. Produces banner format crosstabs & related tables, statistics (incl. regression) & bar charts. Also codes & reports open-ends. All reports are camera-ready. CRT interviewing options available. Creative Research Systems 15 Lone Oak Ctr., Dept. W

Time Management

Forget Anything?

Personal Reminder System

"The Friendliest Reminder Program Ever

- ADVANCED NOTIFICATION
 CALENDAR/TEXT DISPLAYS
 PAST EVENT DIARY
- NTRODUCTORY OFFER: \$29.95

(908) 272-2827

FREE, 28-DAY TRIAL IBM-PC VERSION AVAILABLE!



Post Office Box 606 • Cranford, NJ 07016 CIRCLE 597 ON READER SERVICE CARD

Training

Utilities

Opt-Tech Sort/Merge 4.0

Extremely fast Sort/Merge program. Run as a DOS command or CALL as a subroutine. Unlimited filesizes, most languages, datatypes & filetypes supported including Btrieve & dBASE. Advanced features include record selection, record reformatting & much more! Call or write for more info. MS-DOS \$149, OS/2, Xenix, Unix \$249. Obt-Tech Data Processing PO Box 678 Zephyr Cove, NV 89448 702/588-3737

COPYWRITE

CopyWrite Removes Copy Protection. No more diskettes, manuals or code wheels. \$75. U.S. 1000's of products copied. Quaid Software Limited 45 Charles St. E. 3rd Fl. Dept. W Toronto, Ontario M4Y 1S2 416/961-8243, FAX 416/961-6448

DOS 5 Memory Kit™

Manassas, VA 22110-2829

703-368-2949 (703-361-8251 fax)

Improved memory management that gives you what DOS 5 left out: load high and convert extended to expanded on 8088 and 80286 PCs (not just 386s), get 64K+ more high DOS memory on 386s, optimize load order, create 32 megabytes expanded memory from disk, load TSRs into expanded/ extended, 30-day guarantee, \$79. Biologic 7950 Blue Gray Ci.

Presents Two New Networking Videos ...

Video Instruction Tools"

A User's Guide to Netware

1 VHS tape, 90 pg. workbook, Run Time 112 min.

\$69500

The Administrator's Guide to **Netware Customization**

2 VHS tapes, 140 pg. workbook, Run Time 213 min.

\$89500

- Halverson Associates, Inc.

1313 Newburgh Road, Westland, MI 48185 • (313) 729-0325 • (313) 729-2424 FAX

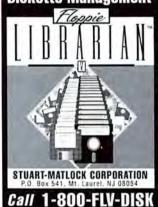
FOR PRODUCT LISTING CALL 1-800-537-1641

CIRCLE 520 ON READER SERVICE CARD

Control Your Printer

Set the configuration of your laser or dot-matrix printer using simple point & shoot menus. Change from elite to condensed, landscape to portrait, letter to legal, and more, in ONE step. Calls directly from within your software using Hot Keys (TSR), \$29. Basys Corporation 830 West Main Street Lake Zurich, IL 60047 708/438-5593





REMOVE HARDWARE LOCKS TO

Protect your investment!

Don't wait for your lock to get lost stolen or fall and render your program useless costing you \$\$\$\$.

Our SAFEKEY'S are quaranteed to unlock the following programs:

MaxRoute Pads2000 Tango PCB MasterCam Pads PC8 PCAD MicroStation Cadkey & others

Only \$399 plus S&H (609) 390-2799 IMAGINE THAT

CIRCLE 437 ON READER SERVICE CARD

BUY WITH CONFIDENCE!



24 Hour Turnaround

Quality Toner Cartridge Remanufacturing

- · 20% More Toner/Darker Print
- · 100% Guaranteed
- · We Buy Empties

1-800-635-6264

Nu-Charge Graphics 3192 Atlanta Hwy Suite 365 Athens, GA 30606 Shipping Included

\$39.95

CIRCLE 494 ON READER SERVICE CARD



CALL TODAY!

Duane Hampson East Coast Representative

1-800-435-7766

Look for PC Books nationwide at: B. DALTON BARNES & NOBLE BOOKSTOP/ BOOKSTAR CROWN SOFTWARE ETC.

WALDENBOOKS ALASKA BOOK CACHE All locations. including Anchorage BAKER AND BAKER BOOKSELLIKS Fairbanks BIG CITY BOOKS

WALDENSOFTWARE

NO. CALIFORNIA CAPITOLA BOOK CAFE Capitola

COMPUTER LITERACY Cupertino San Jose Sunnyvale GAYLE'S BOOKS Davis

National

Bestseller!

H

Windows 3 Secrets

WINDOWS 3 SECRETS

InfoWorld Windows column-

configuration tips, & 36 top

ist reveals undocumented

features & workarounds,

Windows programs.

LICD BOOKSTORE

Davis

STANFORD

BOOKSTORE

Palo Alto

Stanford

BOOKS

SHOPS

BOOKS

SO.

AARDVARK

San Francisco

FOLEY'S BOOKS

San Francisco

FRANCISCAN

San Francisco

COPPERFIELD'S

Santa Rosa

HUNTLEY BOOKSTORE

UCLA

BOOKSTORE

\$39.95 US/\$52.95 Canada,

CALL TO

YALE CO-OP New Haven BOOKS UNLIMITED Rocky Hill U CONN CO-OF Storrs

> DISTRICT OF COLUMBIA REITER'S SCIENTIFIC & PROFESSIONAL Books REPRINT BOOK SHOP

> > TROUER FLORIDA LIBERTIES Boca Raton KINGSLEY'S Sarasota WHITE'S Orlando

MARVIAND SIDNEY KRAMER BOOKS Rockville MARYLAND BOOK EXCHANGE College Park

MASSACHUSETTS WORDS WORD Cambridge CHARLESBANK AT BU BROOKLINE BOOKSMITH Brookline BARDLARI BOOKS Cambridge OUANTUM BOOKS Cambridge RAKEP ROOKS New Bedford

Boston MICHIGAN METRO NEWS CENTER Birmingham Book Worth Grand Rapids LITTLE PROFESSOR BOOK CENTER Dearborn

THE OPEN BOOK

WATERSTONE'S

Westboro

NEW JERSEY McGraw Han Hightstown VILLAGE COMP. & SOFTWARE Cedar Knolls SIMPLEX COMUTER, CENTER Kenilworth

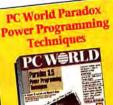
OHO STATE UNIVERSITY Columbus Books & Co. Dayton WILKIE'S SOUTH Dayton

PC World 1-2-3 for Windows Complete Handbook PCWeltin



Definitive reference by two 1-2-3 experts. FREE Quick Reference booklet included. \$29.95 US/\$36.95 Canada, 704 Pgs

PRNT BOOKSTORE/INTOMAKT Dallas SAM HOUSTON BOOK SHOP Houston



Nationa

Bestseller

Critically acclaimed-your only Paradox bible to PAL & advanced techniques. With disk of programs.

\$39.95 US/\$52.95 Canada, 784 Pages, 3 1/2' disk

BRITISH COLUMBIA

UNIHALI COMPLTER BOOKS Vancouver Granville Book Co. Vancouver SULCONNECTIONS BOOKS Vancouver BOLEN BOOKS

NOVA SCOTIA THE BOOK CO. ENTITLEMENT Halifax

ONTARIO COLES BOOK STORES

(all locations) LICHTMAN'S STORES Toronto (5 locations) Thornhill THE BOOK COMPANY Ottawa Odyssey Comp. & Business Ottawa Albert Britnell Toronto Books For Business Toronto World's Biggest BOOKSTORE

Toronto

831 Pages, Two 5 1/4" disks DOS For Dummies Official XTree

PC World WordPerfect for Windows



Definitive guide to the newest WordPerfect, FREE Quick Reference booklet included. \$29.95 US/\$36.95 Canada 704 Pages

A CLEAN WELL LIGHTED PLACE Cupertino THE BOOKSMITH San Francisco BOOKSHOP SANTA CRUZ Santa Cruz BOOKSELLERS Campbell STACEY'S BOOKSTORE Cupertino Modesto Palo Alto San Francisco (all locations) TOWER BOOKS Chico Citrus Heights Concord Mountain View Sacramento (all locations)

San Mateo

Concord

San Jose

San Mateo

San Rafael

Berkeley

Copy's Books

San Francisco

WHOLE EARTH ACCESS

Los Angeles USC TROIAN BOOKSTORE Los Angeles OPAMP TECHNICAL BOOKS Los Angeles VROMAN'S Pasadena SAN DIEGO TECHNICAL BOOKS San Diego University Bookstone San Diego UNIVERSITY BOOKSTORE

La Jolla

COLORADO UNIVERSITY BOOKSTORE Greeley TATTERED COVER BOOKSTORE Denver COLORADO BOOK STORE Boulder

CONNECTICUT HUNTINGTON'S BOOKSTORE Hartford R.I. JULIA BOOKSELLERS

GEORGIA Oxford BOOKSTORE

Atlanta DOUGLASVILLE BOOKS Douglasville MICRO CENTER Marietta

HAWAII HONOLULU BOOK SHOPS Honolulu

ILLINOIS PAGES FOR ALL AGES Champaign 5711 STREET BOOKS Chicago Kroch's &

BRENTANO'S Chicago CALIFORNIA READMORE BOOKWORLD Rock Island BOOKWORLD III Rockford BOOK CENTER/ ILLINI UNION

Urbana LORA & WALLY GRICE Woodstock BOOKS ON THE SOUARE Woodstock

UNIVERSITY OF IOWA lowa City

INDIANA HORIZON BOOKS Indianapolis BOOK CORNER Bloomington BOOK WORLD Mishawaka

Muncie

KANSAS BOSSBOARS Hutchinson University Book Store Manhattan

BALL STATE UNIVERSITY

HARROUR BOOKS

PC World DOS 5 Complete Handbook



Master the new DOS quickly and easily. FREE with purchase: Norton Commander Special Edition disk! \$29.95 US/\$39.95 Canada. 696 Pages, 5 1/4" disk

> YOUNG & WEISHANS Flint BOOKWORM EASTERDOK MALL Grand Rapids MACGREGOR NEWS Mt. Pleasant O'NEILL & AUSTIN Rochester Hills FIRESIDE BONASAOR Rochester Hills JAMES LUNDBERG BOOKSTORE Big Rapids MINNESOTA

BAXTER BOOKS Minneapolis MAVERICK BOOKSTORE Mankuto ODEGARD BOOKS SAINT PALL St. Paul

NEBRASKA NEBRASKA BOOKSTORE Lincoln University Bexistore Lincoln

NEW HAMPSHIRE Hanover

NEW YORK



NORTH CAROLINA ATTICUS BOOS Greensboro NEWS 'N NOVELS

Greensboro оню

WILKIES UNIVERSITY SHOPPES Fairborn Wif & WISDOM Beachwood Rocky River

MICRO CENTER Columbia Mayfield Heights Westerville

OREGON

The no-nonsense introduc-

guide; covers through DOS 5.

\$16.95 US/\$21.95 Canada, 224 Pgs

tion & problem solving

OREGON STATE LINIV. Corvallis BOOK MARK Eugene POWELL'S BOOKSTORE Beaverton.
POWELL'S TECHNICAL BOOKS Portland REED COLLEGE Portland

PENNSLYVANIA THE BOOK STORE Philadelphia THE BOOK CENTER Fittsburgh Business & Computers Willow Grove

TENNESSEE ZIMMERMAN'S BOOKS Johnson City BOOKWORLD Nashville CAMPLS BOOKSTORE

UNIVERSITY CO-OF Austin BOOKSTOP All locations including Austin TAYLORS TECHNICAL Dallas (all National locations) Ft. Worth Bestseller I.A. MAIORS TECH BOOKS Houston

ITAH BYU BOXISTORE Provo

Only official guide to all versions of XTree hard disk software! National bestseller. \$15.95 US/\$21.95 Canada, 292 Pgs

MS-DOS & Hard Disk

Companion

WASHINGTON TOWER BOOKS

Bellevue Seattle University Bookstore Bellevue ELLIOTT BAY BOOK Seattle UNIVERSITY BOOK STORE

WISCONSIN

Appleton HARRY W. SCHWARTZ Milwaukee

CANADA ALBERTA

THE BOOK COMPANY Calgary CALGARY COMPLITER BOXIES

Calgary AUDREY'S BOOKS Edmonton GREENWOOD'S BOOKSHOPPE Edmonton SOFTWARE HOUSE (WEST)

UNIVERSITY OF TORONTO Toronto UNIVERSITY OF WATERLOO Waterloo

QUEBEC

CAMPLOT-INFO COMPUTER Montreal ROSWELL COMPLIER BOXISS

SASKATCHEWAN BOOK & BRIER PATCH



IDG BOOKS WORLDWIDE 155 BOVET ROAD, SUITE 610 SAN MATEO, CA 94402 (415) 358-1261

Buy Me At These Locations Or Call 1-800-762-2974

Ask for IDG Books, BK=PCT2. Phone orders 9-5 PST. You can also call IDG Books at (415) 358-1261 (9-5 PST) to order direct. Circle 121 on reader service card

NewWave for Windows. Never has \$89 done so much for your organization.

The premier desktop manager for Windows that does a lot more for your organization. Now at a price that's a lot less than what you'd expect. Take a look at all you get:

View

Settings

Action Edit Objects

Icons: NewWave turns all of your existing DOS and Windows programs and files into icons for an easier-to-use desktop. Files can have 32 character names. Easily move files around the desktop by "dragging and dropping."

File Cabinet: On your real desk are documents in folders. Your folders are in a file cabinet. NewWave organizes your PC desktop the same way – by project with folder icons, and with a file cabinet for storing folders.

Folders: Finally, you can file your spreadsheet, word processor and / graphics documents together by project, for easy access.

Launch & Load: Just click on an iconboth the file and it's program open / simultaneously—NewWave has linked them together automatically. This means you no longer need to understand the Windows program and file managers to get your work done.

The Work Group Library makes it easier for you to share information with co-workers. We've done away with network menus and DOS commands, so you can focus on what you want to do—to share information with colleagues as you work together on the same project. To share text, graphics, and even spreadsheets, simply drag the file icon onto the server icon and your document is immediately available to others on your network. NewWave will track revisions, as well. So an entire group can work on your project and you will know when data has been changed and who has changed it. Welcome to document sharing, the easy way; the NewWave way.

Special Projects (Folder) is easy to Action Edit Objects View tand and Help e through the Indeed, it is a ne HE which m the tudy Results | Test Results | DOS LETUS 123 Special Projects otic mainframe Advantages will be many. Minimal training is required and wholesalers who have been exposed to NewWave at wildly enthusiastic ·Body Text 🕒 🚨 🚨 🗳 Pg NewWave's Agent brings automation to Windows. Let "The Agent" watch you complete a task just once, like the

NewWave

Style

Task Help

Study Results (Amí Pro)

Frame

Tools

Task

Action Edit Objects View

Page

NewWave's Agent brings automation to Windows. Let "The Agent" watch you complete a task just once, like the monthly update of a budget or sales report, and he'll complete the same job for you again and again using your existing software applications. You can even automate "The Agent" to work across applications and networks to gather the information you need. And he's far easier to set up than the Windows' macro-recorder—because he remembers your steps while you execute them and allows you to edit right then or make changes later. By using his calendar, you can schedule work for him days or weeks in advance. Just think of how much extra time you'll save by turning "The Agent" loose on all of your recurring tasks.

Put NewWave to work for your organization and find out how easy it is to get more done. Now it's only \$89. At a price like this it pays to be organized.

Call 1-800-848-WAVE ext. 2B and get NewWave for only \$89* (suggested retail price \$195). But only if you call before 1/30/92. *Limited time offer. Limit one per customer.



NewWave for Windows. We've made a great idea even better.



Reader

PC W\RLD

ADVERTISING SALES

Richard J. Marino Associate Publisher Sales, Marketing, & Research

Asst. to the Associate Publisher Colette Cornish

Bernard J. Theobald, Jr. Vice President/Group Advertising Director

Advertising Director for Market Development Jeff Edman (415/243-0500)

Western Advertising Director Sharon Van Leuven (415/243-0500)

Eastern Advertising Manager Bob Ostrow (508/820-0440)

Mid-Atlantic/Manhattan John Grogan, Northeast Account Manager (201/587-0090)

Midwest/Chicago Mark Taussig, Midwest Account Manager (708/827-4477)

New England/Ohio/Michigan/ Western Pennsylvania Michael Welsh-Carroll, Account Manager (508/820-0440)

Northern California/San Francisco

Ellen Levin, Account Manager (415/243-0500)

Northwest

Greg Mason, Account Manager (415/243-0500)

San Diego/Southwest/Orange County

Renee Callahan, Account Manager (714/250-8081)

San Jose

Susan Simmons, Account Manager (415/243-0500)

Southeast/Atlanta Judy Sutter, Senior Account Manager (404/394-0758)

Southern California/Los Angeles

Denise Pilnak, Account Manager (213/312-8008)

Texas

Harvey Diamond, Account Manager (214/233-3492) PC World Catalog

Catalog Advertising Manager Sandie Wade Eastern Account Manager Duane Hampson Catalog Coordinating Manager Elizabeth Maffly (800/435-7760 in California, 800/435-7766 outside California)

PC World Action Cards

Kevin Normandeau Telemarketing Representative (508/820-8113)

Circulation

Vice President, Circulation Heather Martin Asst. to the Vice President Anna Mercaldi

Subscription Director
David Ball
List Acquisition Manager
Francesca Davies
Circulation Promotion Manager
Ellen DiMatteo
Circulation Business Manager
Noël White
Circulation Assistants
David Cobb, Jane Kratochvil
Subscriber Service
Katherine McCarthy

Single Copy Sales Vice President Gerald Kemmet Single Copy Sales Director Linda Ruth Single Copy Sales Manager Dinny Zimmerman

Marketing & Research

Director of Marketing
Communications
Jay McSherry
Marketing Manager
Bruce Frymire
Sales Promotion Director
Nola Armijo
Reprints Coordinator Scott Shores
Administrative Assistant
Sandy Wong

Production

Director of Manufacturing
Linda Manes
Production Manager Laura Smith
Advertising Billing & Booking
Coordinator Kevin Octavio
Advertising Traffic Coordinator
Paul O'Neil

Administration

Director of Finance Vicki Peilen Human Resources Director Richard Willoughby Asst. to the Publisher
Kelly Milan
Director of Information Services
Walter J. Clegg
Corporate Business Manager
Christina Spence
Accounting/Operations Manager
Pat Murphy
Accounting/Facilities Manager
Michelle Reyes
Financial Analyst
Madeleine Buckingham
Human Resources Administrator
Thalia Ohara
Human Resources Assistant
Maria Chico

ADVERTISER INDEX A TO Z

Get more information—circle the appropriate number on the reader service card.

	N. 7 3 5 10 30
Read	
Num	
189	ACCEL 25
3	
54	Acer America 212-213
20	Advanced Computer Products326
45	American Power Conversion 4
	American Small Business Computers
_	Anthro Corp
8	Arlington Computer Products
43	ASP Computer Products 243
	AST Research191
	Attitash Software 262
	Automated Computer Technology
1	Blackship Computer Systems
57	Brown-Wagh Publishing 140-141
215	, 보고 등 가능이 되고 있는 그리고 있다. 그리고 있는 그리고 있는 것이 없는 것이 없다.
88	Bureau of Electronic Publishing
64	CAD-ONE Computer Design Systems
21	Caere Corp
	Clarion Software 44
	Colorado Memory Systems 16
-	COMPAQ Computer Corp
33	CompuServe
	Computer Associates 12
	Computer Associates 144-145
	Computer Discount Warehouse
63	Computer Spectrum

	nber	Page Number
181	Concentric Data Systems	142
48	Corel Systems Corp	82
56	Cougar Mountain Software .	248
62	Crosstalk	123
	Crosstalk	
53	CTX International	. 29
-	Curtis	9
	DaeEasy, Inc	
	Dell Computer Corp	
	Dell Computer Corp	
	DeScribe, Inc 2490	
	Dow Jones	
	Eikon Systems	
_	Epson	38-39
100	Fast Micro 3	08-311
71	Fifth Generation	26-27
	First Source International	
_	Ford Motor Co 68	A-68B
148	Funk Software	279
_	Gateway 2000	49-53
110	Great American Software	
79	Haventree Software Ltd	36
	Hayes	60
111	Helix Software	161
114	Hewlett Packard	10-11
90	Hewlett Packard 1	34-135
102		
_	TACHIOLO Y DOTTOR TO A	
275		
	IDG Books	
109	Intel	14-15
141	Kenosha Computer Center	316
÷	L A Trade	317
123	Laser Press & Graphics	323
124	Leading Edge	., 206
128		
127	Logitech	33
-	Lotus Development Corp	
149	Lucas Management Systems	165
	MacFriends	
	Mainlan Inc	
	Marmand Floatronias	

217 Merritt Computer Products 86

179 Micrografx 172-173

160 MicroProse 106

Microsoft 30-31, 136-139

162 Microtek......259

PC World is a publication of International Data Group, the world's largest publisher of computer-related information. International Data Group publishes more than 130 computer publications in more than 40 countries. Nineteen million people read one or more International Data Group publishes more than 130 computerworld Australia. Australia and Computerworld Australia and Computerworld Australia and Sala's Asian Computerworld; AUSTRALIA's Australia Macworld, AUSTRALIA's Computerworld Australia and Computerworld Danmark, Macworld Danmark, PC World Danmark, Unix World; FINLAND's Mikro PC, Tietoviikko; FRANCE's Distributique, Info PC, Le Monde Informatique, Télécoms International; HUNGARY's Computerworld SZT, Mikrovild;; INDIA's Computers & Computers & Computers Weekly; ITALY's Computerworld Italia, PC World Italia; JAPAN's Computerworld Japan, InfoWorld, Publish!; KOREA's Hi-Tech Information/Computerworld; MEXICO's Computerworld Mexica, PC Journal; THE NETHERIANDS' Amiga World, Computerworld Netherlands, PC World Benelux; NEW ZEALAND's Computerworld Norge, PC World Norge, PEOPLE's REPUBLIC OF CHINA's China Computerworld, MikroDatorn, PCUNyheterna, Svenska PC World; Amiga World, CIMWorld, Computerworld Taiwan, PC World España; SWEDEN's Computer Sweden, Mac World, MikroDatorn, PCUNyheterna, Svenska PC World; SWITZERLAND's Computerworld Schweiz; TAIWAN's Computerworld, PC Business World; UNITED STATES' Amiga World, Cl. Computerworld, Digital NEWS, Federal Computer Week, GameFro, inCider/A+, InfoWorld, International Custom Publishing, Macworld, Network World, PC Surines, PC World USSR; VENEZULLA's Computerworld Venezuela, Micro Computerworld, World, Computerworld, Neurona; USSR's Manager, Network, PC Express, PC World USSR; VENEZULLA's Computerworld Venezuela, Micro Computerworld, World, Computerworld, Neurona; USSR's Manager, Network, PC Express, PC World USSR; VENEZULLA's Computerworld Venezuela, Micro Comp

Read Serv Num	Ice	Poge Number	ADVERTISER INDEX BY PRODUCT CATEGORY
172	MIS Computer Systems	328	PRODUCT CATEGORY
	Momenta1		t more information—circle the
7	M-USA Business Systems		propriate number on the read-
	M-USA Business Systems	are a	service card.
87	NEC Technologies	C2-P1	
3	NEC Technologies	19-22 Read	
	NEC Technologies	187 Servi	
	NEC Technologies	201	
	NewGen Systems	257	HARDWARE
	NewGen Systems	257	Communications
N	Rad	184	Crosstalk
N	orthgate Computer		Hayes60
	ystems	202	U.S. Robotics
	ific Data Products	111	Zero 1 Networking 143C
P	aradise Computer roducts		Computers
	Patton & Patton Software	3	Acer America
	Corp	24	AST Research
	PC Brand	4-7	Automated Computer
	PC Connection 2	14-219	Technology143A-143B
	PC Power & Cooling		Blackship Computer
	Peachtree Software		Systems
	PKWARE, Inc		Corp
	Power Up! Software		Dell Computer Corp C5-C8
	Power Up! Software	-, . D1 74	Dell Computer Corp 62-67
	ower Up! Software	58	Fast Micro 308-311
	lower Up! Software	59	Gateway 2000 49-53
	easonable Solutions 3:	109	Intel14-15
	eference Software	172	MIS Computer Systems 328
	se Electronics	163	Momenta
	se Hill Systems 3	203	NEC Technologies 19-22
	ipo	233 189	ACCEL 25
	re-It		Northgate Computer
	ware Publishing		Systems
Con	rp 46-47, 131,133, 14	16, 276	PC Brand
	oftware Toolworks	42,44	Zenith Data Systems 244-245
	oftware Toolworks	202	Zeos International.
	Sony 10	08-109	Ltd 74-75, 78-81
	SS, Inc	7.77	Zeos International, Ltd 93-105
	tarware Publishing		Connectivity
	Symantec/Norton Utilities	43	ASP Computer Products 243
W 6	ysgen Inc	213	Buffalo Products, Inc 71
	ystems Compatibility Corp.	157	Rose Electronics 170
	exas Instruments	323	Western Telematic90
	iger Software 89,1	98	Desktop Publishing
	TimeSlips Corp		Pacific Data Products 171
	imeworks, Inc		Input Devices
	bshiba	34-235	Logitech
	J.S. Robotics		Microsoft 30-31
	alitek	188	Laptop/Notebook
	Ventura Software, Inc	85 90	Hewlett Packard 134-135
	entura Software, Inc	87 124	Leading Edge 206
	stern Telematic	90 163	Momenta
	ınte	116 205	NEC Technologies 201
X	Tree Company	102	PC Brand
Z	enith Data Systems 2	44-240	Toshiba
	eos International,	F 100 100 100 100 100 100 100 100 100 10	Zeos International, Ltd
	td	224	Zeos International, Ltd 93-105
	eos International, Ltd	53-105	Local Area Networks
44	ero 1 Networking	216	Buffalo Products, Inc
	Soft Corp	111.00	Mainlan Inc 209
-	man south in court of	100	Rose Electronics 170

ADVERTISER INDEX BY PRODUCT CATEGORY

Read	
Servi Num	
	HARDWARE
	Communications
62	Crosstalk
	Hayes 6
293	U.S. Robotics
318	Zero 1 Networking 1430
3	Acer America 3
10	AST Research 19
30	Automated Computer Technology143A-1431
1	Blackship Computer Systems
	COMPAQ Computer Corp
	Dell Computer Corp C5-C
	Dell Computer Corp 62-6
100	Fast Micro 308-31
-	Gateway 2000 49-5
109	Intel14-1
172	
163	
203	
189	
191	Systems
198	
290	Rose Hill Systems 324-32 Zenith Data Systems 244-24
	Zeos International,
	Ltd 74-75, 78-8
324	Zeos International, Ltd 93-10
43	ASP Computer Products 24
215	
239	
325	
	Desktop Publishing
_	Pacific Data Products 17
	Input Devices
	Logitech3
	Microsoft
	Laptop/Notebook
	Hewlett Packard 134-13
	Leading Edge 20
	Momenta
205	NEC Technologies 20
198	PC Brand 4-
	Toshiba
	Zeos International, Ltd
	Zeos International, Ltd 93-10
	Local Area Networks
	Buffalo Products, Inc 7
	Malulan Inc. 000

Serv	lce Page ber Number
325	Western Telematic90
318	Zero 1 Networking 143C
	Monitors
	Acer America
53	CTX International 29
187	NEC Technologies C2-P1
255	Sampo 233
	MultiMedia
57	Brown-Wagh Publishing 140-141
	Music
145	Media Vision 120
	Power/Protection
45	American Power Conversion45
208	PC Power & Cooling 73
	Printers/Plotters
-	Epson
114	Hewlett Packard 10-11
123	Laser Press & Graphics 323
-	MacFriends 280
158	The state of the s
	NewGen Systems 257
	Texas Instruments 157
317	Xante
	Scanners/Digitizers
	Caere Corp
	Hewlett Packard 224-225
162	Microtek
	Storage/Backup Devices
	Colorado Memory Systems 16
	Liberty Systems 8
	Maynard Electronics 250
188	
	Sony 108-109
	Sysgen Inc
307	Valitek 188
	Systems
	MacFriends 280
189	Nobel, Inc
	SOFTWARE
	Accounting/Financial
29	Computer Associates 12
	Cougar Mountain Software 248
	DacEasy, Inc
	Great American Software 263
	M-USA Business Systems 205
	M-USA Business Systems 305
	Peachtree Software 258
	CAD/CAM
306	American Small Business
	Computers
	Communications
84	Crosstalk 125
	Database Management
36	Clarion Software 44
	Computer Associates 144-145
	Concentric Data Systems 142
	Desktop Publishing
	Power Up! Software 56
	Timeworks, Inc 249
	Ventura Software, Inc
34,5	

Serv	lce Page	Ser	vice nber	Page Number
225	Western Tolemetic 9		P.downston	
	Western Telematic		Education	
318	Zero 1 Networking 1430	88	Bureau of Electronic Publishing	219
	Monitors	100	NEC Technologies.	
	Acer America	0/0	Software Toolworks	
	CTX International 2	1 8.5.	Software Toolworks.	
	NEC Technologies C2-P	201		
255	Sampo	281	Sony	
	MultiMedia		Electronic Mail	
57	Brown-Wagh Publishing 140-14	-	Lotus Development Corp	104 105
	Music			154-155
145	Media Vision 12)	Entertainment	
	Power/Protection		MicroProse	000000000000000000000000000000000000000
45	American Power Conversion4		MicroProse	
	PC Power & Cooling	131	Starware Publishing	312
200	Printers/Plotters		Fontware	
		321	Z Soft Corp.,	
	Epson		Graphics	
	Hewlett Packard 10-1	48	Corel Systems Corp.	
	Laser Press & Graphics 32	82	Eikon Systems	
-		183	Micrografx	
158	NewGen Systems 25		Micrografx	
	NewGen Systems 25	210	Power Up! Software	
295	Texas Instruments 15		Software Publishing	
317	Xante		A CONTRACTOR OF THE PARTY OF TH	The second second
	Scanners/Digitizers		Timeworks, Inc	
21	Caere Corp	320	Z Soft Corp	
	Hewlett Packard 224-22		Integrated Soft	
	Microtek	_	Hewlett Packard	300
101	Storage/Backup Devices		Local Area Netv	work
		. 79	Haventree Software	Ltd 36
	Colorado Memory Systems1	156	Mainlan Inc	209
	Liberty Systems		Management	
	Maynard Electronics 25		Bureau of Electronic	
	NEC Technologies 18		Publishing	312
	Sony 108-10		Helix Software	161
	Sysgen Inc	100	MicroBiz Corp	331
307	Valitek	3	MultiMedia	
	Systems	57	Brown-Wagh Publish	ing 140-141
-	MacFriends 28)	Operating Syste	
189	Nobel, Inc	5	Microsoft	
			Presentation G	
	SOFTWARE			apnics
	Accounting/Financial	11/2	Software Publishing Corp	131 133
29	Computer Associates 1	2	Project Manage	
56	Cougar Mountain Software 24	3		meni
94	DacEasy, Inc	149	Lucas Management Systems	
	Great American Software 26		Patton & Patton Soft	
7	M-USA Business Systems 20		Corp	
	M-USA Business Systems 30	28	TimeSlips Corp	28
	Peachtree Software25		Scheduling Soft	
	CAD/CAM		Power Up! Software	
704		1.0	Shareware	
300	American Small Business Computers	1 100	Company of the state of	919
	Communications	1,34	Micro-Tech USA	
04	Crosstalk		Reasonable Solutions	
04		,	Spreadsheets/T	emplates/
	Database Management		Lotus Development	
	Clarion Software 4		Corp	192-193
	Computer Associates 144-14		Statistics	
181	Concentric Data Systems 14	252	SPSS, Inc.	180
	Desktop Publishing			
	Power Up! Software 5	0/0	Taxware	
287	Timeworks, Inc	260	Timeworks, Inc	68
305	Ventura Software, Inc 8		Utlities	40.00
308	Ventura Software, Inc 8		Fifth Generation	
320	Z Soft Corp	148	Funk Software	279

PRODUCT INFORMATION COMPANY ADDRESS Circle the number corresponding to the CITY STATE ZIP (required)

product or product category you need to know more about. Manufacturers will rush product information directly to you.

INFORMATION FROM ADVERTISERS

1 21 41 61	22 42 62	3 23 43 63	4 24 44 64	5 25 45 65	6 26 46 66	7 27 47 67	8 28 48 68	9 29 49 69	50	11 31 51 71	12 32 52 72	13 33 53 73	14 34 54 74	15 35 55 75			18 38 58 78	19 39 59 79	20 40 60 80
81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	95	97	98	99	100
101 121 141 161 181	102 122 142 162 182	103 123 143 163 183	124 144 164	125 145 165	126 146 166	127 147 167	128 148 168	129 149 169	130 150 170	131 151 171	112 132 152 172 192	133 153 173	134 154 174	135 155 175	136 156 176	137 157 177	138 158 176	139 159 179	120 140 160 160 200
201 221 241 261 281	222 242 262	223 243 263	224 244 264	225 245 265	226 246 266	227 247 267	228 248 268	229 249 269	230 250 270	231 251 271	212 232 252 272 292	233 253 273	234 254 274	235 255 275	236 256 276	237 257 277	238 258 278	239 259 279	240 260 280
	302 322 342	323	324	325	326	327	328	329	330		312 332								

TITLE

CATALOG SECTION

401	402	403	404	405	406	407	408	409	410	411	412	413	414	415	416	417	418	419	420
																		439	
																		459	
																		479	
481	482	483	484	485	486	487	488	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	555	556	557	558	559	560
561	562	563	564	565	566	567	568	569	570	571	572	573	574	575	576	577	578	579	580
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	600
		Che	ock	this	box	to	ryo	ur s	ubs	crip	otio	n to	PC	WC	DRL	D. Y	ou	will	be

billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

601											612								
641	642	643	644	645	646	647	648	649	650	651	652	653	654	655	656	657	658	659	660
											672								
	722 742 762	723 743 763	724 744 764	725 745 765	726 746 766	727 747 767	728 748 768	729 749 769	730 750 770	731 751 771	712 732 752 772 792	733 753 773	734 754 774	735 755 775	736 756 776	737 757 777	738 758 778	739 759 779	740 760 780
801 821 841 861 881	802 822 842 862	803 823 843 863	804 824 844 864	805 825 845 865	806 826 846 866	807 827 847 857	808 828 848 868	809 829 849 869	810 830 850 870	811 831 851 871	812 832 852 872 892	813 833 853 873	814 834 854 874	815 835 855 875	816 836 856 876	817 837 857 877	818 838 858 878	819 839 859 879	820 840 860 880

PRODUCT CATEGORY INFORMATION

For Information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 918 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950

Advertised Products

Computers	951	Network Products
Data Management (PIMs)	952	Operating Environments
Desktop Pub /Graphic Software	953	Printers
Financial/Accounting	954	Scanners
Memory Boards	955	Video Boards
Monitors	956	Word Processing

December 1991

essing Expires 4/9/92

N1

Free Product Information



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES

958 959

960 961

BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE



Product Information Center P.O. Box 5330 Pittsfield, MA 01203-9871









BUSINESS REPLY MAIL

FIRST CLASS PERMIT NO. 758 PITTSFIELD, MA

POSTAGE WILL BE PAID BY ADDRESSEE



Product Information Center P.O. Box 5330 Pittsfield, MA 01203-9871





FREE PRODUCT INFORMATION

PC W\(\beta\)RLD

Circle the number corresponding to the product or product category you need to know more about. Manufacturers will rush product information directly to you.

17.100		
COMPANY		
ADDRESS		
CITY	ŞTATE	ZiP (required)
TITLE	PHONE () -

INFORMATION FROM ADVERTISERS

1	2	3	4	5	-	7	8			-11	12	13	-	15			18	19	20
21	22	23	-	25	-	27			30	31	32	-	-	35			38	39	40
41	42	43	44	45			48		50	51	52						58	59	
61	62	63	64	65			68		70	71	72			1.54	76		78	79	80
81	82	83	84	85	86	87	83	89	90	91	92	93	94	95	96	97	98	99	100
101	102	103	104	105	106	107	108	109	110	111	112	113	114	115	116	117	118	119	120
121	122	123	124	125	126	127	128	129	130	131	132	133	134	135	136	137	138	139	140
141	142	143	144	145	146	147					152						158	159	160
161		163		165							172						178		180
181	182	183	164	185	186	187	188	169	190	191	192	193	194	195	196	197	198	199	200
201	202	203	204	205	206	207	208	209	210	211	212	2.3	214	215	216	217	218	219	220
221	222	223	224	225	226	227	228	229	230	231	232	233	234	235	236	237	238	239	240
241	242	243	244	245	246	247	248	249	250	251	252	253	254	255	256	257	258	259	260
261	262	263	264	265	266	267	268	269	270	271	272	273	274	275	276	277	278	279	580
281	282	283	284	285	285	287	288	289	290	291	292	293	294	295	296	297	298	299	300
301	302	303	304	305	306	307	308	309	310	311	312	313	314	315	316	317	318	319	320
321	322	323	324	325	326	327	328	329	330	331	332	333	334	335	336	337	338	339	340
241	242	242	244	245	246	247	2.40	240	250										

NAME

CATALOG SECTION

401	402	403	404	405	406	407	403	409	410	411	412	413	414	415	416	417	418	419	420
421	422	423	424	425	426	427	423	429	430	431	432	433	434	435	435	437	438	439	440
441	442	443	444	445	446	447	443	449	450	451	452	453	454	455	456	457	458	459	460
461	462	463	464	465	466	467	463	469	470	471	472	473	474	475	475	477	478	479	480
481	482	483	484	485	486	487	483	489	490	491	492	493	494	495	496	497	498	499	500
501	502	503	504	505	506	507	508	509	510	511	512	513	514	515	516	517	518	519	520
521	522	523	524	525	526	527	528	529	530	531	532	533	534	535	536	537	538	539	540
541	542	543	544	545	546	547	548	549	550	551	552	553	554	558	556	557	558	559	560
																		579	
581	582	583	584	585	586	587	588	589	590	591	592	593	594	595	596	597	598	599	E00
		Ch	eck	this	bo	x fo	r vo	ur	sub	SCI	ptio	n to	PO	W	ORL	DY	/ou	will	be

billed \$19.97 for a 1-year (12-issue) subscription (U.S. only).

PRODUCTS FEATURED IN EDITORIAL

•			• • •		-					_										
	621 641 661	622 642 662	623 643 663	624 644 664	625 645 665	626 646 666	627 647 667	628 648 668	629 649 669	630 650 670	631 651 671	632 652 672	633 653 673	634 654 674	635 655 675	636 656 676	637 657 677	638 658 678	619 639 659 679 699	660 680
	721 741 761	722 742 762	723 743 763	724 744 764	725 745 765	726 746 766	727 747 767	728 748 768	729 749 769	730 750 770	731 751 771	732 752 772	733 753 773	734 754 774	735 755 775	736 756 776	73/ 757 777	738 758 778	719 739 759 779 799	740 760 780
	821 841 861	822 842 862	823 843 863	824 844 864	825 845 865	826 846 866	827 847 867	828 848 868	829 849 869	830 850 870	831 851 871	832 852 872	833 853 873	834 854 874	835 855 875	836 856 876	837 857 877	638 858 878	819 839 859 879 899	840 860 880

PRODUCT CATEGORY INFORMATION

For information on an entire category of products or all of the products mentioned in an article, circle the appropriate number below.

Editorial Features (See Article for Number)

901 902 903 904 905 906 907 908 909 910 911 912 913 914 915 916 917 318 919 920 921 922 923 924 925 926 927 928 929 930 931 932 933 934 935 936 937 938 939 940 941 942 943 944 945 946 947 948 949 950

Advertised Products

Computers	
Data Management (PIMs)	
Desktop Pub / Graphic Software	
Financial/Accounting	
Memory Boards	
Monitors	

951	Network Products	957
952	Operating Environments	958
953	Printers	959
954	Scanners	960
955	Video Boards	96.1
956	Word Processing	962

Quicken Users

Get the best upgrade for only \$1000

Instead of spending \$29.95 for a Quicken upgrade, send us the title page from your Quicken manual along with \$10.00. Then we'll send you a complete version of CashBIZ™... the best home and cash-based business accounting software available for non-accounting people. The true upgrade path for Quicken users.

CashBIZ is the new personal finance software that, according to David Coursey of the Dallas Times Herald, "... has a lot to recommend it to people who need a very low-end checkbook accounting system or those who wish Ouicken had more business features."

CashBIZ is from M-USA, the company you trust. The company who produced the award winning Pacioli 2000, the best selling accounting software ever introduced.

With a suggested retail price of \$49.95 and a 30 day money-back guarantee, you can't afford to pass up this opportunity.

The Best of Both Worlds

CashBIZ is ideal for your personal finances PLUS it has the features necessary to help you run your cash-based business.

You can reconcile checking or any account in minutes; enter manual as well as computer printed checks; control credit cards with instant balance and payment status; and monitor home mortgage and other loan payments to avoid costly late charges.

Managing your cash-based business with CashBIZ is just as easy. Because there are more important things than just paying bills, CashBIZ includes a separate business chart of accounts with up to 30 characters for names; complete invoicing, accounts receivable and accounts payable; plus a full set of financial reports for Cashflow, Balance Sheet, Income Statement, Aging, etc. And you can print to paper or export to spreadsheet, data base, graphics, word processor or tax preparation programs.

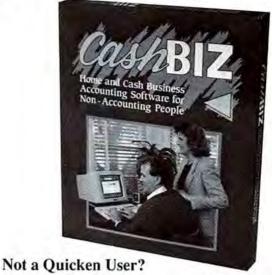
CashBIZ includes a handy Address Book for keeping all your customers, friends, family, etc. in an unlimited number of groups. You'll also enjoy the convenience of the Notepad for basic word processing. It lets you create a letter or memo at any time without exiting, and then return to your original task. And there's an Electronic Calculator which lets you make on-screen calculations and paste the results wherever needed.

Plus, CashBIZ lets you print continuous or laser checks and forms on up to three printers simultaneously.

Here's the best part if you're a Quicken user who's ready to switch. CashBIZ imports all your files (except investment) in addition to using your leftover checks.

So, don't wait. Order today and start enjoying the best home and cash-based business accounting software for nonaccounting people.

© 1991 M-USA Business Systems, Inc. All rights reserved. CashBIZ is a trademark of M-USA Business Systems, Inc. All special offers and specifications subject to change without notice. Quicken is a registered trademark of Intuit Corporation.



If you are using any other personal finance or accounting software, you too can take advantage of this tremendous offer. Just send us the title page from your software manual along with \$10.00 and we will send you a complete CashBIZ.

If you have never used any personal finance or accounting software before, this is your chance to start out right by ordering **CashBIZ** for just \$49.95*.

Discover how managing your finances with CashBIZ can be "frustration free".

Address			
City		State	Zip
Phone No.(
Company Name			
Quicken or other us from your manual.	sers be su	re to inclu	de original title page
No. of Cast	BIZ orde	redx	\$10.00 =
Texas re	esidents a	dd 8.25% s	ales tax =
			Total =
New Users fill this p			
No. of Cash	BIZ orde	redx	\$49.95 =
*Shippi	ng & han	dling (\$7.5	i0 each) =
			Subtotal =
Texas re	sidents a	dd 8.25% s	ales tax =
			Total =
	MC	AmEx	Please specify disk size
Expires			
Signature			
27 07 07 40 4			
Make checks payable	to and n	nan to:	
	44		

Serv Num	ico Poge
212	PKWARE, Inc 48
266	Symantec/Norton Utilities 54
319	XTree Company
	Windows
73	Attitash Software 262
48	Corel Systems Corp 82
	Micrografx
179	Micrografx 172-173
206	Power Up! Software 59
170	Que Software 143D
	Word Processing/Aids
83	DeScribe, Inc 249C-249D
_	Reference Software 179
-	Software Publishing Corp146, 276
277	Systems Compatibility Corp 43
	MISCELLANEOUS
	Computer Accessories
_	Anthro Corp
	Curtis9
217	Merritt Computer Products 86
150	NoRad
	Mail Order
20	Advanced Computer Products326
8	Arlington Computer Products327

Servi Num		Page Number
64	CAD-ONE Computer Design Systems	322
200	Computer Discount Warehouse3	14-315
63	Computer Spectrum	318
78	First Source International	330
_	Gateway 2000	49-53
141	Kenosha Computer Center	316
-	L A Trade	317
123	Laser Press & Graphics	323
154	Micro-Tech USA	313
220	Paradise Computer Products	. 319
_	PC Connection 2	14-219
227	Reasonable Solutions 3	20-321
240	Rose Hill Systems 3	24-325
252	Starware Publishing	312
259	Tiger Software 89,1	11-115
	On-Line Services	
13	CompuServe	129
_	Dow Jones	210
	Other	
_	Ford Motor Co 68	A-68B
	Periodicals/Subscripti	ons
275	IDG 249/	
	IDG Books	
27.	Security	1.00
21	Secure-It	86

STATEMENT OF OWNERSHIP, MANAGEMENT, AND CIRCULATION REQUIRED BY 39 U.S.C. 3685

- 1. PC World Magazine, Pub. No. 07378939
- 2. Date of filing: October 11, 1991
- 3. Published monthly
- 3A. No. of issues published annually: 12
- 38. Annual subscription price: \$29.90
- 4. Known office of publication: 501 Second St. #600, San Francisco, CA 94107
- Complete mailing address of the headquarters of the general business offices of the publishers PC WORLD COMMUNICATIONS, INC., 501 Second St. #600, Son Francisco, CA 94107
- A. The names and addresses of the publisher, editor, and managing editor are Publisher: Patrick Kenealy, PC WORLD COMMUNICATIONS, INC., 501 Second St. #600, San Francisco, CA 94107; Editar: Philip Lemmons, PC WORLD COMMUNICATIONS, INC., 501 Second St. #600, San Francisco, CA 94107; Managing Editor: Steve Fox, PC WORLD COMMUNICATIONS, INC., 501 Second St. #600, San Francisco, CA 94107; Managing Editor: Steve Fox, PC WORLD COMMUNICATIONS, INC., 501 Second St. #600, San Francisco, CA 94107
- 7. The owner is: IDG COMMUNICATIONS, INC., Patrick McGovern, 5 Speen St., Framingham, MA 01701. The names and addresses of stockholders awning or holding 1% or more of the total amount of stock are listed below.
 None.
- 8. There are no known bondholders, mortgages, or other securities.
- 10. Extent and nature of circulation

Average no. capies each issue during preceding 12 months: A. Total no. capies (net press run), 796,416; B. Paid and/or requested circulation 1. Sales through dealers and carriers, street vendors, and counter sales, 110,448; 2. Mail subscription (paid and/or requested), 562,589; C. Total paid and/or requested circulation (sum of 1081 and 1082), 673,037; D. Free distribution by mail, carrier, or other means, samples, complimentary, and other free capies, 7318; E. Total distribution (sum of C and D), 680,355; F. Copies not distributed 1. Office use, left over, unaccounted, spailed after printing, 3731; 2. Return from News Agents, 112,330; G. Total (Sum of E, F1, and F2—should equal net press run shown in A), 796,416.

Actual no. copies of single issue published nearest to filing date: A. Total no. copies (net press run), 762,584; B. Paid and/or requested circulation 1. Sales through dealers and carriers, street vendors, and counter sales, 107,589; 2. Mail subscription (paid and/or requested), 523,521; C. Total paid and/or requested circulation (sum of 1081 and 1082), 631,110; D. Free distribution by mail, carrier, or other means, samples, complimentary, and other free copies, 5100; E. Total distribution (sum of C and D), 636,210; F. Copies not distributed 1. Office use, left over, unaccounted for, spoiled after printing, 3313; 2. Return from News Agents, 123,061; G. Total (sum of E, F1, and F2—should equal net press run shown in A), 762,584.

11. I certify that the statements made by me above are correct and complete. Patrick Kenealy, President & Publisher

PRODUCTS FEATURED IN EDITORIAL

Get more information—circle the appropriate number on the reader service card.

	propriate number on the read- pervice card.
lead ervi luml	ce Page
	Accounting
863	Quicken 5.0, Intuit 117
	Add-On Board
745	Interface, Sealevel Systems 48
859	IBM 50-MHz upgrade, IBM 84
744	Model 232CICC2, B&B Electronics Manufacturing 48
845	Stacker 2.0, Stac Electronics
	Communications
837	LapLink Pro 4.0, Traveling Software
846	Takeover, Takeover Lite; SoftKlone Distributing143
	Computer System
875	Acer 1100/33, Acer America
757	AcerPower 486SX, Acer America
849	AcerPower 500/50, AcerFrame 1000/50, AcerFrame 3000MP50; Acer America
758	ALR BusinessStation 486ASX Model 200-DMA, MPS 486ASX Model 200-5, PowerFlex 486ASX; Advanced Logic Research159
758	ALR BusinessVEISA 486ASX, Advanced Logic Research 150
	ALR BusinessVEISA Array 486750, PowerPro Array VM 486/50 Model VM/420, BusinessStation 486/50 Model 200-DMA; Advanced Logic Research 84
	AST Premium II 486SX/20, AST Research
	Atronics ATI-486/50, Atronics Int'l
853	Austin 486/50 EISA Wintower, Austin Computer Systems 84
	BLK 486SX/20, Blackship Computer Systems 159
	Compaq Deskpro 486/50L Model 120, Compaq Computer 84
	CompuAdd 333T Low Profile, CompuAdd168
	Copam 486SXB-20, Copam USA
855	CUI Advantage 486-50CX, CUI84
800	Computer
856	450SE; Dell Computer 84
857	Dolch P.A.C. 486-50E Portable, Dolch Computer Systems 84
811	Eltech Model 4200, Eltech Research
877	Everex Step 386/33, Everex Systems

801 Everex Step 486SX/20, Tempo

486SX/20; Everex Systems. . . . 152

Everex Step 486/50 Megacube, Tempo Modular 486/50; Everex

Servi Numb	ca	Page Number
878	Gateway 2000 33-MHz 386 C Gateway 2000	Cache,
812	HP Vectra 486s PC Model 13 Hewlett-Packard	20,
813		ics
802	IBM PS/2 Model 90 XP 486 IBM	SX,
879	Leading Edge Model D3/33, Leading Edge Products	
660	Lightning 486/50, 486/50E; Lightning Computers	84
814	Memorex Telex Model 7480, Memorex Telex	159
103	Mitac 4270E, American Mitac	156
851	Mitac 4280i, American Mitac Mitae MPC4000G, American	
880	Mitac	168
825	Momenta Computer, Momenta	
815 816	NEC PowerMate 48SX/20e, Technologies.	NEC
817	Northgate 486SX/20, Northa Computer Systems	rate
881	Northgate Elegance SP 386 Northgate Computer	33,
818	Packard Bell 486SX, Packar Bell	d
826	Maria coloca coloca	
804	Reply Model 32 486SX/20, Reply	
819	Samsung DeskMaster 486S Samsung Information Syste America	20, ms
820	Swan Technologies 486SX, 8 Technologies	Swan
882	Tandon 386/33, Tandon	168
805	Computer	
306	Tri-Star Computer	160
821	Twinhead Superset-600/420 Model 1050V, Twinhead	159
361	Wang EC 486/50C, Wang Laboratories	84
322	Zenith Z-486SX/20, Zenith Systems	159
	Zeos 386-33, Zeos Int'l Zeos 486SX-20, Zeos Int'l	
	Data Base Managem	
327	Paradox SE, Borland Int'l	136
	Desktop Publishing	
331	By Design 2.0, By Design for Windows; Streetwise Software.	
	Disk Drive	
690	7100-20, Microscience Int'l.	230
585	7120A, CP-30100, CP-30104 CP-3100, CP-3104; Cumulus.	220
	B120A3-M3540, B120A3-N, B120F2-M5070, K100A3-N, K100S3-N, K120M50Z70P; Enhancements.	CMS
700	Caviar WDAC2120, Western Digital	1
	Cobra 110at, Rodime Systems	

689 EPS-100-A, Micronet Computer

Reader Service Page Number Number	Reader Service Number	Page Number	Reader Service Number	Page Number	Reader Service Number	Page Numb
694 Hardcard II XL 105, Impulse		nomoer .		Walter Arthur Till	616 Lexmark/IBM L	
DriveKit for Microchannel,	Graphics	Turnifun	639 IM 9600, 14400, Forval America	SA 9000, 14400; 238		
ProDrive 120AT/S, LPS 105AT/S;	834 Dr. Halo IV Paint and Pack, Halo Desktop Ir	nager Halo	645 Intel 9600EX M		617 Mannesmann Ta	
Quantum	F/X; Media Cyberneti		646 Maya Modem 96		MT91PS; Manne	esmann
683 Hopi 120MB, Conner Peripherals230	Information Mar	agement				18
688 KL3100, Kalok 230	838 SolomoNotes, Solomon		651 MultiModemV32		607 Microtek TrueLa	aser MTP 306,
692 LanSafe 110A, 110S, 120E; Perisol	Software	139		240	608 NEC Silentwrite	
Technology	LAN Application		652 N9635E, NEC A			
687 M2616, Fujitsu America 230	603 Lanscope Resource M	anager;	644 Optima 96, Ultra	a 96, 144; Hayes Products 238	618 NewGen TurboP	
697 MacinStor 120i, Storage	Connect Computer	State of the state	653 OSI 8196, Octoo		Systems	18
Dimensions 230	601 Saber Meter, Saber So	oftware 61		240	619 Okidata OL830 I	ED Page Printer,
684 MC120, Core Int'l 230	602 SiteLock, Brightwork Development	61	655 PM9600 Half-Ca			
699 MK-1034FC, Toshiba America	Memory Manage		V.32/V.42bis; Pra		609 Okidata OL840 I Okidata	LED rage Frinter
Information Systems	739 386MAX version 5.12,	meni		EG 0000 Ph	610 Panasonic Laser	
691 MT-4115E/S, Pacific MagTron	Qualitas	41	656 ProModem 9600 ProModem Ultra		P4455, Panasonie	c Communications
693 Pira 120, PMC 120, Propag 100,	740 QEMM-386 version 6.0	Att 1 (1) (1) (1) (1) (1) (1) (1) (1) (1) (240	the same of the sa	
120-19, S:100/PS3, S:100/S3TO5;	Quarterdeck Office Sy		662 QBlazer, T1600,	T2500, T3000;	832 PPS II 2380, PP	S II 2390; 13
Procom Technology 230	Miscellaneous			240	830 PSX, Seiko Instr	
839 Plus Impulse DriveKit, Quantum	741 CP+ Connection II, C	P+	648 QX/4232bis, QX/ Microcom	/4232hs; 240		12
686 RoadRunner XD-120, Disk	Telecoupler; Consumer Plus	Products	657 RMD 3222, 3232		611 QMS-PS 410, QI	MS 18
Technologies230	742 Modern Adapter MA10	15r 1 ve 1st 0r.		, 5250; Nacai-	620 Qume CrystalPr	int Publisher II,
698 SD-3105, TEAC America 230	Information Machines		627 Smart One 9642	X, Best Data	Qume	
696 ST3120 A/N, ST1133 N, ST2125 N,	Modem	No more	Products		621 Sharp JX-9500P	S, Sharp
ST4135 R, ST4144 R; Seagate	650 3260/61 Data Modem,	Motorola	643 SM-96, 96+, 96H			18
Technology	Codex	240			522 Star Micronics I. StarScript, Star	AserPrinter 4 Micronics
Display	669 532/42bis, 532/42i; Wes		630 SpeedModem St. (internal) Storm	ar (external), Star (external), Storm		
746 Aamazing CM-1726X, Aamazing Technologies	Datacom	242		uCom238	612 Texas Instrumen	
864 AcerView 76, Acer	626 9600 etc/e, ATI	999	667 Sportster V.32, V	32 internal; U.S.		truments 18
America	Technologies				623 TI MicroLaser T	Aurbo PS35, Texas
865 Addonics MON-C171, MON-C151;	Technologies		659 SupraFaxModen	1 V.32, V.32bis;		
Addonies 212	628 9600V.42, Cardinal		664 TC9642, Teleneti		Scanning So	
747 ADI 4A MicroScan, ADI	Technologies	238			843 OmniPage Profe	ssional 2.0,
Systems	647 9600/PC, 9600/SA, 961		661 T/Card V.32, V.32 Systems	2018; 1eicor	C. C	
748 CTX CPS-1760, CTX Int'1 199	SA, 14410/SA; Micro I Communications		640 UFO 9600, UFO		Spreadsheet	
749 Dell GPD-16C, Dell Computer	634 9624 LE, LE+, PC, PC	Section of the section of the			827 Quattro Pro SE,	
866 HP D1188A, Hewlett-	Systems		668 Ven-Tel 9600 Plu			
Packard	632 9632-MM2, CXR/Ande	erson		Ven-Tel 242	Tape Backup	
750 IOcomm CM-5128: ThinkSync 5,	Jacobson	TO A OF STREET, SALES	631 ViVa 9632e, 9642 Peripherals	e; Computer 238	730 AccuTrak Standa	
CM-7128: ThinkSyne 7M; IOcomm Int'l Technology200	641 Access Series 3242bis, Systems		670 V.42bis Probe, X-			Systems 22
751 Mag MX15F, Mag MX17F; Mag	654 Alliance V32, V32/14.4		624 Xpress 96, 96MC		731 ArchiveXL 5580i	
Innovision204	Penril DataComm	7 = 7		Systems 238		C I-II 00
752 Nanao FlexScan 9080i,	Networks		672 Zoon/Modem V.		728 Coretape Light,	
Nanao USA 204	636 Bullet Modern E9696N			honies 242	729 Excel 120F, Ever	
753 NEC MultiSyne 4FG, NEC	E-Tech Research	The Title of Title	671 ZyXEL U-1496, Zero One Networ	1496B, 1496E;	732 FileSafe 8000Phi Mountain Netwo	is, Mach 2;
Technologies	629 CMS Calling Card X9 Enhancements		Communications			
Technologies	625 Comsphere 3820, AT&	31,5,5,10,5,10,5	Presentation	Graphics	733 FS250, FS300; T	
868 Princeton Ultra 1700, Princeton	Paradyne		828 Freelance Graph			22
Graphics Systems 212	666 Courier HST Dual Sta	indard, HST	Lotus Developme	ent 122	727 Jumbo 250, Color Systems	rado Memory
869 Qume QM870, Qume 212	Dual Standard interna V32bis, V32bis interna		829 Harvard Draw fo	or Windows 1.0,	734 MiniVault 250, To	
870 Relisys RE1776, Relisys 212	Robotics			ing 138	735 Model 3080, War	
871 Sampo AlphaScan 17, Sampo	663 DA 3214, Teleglobe	240	847 Harvard Graphic Software Publish	s for Windows,	726 Phantom 250, Ba	
America	642 DataComm 596, Desk'		842 Persuasion 2.0, A		725 Retriever 250C, A	
872 Sony CPD-1604S, Sony 212	General DataComm	V1 8. 0 1 8.3.1.2.1181	Printer	Date	Products	22
873 Tatung CM-17MBD, Tatung	633 DataTrek V.32 Modem DataTrek	928	604 Apple Personal I	acarWeitor NT	Utility	
754 Taxan MultiVision 875, Taxan	635 DCM 4232, Dowty		Apple Computer		836 Power Launcher,	hDC
America	Communications	238	613 Dataproducts LZ			13
874 TVM MediaScan 6A, TVM	658 DM-9600V+, Star Log	variation of the same of the s	Dataproducts		743 Seidman's WPM	
Professional Monitor 212	637 Evercom 96+, 96E+;	A CONTRACTOR OF THE PARTY OF TH	614 Digital Equipmen			Doctor, Software
755 ViewSonie 7, ViewSonie 208	Systems			nt	841 Super PC-Kwik	
Fax	665 FasTalk Fax32, V32/42	2b Data	605 Epson EPL-7500 America), Epson 177		Aultisoft14
835 LANSpool 3.0, LANSpool Fax 1.0,	Modem, V.3227, V.3229 Motorola	; UDS/	606 Everex LaserScr		Word Proces	
Net SatisFaxtion 1.0; Intel 128	638 FDX 9696, 9696B, 969	and the same of th		177	862 Microsoft Word f	
Form Generation	FastComm Communica		615 GCC Technologie	s BLP II, BLP		
833 ObjectVision 2.0, Borland Int'l	649 GV32, MV32; MicroGa	ite 240		ologies 189	848 WordStar for Wi	ndows 1.0,
MILL 477477447447474744444444444444444444			840 HP Plus Hewlett	t-Packard 143	wordStar Int'l.	

FastData Power PCs



FastData 486/33

If you need the ultimate in 486 power, the FastData 486/33 delivers. A true IntelTM 486-33 processor with integrated coprocessor and 8K internal cache is complemented by a 128K external static RAM cache with burst mode support to deliver 14.7 MIPS of processing power. The system is expandable to 16 megabytes of memory on-board using the STAM STATE of the STAM STATE OF THE STATE Inb SIMMS, thus protecting your investment in existing memory when you're ready to upgrade. The FastMicro team has bundled the 486/33 with four megabytes of memory, a high-speed 200mb IDE hard disk and a 1mb Super VGA adaptor and Non-Interlaced monitor at an attractive price. From networking to publishing to CAD, we have what it takes to make your computer a complete solution.

Standard Features

- 33mhz Intel 80486
- processor with coprocessor. 8K processor & 128K external static RAM cache.
- 4 megabytes of fast RAM. 200 mb 18ms IDE hard disk, 1:1 interleave.
- 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- Full size or upright (shown) chassis with keylock, speed and reset buttons.
- √ 14" SVGA Non-Interlaced color monitor, 1024x768 resolution. with 1mb VGA card.
- Clock calendar, parallel port, two serial ports, and a game port.
- Key Tronic 101 key keyboard.
- 230 watt power supply 8 ISA slots, 5 drive bays. Windows & Mouse add \$69. MS-DOS 5.0.
- FCC Class A approved for business use only.

	386 33 Mhz	NO EXTRA CHARGE
6	# 000 I	OV-ISIN
Fastl	Data 386/33	\$1799

The fastest 386 processor available combined with a 64K thirty nanosecond memory cache make the FastData 386/33 a power users dream! Included in the base price is a 80 megabyte 20 millisecond hard disk, 1024 by 768 Non-Interlaced Super VGA monitor and card, four megabytes of memory, and 5.25" & 3.5" high capacity floppy drives. Plus, should anything ever go wrong with your FastData computer, you are covered by a oneyear warrantee with free on-site service or system replacement if we cannot correct the problem with our FastSHIP advance parts replacement program.

Standard Features

- 33mhz Intel 386-DX processor.
- 64K high-speed memory cache. 4 megabytes high speed RAM. 105 mb 17ms IDE hard disk,
- 1:1 interleave. 1.2mb 5.25" and 1.44mb 3.5"
- floppy drives. Standard chassis (shown) or mini-tower with speed. keylock and reset buttons.
- 387-DX coprocessor socket.
- 200 watt power supply.
- √ 14" SVGA Non-Interlaced color monitor, 1024x768 resolution, with 1mb VGA card.
- ✓ Clock calendar, parallel port, game port and two serial ports.
 ✓ Key Tronic 101 key keyboard.
- √ 8 slots & 5 drive bays. ✓ Built-in memory management.
- MS-DOS 5.0. Windows & Logitech Mouse

1	FCC	Class E	3 approved.

486/33	80mb	100mb	200mb	340mb
Mono	\$1,929	\$1,999	\$2,249	\$2,649
Mono VGA	\$2,029	\$2,099	\$2,349	\$2,749
VGA 10240	\$2,229	\$2,299	\$2,549	\$2,949
VGA 1024mi	\$2,279	\$2,349	\$2,599	\$2,999



386/DX33	80mb	100mb	200mb	340mb
Мови	\$1,379	\$1,449	\$1,699	\$2,099
Mono VGA	\$1,479	\$1,549	\$1,799	\$2,199
VGA 1024i	\$1,679	\$1,749	\$1,999	\$2,399
VGA 1024ni	\$1,729	\$1,799	\$2,049	\$2,449



FastData NoteBook

New 80mb SX/20 model! Call for pricing& specifications. All FastData Systems Include:

- Toll-Free Technical Assistance for Life
- 'FastSHIP' Advance Parts Replacement
- On-Site Service or System Replacement Should Unusual Problems Arise
- 30 Day Money Back Guarantee FastMicro Peace of Mind

FastData SX Systems



\$1399 FastData SX/20

25% faster than a 16mhz SX, the FastData SX/20 adds even greater performance to its 386 multitasking capabilities. Just \$200 more than our SX/16, this machine also includes an 80mb hard drive in addition our SXIO, this machine also includes an 80mb hard drive in addition to the super VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard, DOS 4.01 or 5.0, and two floppy drives. The system includes two megabytes of memory and is expandable to eight on the main system board. Remember, when you have questions, need to solve a problem, or want recommendations on products for your system, the FastMicro team is standing by toll-free to provide product support for as long as you own your FastData personal computer.

Standard Features

- 20mhz Intel™ 386-SX processor.
- 2 megabytes of high speed
- 80 mb 20ms IDE hard disk, 1:1 interleave.
- 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- Standard chassis (shown) or mini-tower with keylock, speed and reset buttons.
- 200 watt power supply

386/SX20

- √ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- Clock calendar, parallel port, two serial ports, and game port. Key Tronic 101 key keyboard.
- √ 8 expansion slots, 5 drive bays.
- √ 80387-SX coprocessor socket.
 √ Full Shadow RAM and LIM 4.0
- EMS support.

200mb

\$1,419

\$1,519

\$1,669

\$1,719

- Windows & Mouse add \$69. MS-DOS 5.0.

80mb

\$1,099

\$1,199

\$1,349

\$1,399

✓ FCC Class B approved.

100mb

\$1,169

\$1,269

\$1,419

\$1,469

1	OSIM TO
1	Marilla
	I SA
-1	0.000





\$1249 FastData 386/SX

Combine the benefits of an advanced Intel 386 processor, the value of a 286 and the advantages of FastData and you've got the FastData 386/SX! This machine is the choice of those who want to run today's powerful 386 and multitasking software, like Windows, and also want to run their favorite DOS applications at surprising speeds. We've made our customers' favorite options standard: it comes with an ample thade our customers shorter opinis standard: It comes with an ample two megabytes of memory, a high performance 40mb hard drive, and 16 bit super VGA. Compare performance, features, and service and you will find no better SX value. Interested further? Try the FastData 386/SX for 30 days; you have to be happy - if not, we'll take it back.

Standard Features

- 16mhz Intel™ 386-SX processor.
- 2 megabytes of fast RAM.
- 40 mb 28ms IDE hard disk, 1:1 interleave.
- 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- Standard, mini tower, or mini desktop (shown) chassis with keylock, speed and reset buttons
- 200 watt power supply

- √ 14" Super VGA color monitor with 16 bit VGA card with 512K.
- Clock calendar, parallel port, two serial ports, and a game port. Key Tronic 101 key keyboard. 8 expansion slots, 5 drive bays.

- 80387-SX coprocessor socket. Full Shadow RAM and LIM 4.0 EMS support.
- Windows & Mouse add \$69.
- MS-DOS 5.0.
- FCC Class B approved.

386/SX16	40mb	80mb	100mb	200mb
Mono	\$949	\$1,079	\$1,149	\$1,399
Mono VGA	\$1,049	\$1,179	\$1,249	\$1,499
VGA Color	\$1,199	\$1,329	\$1,399	\$1,649
VGA 1024)	\$1,249	\$1,379	\$1,449	\$1,699



40mb

\$969

\$1.069

\$1,219

\$1,269



FastMicro



3655 E. LaSalle St.







Phoenix, AZ 85040 (800)821-9000 (602)437-5700 (602)437-2300 FAX © 1991 FastMicro, Inc. All trademarks acknowledged. Add 3% for shipping.

457 MICRO Hardware 1-800-441-FAST

DISK DRIVES

CD-ROM	
Hitachi Ext. 680mb Kit	499
Sony Int. 680mb Kit	379
Book of Mammels / Enclopedia	49/69
MS Bookshelf, Stat. Pack,	
World Atlas & Consultant CDs	99
Colorado	
DJ-10 40-120mb Int. Tape	239
DJ-20 80-240mb Int. Tape	299
External Kit	69

Toshiba 100mb IDE Kit \$369



Upgrade your 286 or 386 to IDE technology and Toshiba quality at a FastMicro price. This kit comes with a fast 20ms 105mb drive and

built-in 1:1 controller, 16 bit IDE card with dual floppy controller & cables, 5.25" brackets & rails

Conner (see FastData IDE controllers) CP3044 40mb IDE 28ms199
CP3104 100mb IDE 25ms349 CP3208 200mb IDE 25ms599
DTC
6280 ESDI 16bit HD/FD Cont
Micropolis (see DTC Controllers)
MC1664 345mb HH ESDI 14ms 1099 MC1568 668mb FH ESDI 14ms 1499
MC1518 1.3gb FH ESDI 14ms2595 Plus Development
HardCard IIXL 50mb 9 ms 16bit399
HardCard IIXL 105mb 9 ms 16bit579



Seagate

89mb AT Kit \$319 IDE performance, big 89 megabyte capacity, 19ms access time and 5 mbns transfer rate

mbps transfer rate make this a great Controller, cables and rails are included to buy. Controller, cames and a make installation fast and easy

Seagate	
30MB XT Kit ST238 w/ cont	249
40MB AT ST251-1 MFM Drive	229
40MB AT ST157A 28ms IDE Drive	
89MB ST3096A 19ms IDE Drive	
125MB ST1144A 19ms IDE Drive.	359
210MB ST1239A 15ms IDE Drive.	
330MB ST2383E 16ms ESDI Driv	e 1199
Teac	
1.2MB 5.25" Floppy	65
1 44MB 3.5" Flonny	65



Toshiba 1.44mb Floppy \$59

and the second second second second	
Toshiba	
360K 5.25" Floppy (Black)	59
1.2MB 5.25" Floppy	59
1.44MB 3.5" Floppy	59
107mb 1034 IDE 3.5" drive	349
Western Digital	
WD93044 40mb IDE 28ms	199
WDAC280 80mb IDE 20ms	
WDAP4200 200mb IDE 20ms	

MODEMS & FAX

ATI	
2400 ETC Internal / External	129/159
8514/Ultra+VGA 1mb	599
9600/E External MNP V.42bis.	369



\$369 ATI 9600ETC•E

ATI delivers speed and accuracy with the 9600 Etc-E! It includes V.42, LAP-M, and MNP error correction combined with MNP/5 and V.42 bis data

MINI/2 and V-42 bis data compression to provide total high speed throughput. It features automatic line speed correction, synchronous/asynchronous communication and automatic feature negotiaton with connecting with other moderns.

59
39
19
19
69
79
֡



Practical Peripherals 2400B Int Modem.....

.379 OmniLink Laser \$379

Don't settle for curled-up thermal paper or tie up your PC to receive faxes - get OmniLink Laser, it connects to your phone laser and receives and prints your faxes. You can still print anytime you want and OmniLink will store up to 30 faxes while your printing. Plus, its a standard 2400/9600 modern/sendfax and software is only \$89.

Practical Peripherals 2400B Int Modem
MICE & INPUT
Key Tronic 101 Keyboard
Logitech Mouseman Serial righthand



Microsoft Mouse

Ergonomic design and 400 DPI accuracy make this the world's most popular mouse. Microsoft design and mouse utilities assure compatibility with the programs you use most.

Microsoft	
Serial or Bus Mouse only83	
Serial or Bus with paint95	
Serial with Windows147	
Z-Nix Super Mouse II w/Windows79	

International orders welcome Fax 602-437-8622

NETWORKING

Artisoft/Lantastic	
Lantastic Two Station Starter Kit:	
2 Mbps	349
Ehternet	469
Ethernet Additional Stations	209
Novell	1777
Motware Lite	Call

BOARDS & CHIPS

Sound Blaster109
Sound Blaster Pro (stereo & MIDI)189
Everex
RAM3000 16 bit - w/ 0K (max 3mb)75
RAM3000 16 bit - w/ 1mb135
RAM8000 16 bit - w/ 0K (max 8 mb) .169
RAM8000 16 bit - w/ 2mb289
Intel
287XL85
387-DX25 or 33209
387-SX16 / 20129 /139
Memory - 1mb SIMMS 80ns\$59
Memory - 1mb chips 80ns set of 9 \$59

FASTDATA PRODUCTS



FastData 16 Bit VGA \$69 \$89

GA card features 256K of video memory, occ CGA, EGA, & VGA up to 1024x768 and omes with drivers for popular software cluding Windows 3.0. It's expandable to 12K and has a 30 day money-back guarantee.

FastData	16bit	1mb	VGA99
FastData	CGA (Card	35
FastData.	MGP	Card	29

FastData **Monitors**

all line manufact or us by ma acturers like Hyu nd Matsushita (P

Shown is the VGA

9600B SendFax w/ 2400B Modem	99
9600B Send/Receive Fax w/2400B	.119
Ethernet 16bit 10Base-T	.129
IDE 16 Bit 1:1 Hard/Floppy Disk Cont.	29
IDE HD/FD w/Par/2 Serial/Game	39
Parallel/2 Serial/Game Card	29
RLL 16bit 1:1 Hard/Floppy Disk Cont.	59
XT 1.44 Dual Floppy Controller	



FastData 2400 Baud Modem

\$59 The FastData band

FastData Monitors	
14" Amber or White Monochrome	99
14" White VGA Monochrome	119
14" CGA Color .52 dot pitch	199
14" VGA Color .31 dot pitch	279
14" Super VGA 1024 x 768i .28 dp.	319
14" Non-Int VGA 1024 x 768 .28 dp	429

VIDEO & MONTORS

ATI
VGA Basic 16 / Integra75 /129 VGA Wonder + 256K / 512K159 /189
VGA Wonder + 256K / 512K 159 /189
VGA Wonder XL 256K / 1mb 189 /259
8514 Ultra 8514+VGA 1mb599
Diamond
SpeedStar Plus HiColor 1mb189
Everex EGA 480 Card69
FastData Monitors & Cardssee above
Hercules Graphic Card +Call
MAG Colorview/15Call
Mitsubishi
1410 EGA325
Diamond Scan 1381499
Diamond Scan 16L
NEC
Multisync GS 2a199
Multisync 3FGXCall
Multisync 4FG
Orchid ProDesigner II 1mb279
Paradise
Basic VGA - 8 bit99
VGA 1024 256K/512K149 /179
Panasonic C1381 VGA369
Seiko
CM1440499
CM1450639
Sony 1304 Multiscan629
Video 7
VGA 1024i 256K / 512K129 /149
V-RAM II VGA 512K / 1mb249 /319
Zenith 1492599

Sound Blaster \$149

Sound Blaster of 49 Sound Blaster does for sound what VGA does for graphics? Supported by the largest software library, Sound Blaster make your games come to life. Also includes a music synthesizer, voice input and sound compression, and MIDI interface. SB Talker even converts text into spoken English. Includes a game port also.

Includes a game port also.

PRINTERS

Canon	
BJ10XE Portable	.319
BJ300 / BJ330 Ink Jet459 /	599
LBP-4 Laser	
Citizen	
200GX 9 Pin	159
GSX-130 24 Pin	249
GSX140+ 24 Pin	
GSX145 24 Pin Wide	
PN48 Std / Pro299 /	320
Fujitsu DL3400	359
NEC	.000
P3200 24 Pin	260
P3300 24 Pin Wide	360
P6200 / 6300 460 /	620
P6200 / 6300469 / Silentwriter 2 Model 90469	1550
Okidata	1330
Okilaser 400	660
Panasonic	.009
KXP1180 9 Pin	155
KXP1123 24 Pin	
KXP1124i 24 Pin	
KXP1624 24 Pin Wide	260
KVP0624 24 Pin Wide	309
KXP2624 24 Pin Quiet	
KXP4420 Laser	Cell
KXP4450i / 4455 Lasers	
Seiko Smart Label Printer Plus	.107
Star	440
NX1001	
NX2410 / 2415239 /	309
XB2410 / 2415419 /	539

Texas Instruments

\$1199

MicroLaser PS17
PostScript laser printing has never been so affordable. The TI PS17 includes 1.5mb of memory, PostScript by Adobe, and 17 standard fonts including Times. Helvetica. Courier and Symbol. It handles paper up to 8.5 x 14 and envelopes too!



exas Instr	uments	
Microlaser	PS171	199
Microlaser	PS351	499

FastData 286/12 Imagine a fast 286 computer at a super price and you've got the FastData 286/12. This system is complete, not stripped. You get one megabyte of zero-wait-state memory and a 28ms IDE hard disk - standard. Also included is an

wan-state memory and a 25th tip. India dask-standard. Also included is an amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Key Tronie keyboard. And since its a FastData, you are backed with toll-free technical support, one year warranty with the FastShip replacement program & on-site service plan, and our 30 day full money back satisfaction guarantee!

- 12mhz 80286 processor. 1 megabyte RAM. 40 mb 28ms IDE hard disk

- 1:1 interleave. 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add \$59)
- Standard chassis (shown)
- Five drive bays. 200 watt power supply. Math coprocessor socket
- Monochrome monitor with
- monochrome graphic board. Clock calendar, parallel port, game port, & 2 serial ports. Key Tronic enhanced 101 keyboard.
- 8 expansion slots, 6 available.
- MS-DOS 5.0.
- Full documentation. FCC Class B approved.



Software

DATABASE & FORM	IS
askSam 5.0	209
Clarion Personal Developer	45
Clarion Professional Developer	449
Clipper 5.01	489
DataEase	
dBase III+	
dBase IV	479
dBXL Diamond	
FormTool Gold	299
Formfiller	52
Foxbase Plus	170
FoxPro 2.0	
Paradox 3.5	
Paradox Competitive Upgrade	169
Paradox SE	65
Per:Form Designer & Filler	89
Personal Rbase	79
Q & A 4.0	
RapidFile	
Rbase for DOS	447
Reflex	
Personal	-



_	_	-	IAIA	MENT
- 14	_	HIA	TIME IN	лемі

ENTERTAINMENT	
Carmen SanDiego Deluxe Edition	45
	38
King's Quest 5 (VGA Vers.)	38
Leisure Suit Larry III	35
	38
	27
PC Globe or PC USA	
	28
SimEarth	
Wing Commander I / II39 / 4	15

DESKTOP PUBLISHING

Adobe Po	stscrip	t Cart.	for HPI	_J-II	.299
Bannerma					21
Express F	ublish	er			.Call
Microsoft	Publish	her for	Window	WS	.129
Pagemak	er 4.0.				.489
			_		

Microsoft \$129 Publisher



Publisher
New Microsoft Publisher for
Windows gives you easy-touse page layout, text, and
graphies tools to create
publications quickly. It
includes a built-in word
processor with speller or
import text from any major
word processor. Also includes PageWizards - step
by step publication creation, WordArt - text special
effects, and Toolbar - access to fequently use
functions are a click away. Also comes with 100+
clip art images, border art, drawing tools & more.

PFS:First Publisher	89
Printshop	33
Publisher's Paintbrush	279
Publish It!	129
Ventura Publisher Gold / Wind	dows519

FINANCIAL

ACCPAC BPI Value Pak	
ACCPAC Simply Acctg.for Windows.	115
Bedford Integrated Acct	119
DAC Accounting 4.2	79
DAC Bonus Pack 4.2	119
Dollars & Sense	55
Managing Your Money	109
Microsoft Money for Windows	45
Money Matters	40
One Write Plus G/L, A/P & A/R	165
Pacioli 2000	
Peachtree Crystal Acctg. Windows	130
Peachtree Complete III	
Peachtree with Data Query	200
Quicken	41
The Managar's Organisas	120
The Manager's Organizer	135
Timeslips III	1/5

CITIAL TILOS	
Autosketch 3.0	139
Corel Draw 2.0	
Design CADD 3-D	185
DrawPerfect	259
Freelance Graphics 4.0	299
Freelance Competitive Upgrade	89
Generic 3D Drafting	199
Generic Cadd Level 2 Starter Kit	89
Generic Cadd 5.0	279
Harvard Graphics	Call
PC Paintbrush IV Plus	109

CRAPHICS

We Ship Air at Ground Rates.

PC Tools \$99

FEDERA

Deluxe 7.0

New PC Tools 7.0 is the perfect set of utilities for DOS 5. Includes new application menu system, remote operation of another PC, advanced data recovery and an enhanced Backup in DOS and Windows versions. Anti-Virus, which recognizes over 400 known viruses and even detects unknown ones is included as a free bonus.

INTEGRATED

First Choice	95
Framework XE	95
Geoworks Ensemble	
LotusWorks	89
SmartWare II	417
Symphony 2.2	489
Works	89
Works w/ MS Serial Mouse	149
DDOCDAMMING	

PROGRAMMING

Borland C++	299
Borland ObjectVision for Winde	ows89
Turbo Pascal Dos/Windows	90/Call
Macro Assembler	95
Microsoft C Compiler	
Quick Basic	60
Quick C or Quick Pascal	60
Visual Basic for Windows	125
Windows Developer's Kit	309

SPREADSHEETS

Allways	115
Excel for Windows	299
Lotus 1-2-3 version 2.3	325
Lotus 1-2-3 version 3.1+	399
Lotus Upgrades	Call



Quattro	Pro 3.0			309
Quattro	Pro 3.0	Comp. Upg	rade	.89
		SE		.47
Superc	alc 5.1			80

WORD PROCESSORS

The second secon	
Facelift for WordPerfect	57
Grammatik IV	55
LetterPerfect	119
Multimate 4.0	267
Professional Write	
Publisher's PowerPak / WordPerfect	

WordPerfect 5.1 \$239



WordPerfect is the #1 rated word processing software. Its got almost every feature imaginable and yet it is easy to use. The current version adds pull-down menus, mouse support, table creation and equation editor. Add this to the best software support in the business and you can't go wrong!

Rightwriter55	
Sprint117	
Word209	
Word Perfect 5.1239	
Word Perfect for Windows269	
Word Perfect Add'l Station159	
Word Perfect Office89	
WordStar ProfessionalCall	
Writer's Toolkit79	ŀ

5
4
3
7
7
4
6



-DOS 5.0 \$55

S55
The new Microsoft DOS 5.0 frees 45K or more for DOS on 286 & 386 PC's. It includes a new Shell, Undelete and Unformat, new Editor and more. Also includes Obasic, Command Line Help, new Backup and Windows enhancements. Plus, you can install it on your drive without reformatting, even on Networks. This official upgrade pack requires that you simply have an older command.com on your drive!

Carbon Copy Plus 105 Desqview 2.4 75 Desqview 386 2.4/6.0 125 Direct Access 57 Direct Access 57 Disk Manager Dos / Novell 36 /95 Disk Optimizer 29 DR DOS 5.0 Call GoScript 3.0 89 Fastback Plus 109 Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Sorton AntiVirus 79 Norton Commander 90 Norton Commander 90 Norton Commander 90 Norton Commander 100	CoreFast	60
Desqview 2.4 75 Desqview 386 2.4/6.0 125 Direct Access 57 Disk Manager Dos / Novell. 36 / 95 Disk Monager Dos / Novell. 36 / 95 Disk Optimizer 29 DR DOS 5.0 Call GoScript 3.0 89 Fastback Plus 109 Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Laplink III. 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Carbon Copy Plus	105
Direct Access 57 Disk Manager Dos / Novell 36 / 95 Disk Optimizer 29 DR DOS 5.0 Call GoScript 3.0 89 Fastback Plus 109 Headroom 59 HJJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Desgview 2.4	75
Direct Access 57 Disk Manager Dos / Novell 36 / 95 Disk Optimizer 29 DR DOS 5.0 Call GoScript 3.0 89 Fastback Plus 109 Headroom 59 HJJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Desgview 386 2.4/6.0	125
Disk Manager Dos / Novell. 36 / 95 Disk Optimizer 29 PB DOS 5.0 Call GoScript 3.0 89 Fastback Plus 109 Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III. 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Direct Access	57
Disk Optimizer 29 DR DOS 5.0 Call GoScript 3.0 89 Fastback Plus 109 Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Disk Manager Dos / Novell	36 / 95
DR DOS 5.0. Call GoScript 3.0. 89 Fastback Plus 109 Headroom 59 HJJaak 2.0. 95 InfoSpotter 45 Labels Unlimited 45 Laplink III. 85 Mace Utilities 1990. 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0. 109	Disk Ontimizer	29
GoScript 3.0 89 Fastback Plus 109 Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	DR DOS 5.0	Call
Fastback Plus 109 Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Commander 90 Norton Commander 90 Norton Commander 99 Norton Commander 199	GoScript 3.0	89
Headroom 59 HiJaak 2.0 95 InfoSpotter 45 Labels Unlimited 45 Laplink III. 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Fastback Plus	109
HJaak 2.0		
InfoSpotter 45 Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Uptities 6.0 109		
Labels Unlimited 45 Laplink III 85 Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109		
Laplink III. 85 Mace Utilities 1990. 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Lahels Unlimited	45
Mace Utilities 1990 88 Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Lanlink III	85
Microsoft Learning DOS 32 MS-DOS 5.0 Upgrade 55 Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109	Mare Utilities 1990	88
MS-DOS 5.0 Upgrade	Microsoft Learning DOS	32
Norton AntiVirus 79 Norton Backup 90 Norton Commander 90 Norton Utilities 6.0 109		
Norton Backup	Norton AntiVirus	79
Norton Commander90 Norton Utilities 6.0109		
Norton Utilities 6.0109	Norton Commander	90
	Noton Utilities 6.0	109
		103

Stacker \$79
Stacker doubles the capacity of your hard disk in minutes, without reformatting. It compresses files in the back-ground transparently giving you the extra room you need. For higher performance, Stacker soft-ware with coprocessor card (\$139) is an easily installable hardware solution which gives your hard disk a new lease on life.



95
9
34
55
4
53
5
6
2:
8
59
4
59
5
6
4:
4:
8

FASTMICRO



For Pricing on Other Products or to Order, Call Toll-Free (800) 441-3278









WINDOWS SOFTWARE

WINDOWS
3-D Charts to Go for Windows
ACCPAC Simply Acctq.for Windows119
Adobe Illustrator309
Adobe Streamline119
Adobe Type SetsCall
Adobe Type Align59
Adobe Type Manager59
Adobe Type Manager Plus Pack 115
After Dark for Windows25
Ami115
Ami Pro 2.0
Ami Pro 2.0 Competitive Upgrade119
Microsoft



Office \$447

parenascu separatery.	
Asymetrix Toolbook	279
BeckerTools Plus	
Bitstream Facelift	57
Corel Draw 2.0	
Correct Grammar	57
Current	
DBfast/Windows	239
DynaComm 3.0 Async	139
Excel	299
FaceLift	57
Form Publisher	139
Grammatik IV for Windows	55
HDC First Apps or Windows Expres	s55

1-2-3 & Ami Pro Double Upgrade \$139 wow!



marking, and more.	
Instant Orgchartl	.119
JustWrite	.129
Lotus 1-2-3 for Windows	Call
Lotue 1-2-3 Compatitive Unarrada	110



Windows 3.0 \$89

Get in on the Windows tersolution! Windows turns your 286 or above into a powerful multitasking workstation that runs even non-Windows applications. Includes many miegrated as standard, Plus, If you buy stafficro, we'll throw in 12 of

the best Windows shareware programs free	
Micrographix Draw +	149
Micrographix Designer	449
MicroPhone II	199
Microsoft Entertainment Pack	27
Microsoft Mouse w/ Windows 3.0	.147
Microsoft Office (Word/Excel/Powerpoint)	.447
Microsoft Powerpoint for Windows	309
Microsoft Productivity Pack	39
Microsoft Windows Developer's Kit.	
Microsoft Word for Windows	
M.Y.O.B	
Norton Backup	
Norton Desktop	95
ObjectVision for Windows	
On Target	. 259
MIC Wester	



\$129

New Microsoft Works for Windows is the easyro-use integrated software for Windows that's
designed with small
business users in mind. It
includes a Word Prowith charting, Database with report generator, and
Drawing toolsto design graphics you can paste into
your word processing document. On-line help is a
click away and WorksWizards guides you through
the process of creating custom documents.

PackRat 3.0	239
Pagemaker 4.0	
Persuasion	
PertForm Pro	
PFS:WindowWorks	
Pro Write Plus	159
Project for Windows	
Publisher's Powerpak	
Publisher's Paintbrush	
RightWriter for Windows	
SuperBase 4	419
Turbo Pascal for Windows	
Ventura Publisher	519
WideAngle for Windows	
Winconnect	
Windows 3.0	
WinFax Pro	69







Aerial photo of Devil's Island from #901

Space Shuttle cargobay from #902

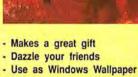
Sidewinder in the sand from #903

Simply the highest quality 800x600x256 PCX images

Swimsuit Calendars







- DOS & Windows viewing utilities included

- Use with your favorite word processor, publishing or graphics application

- Hard drive not required

- Windows users convert files to BMP, GIF, IMG, PCX, PIC, TIFF and WPG

- Over 5MB in every volume, comes on high density diskettes

#901 Mother Earth - vol I One volume \$29.88, two volumes \$44.88, three volumes \$59.88 Breathtaking views of our planet. Includes images of oceans, deserts, islands, & sunsets. #902 Space Things - vol I

A must have for any computer user. Contains stunning views of Earth, galaxies, and satellites #903 Amazing Animals - vol I
An educational look at mysterious animals around the world. A most unique product.

First calendar \$29.88, each additional calendar only \$24.88
Every month features beautiful women sporting the latest in swimwear fashlons.

1995 Hot Hunks Calendar
This year add some apice to your computer. Sure to inspire you to new heights.

9900 Graphix Starter Kit sold separately for only \$10 A collection of DOS and Windows utilities with Previow Images of all RAD Graphix and 1992 Swimsuit Calendars. Included with every order and every calendar.

Holiday **Limited Time Offer**

hour / 7days Order Hotline



US & Canada



Check or money order:

Add \$3 for S&H

Starware Publishing Corp. P.O. Box 4188, Dept. 56 Add \$3 for Foreign Deerfield Beach, FL 334 Add \$3 for 3.5" disks For more information call 33442 FL add 6% sales tax (305) 426 - 4552

Circle 252 on reader service card





Multimedia CIA World Tour

MPC Title! With info straight from the CIA --Plus Maps from Hammond, Inc. and flags & National Anthem segments New Version!

Monarch Notes on CD-ROM

Over 200 Notes on One CD-ROM Disc
The Entire Collection (many out of print) Only \$99 The definitive multimedia source for understanding the world's greatest literature. PC & Mac

Greatest Books Ever Written

The Ultimate Electronic Book PC & Mac \$295

Countries of The World

Full text of over 100 Study Books, Maps, National Anthems, Flags & more! PC & Moc \$495

U.S. History on CD-ROM WINNER 1991 OPA BEST EDUCATIONAL PRODUCT Text & Images PC/Mac "S50 rebate-final cost \$349

Pioneer CD-ROM 6 Pak

6 PC/MAC DISCS BUNDLED FOR ONLY \$395!

Six Pack & Minichanger (Save over \$1000) \$1489

Hitachi CD-ROM BUNDLES! CALL!

High Performance Hitachi CD-ROM Drive Kits

The fastest most reliable drives on the market Hitachi 1700S kit (fastest Serial drive) \$740 Hitachi 1750S kit (fastest SCSI drive) CALL Hitachi 3600S kit (internal) 5649 Other Hitachi CD-ROM Drives FROM \$499 Hitachi Disc Caddies (5 or more) \$10 each Also: Pioneer Minichanger, Chinon, CDT, Denon, Todd, NEC, Sony Laser Library, WORM & Erasable drives, in-stock - Call

Multimedia CD-ROM Titles

Microsoft Bookshelf best selling CD-ROM disc Best Price Mixed Up Mother Goose 'fun' educational disc Grolier's Encyclopedia 21 volumes, VGA pictures Call Nat. Geographic / IBM Mammals pictures & text Call Compton's Multi-Media Encyclopedia

Libraries / Science / Business

Between Heaven & Hell II even stranger Magazine Rack 100's of current magazines Voyage to the Planets astounding Voyager trip 119 es Art Review colorful, classic art TIME Magazine Compact Almanac 5,000 articles Call Family Doctor home medical guide 149 Variety Video Directory Home video reference Zip++ Every US address 195 McGraw-Hill Ref. Set 100,000 terms: 7,300 articles 295 New England Journal of Medicine full text Speed Dial entire U.S. Yellow Pages on one disc Oxford Textbook of Medicine general reference 595 PC-Sig Library new edition, newest version Call Oxford English Dictionary over 250,000 headwords! 889 Phonedisc USA Telephone Directory - East or West 989
Business Lists on Disc desktop marketing 2495

usaness usts on DISC desktop marketing 249

**MORE! Over 300 different titles available **

Money back guarantee Free fech support
CALL - Bureau On-Line CD-ROM Library,
FREE access to 12 different CD-ROM Discs
GSA# GS00K91AGS5280





Dept. B, 141 New Road, Parsippany, NJ 07054

FAX # 201-808-2676

CALL: 800-828-4766 ORDERS 201-808-2700 INFORMATION



WP - Menu-mice (2 disks)

WP - Tools (2 disks)

MICRO-TECH USA



(800) 235-4445

America's largest PD/Shareware Distributor

Currently over 200,000 programs available and growing! Order our 200+ page catalog Limited offer: 4 free disks of your choice. 100% guaranteed high quality and virus free.

A list of our catagogs include: IBM • Amega • OS2 • UNIX • GIF • Apple • Mac • Commodore for \$7.95 each. • Adult \$19.95 PRINTING BUSINESS/ACCOUNTING Virus Killers Typesetter PC Several virus programs on one disk. Why buy PC Payroll them separate? Great desktop publishing program. Mix graphics, A complete menu-driven payroll system (2 disks) test fonts. Requires 512K, 9 pin printer Back & Forth PC Loans New load up to 20 programs at once. You won't Form Master: Keep track of those nasty loans believe it until you see it. Order this one now! (HD Create your own business forms and legal form's. required) Rated best form program. Year Planner GAMES A super calendar and organizer program Letter Heads Plus PC Risk Design and print custom letterhead, envelopes and ☐ Employee Management System 4.0 You played it on a board. Now play it on a labels. Highly accurate personality/position analysis computer. Same as the board game, but a lot less. WORD PROCESSING PC Yellow Pages (5 disks) 3D Chess PC Write 3.03 One of the most effective marketing tools I've This one is good. You can even ask the computer Top rated program with spell checker. A must for seen. Address merge, labels, fax mail, built in for help. database registered version comes complete with data for your own area (HD required) Striker Intext Fly your copter through enemy fire. Areade qual-DATA BASE New word processing in 7 European languages. ity game. Wampum ☐ Hyper-world (4 disks) An excellent d-base compatible package. PC Rail Road New hyper text word processor and free form A must for model train buffs. Control your trains database with appointment calendar. PC File 5.0 (3 disks) on increasingly complex layouts but don't worry. An automatic collision avoidance system is built Jim Button's best. PC mag editors choice (Req 3.0 GRAPHICS in. It took a few minutes to evaluate this one and DOS or up) hours to turn it off! PC-Key draw SPREAD SHEETS Powerful CAD design system. (4 disks) Megapoly 123 Power Worksheets (2 disks) You have inherited \$100,000. Your challenge is to Dancad 3D (2 disks) Powerful worksheets for Lotus 1-2-3. become rich in 20 years. Very good game. The best there is for 3D wireframe with all conceivable options. Lotus Templates Some ready-made templates. Don't spend hun-A computer wargame. Better and more sophisti-Printmaster Graphics Library #4 dreds and miss this one. It's a bargain for sure. cated and involved than Risk. New 400 great graphics. UTILITIES We have the best in games for mono, CGA, VGA, and Super VGA. Printshop Graphics Library #3 and #4 HD Backup 2 disks. Over 600 graphics. All new. An easy to use program for backing up your hard PRICE BREAK Charts unlimited 1-9 \$2.50 ea. 10-19 \$2.00 ea. 20-49 \$1.50 ea. 50-99 \$1.00 ea. A design tool for creating any kind of chart. Quick Cache (2 disks) Over 100 \$0.89 ca. This one will speed up your computer big time. WINDOWS Icons All new selections's with updates every month. Select 4 free disks with purchase of catalog. Over 250 icons to be used with Windows 3.0 Important: For multi-disk sets, count all disks in a set. Please specify 5.25" 3.5" (add \$1.00 each) Unicom Name At last a super communications program for Win-Address _ dows. Supports X, Y, and Z modem protocols City/State/Zip among others. VISA/MC # ___ Exp. Date ☐ Window Press Signature Great form maker for Windows 3.0 or with differ-Disks Ordered ent fonts, lines, arcs, circles, pies, bars, etc. Preci-List Catalog sion to 1/10 mm. Source code included. For 3.5" disks, add \$1.00 each Office Hours Shipping and Handling WORD PERFECT 5.0/5.1 9:00 - 5:00 pst Foreign Shipping, add \$6.00 PC - Draft III (2 disks) Washington State Residents add 8.2% sales tax\$ ☐ WP - Arts/Graphics (2 disks) Total \$ □ WP - Learning System (2 disks) Method of payment ☐ check ☐ money order ☐ VISA/Mastercard WP - Macros (2 disks) Order Hotline! MICRO-TECH USA

P.O. Box 59403, Renton, WA 98058-0403



COMPUTER DISCOUNT WAREHOUSE™





OL400

LED Page Printer

Features: • 4 PPM • 300 DPI • More Standard Typefaces & Fonts Than LaserJet* IIP • High-Capacity 200-Sheet Paper Tray Included • Slim Low-Profile Design Fits Any Desktop • HP* Series II Compatible • Industry's Best Warranty: 5 Years On Printhead, 1 Year Parts/Labor On Printer

CDW® Price \$595.86

OKIDATA

Page Printer For

Smaller Budgets

WHY PAY RETAIL? CDW. Sells

AND SERVICES YOU BETTER

MAXSTATION 386/33

Today's Personal Computer

Features: * 2 MB Standard FAM, Expandable to 64 MB * 6 16-Bit Expansion Slots * 5 Drive Bays 4-External, 1-Internal * 101-Key Keyboard * 64kb Cache * AT-IDE Hard Disk And Floppy Controller Built-in * 3.5 * Floppy Disk 1.44 MB High Density * 5.25 * Floppy Disk 1.42 MB High Density * 120 MB Hard Drive * Extended VGA * Novell Workstation And Server Approved, Windows 3.0 Cortified And SCO Certified

\$1838.37 MAGNAVOX



HARDWARE, SOFTWARE & PERIPHERALS AT DISCOUNT | PRICES

NETWORKING PRODUC MNOVELL ETHERNET Interface Connector (NE1000) ... \$148.44 ETHERNET For PS/2 (NE/2) ETHERNET E 694 22 3Com 3COM 3C503 TP 10 Base T . 3COM 3C507 Ethernet Card \$257.65 281.61 3COM 3C503 Etherlink. 188.24 OM 3C523 MCA FIN 3COM Ethernet Repeate 3COM 3C501 Ethernet Board 316.09

6242 Arcnet 8-Bit	\$85.89
6242 TP+ Archet	99.53
6245 Archet 16-Bit	196.55
6245 Twisted Pair Plus Ethernet	229.07
6046 PS/2 Board Archet	228.16
6150-10 8 Port Smart Hub	479.10
6150-11 16 Port Smart Hub	691.01
4045 16/4 Token Ring XT/AT	499.23

THOMAS · CONRAD

SMC* ACCESSORIES 3512 TP Concentrator, 12 Nodes. 708.1 Active Hub 8 Port Twisted Pair 355.6

SMC INTERFACE CARDS	
3008 Coax 8-Bit Ethernet	\$169.35
3008 TP 10 BaseT 8-Bit Ethernet	181.81
3016 Coax 16-Bit Ethernet	171.26
3016 TP 10 BaseT 16-Bit Ethernet	206.92
PC 500FS Coax Archet File Server 16-Bit .	275.86
PC 500WS Coax Archet Workstation 16-Bi	167.44
PC 550FS TP Aronal File Server 16-Br	304.60
PC 550WS TP Arcnet Workstation 16-Bit	183.90
SMC PC130 8-Bit Arcnet Coax	89.50
SMC PC130E 8-Bit Arcnet Coax	119.00
SMC PC270E 8-Ba Archet TP	124,55
Eisa 3200 Arcnet Twisted Pair	736.08
Eisa 3200 Aronot Coax	716,18

CMC INTERFACE CARRO

\$182.76
214.95
247.13
167.44
141.86
197.57

Arcnet Pocket Adaptor Coax	\$237.50
Arcnet Pocket Adaptor RJ45	239.77
Ethernet Pocket Adaptor Thin Coax	355.68
Ethernet Pocket Adaptor 10 Base 7	
Parellel Port Multi	69.00
ARTISOFT	
E143 Ethernet Adaptor Kit	\$199.58

ARTISOFT	
E143 Ethernet Adaptor Kit	\$199.58
LANtastic Ethermit Starter Kit	448.31
LANtastic 2Mbps Starter Kill	325.50
LANtastic 2Mbps Adaptor	132.19
CALL FOR ADDITIONAL ARTISC	OFT PRODUCTS

DCA	
IRMA Trac T.R. Convertible	\$528.40

NETWORKING SOFTWARE

NOVELL Netware V2 2 5 User	483.70
NOVELL Netware V2 2 10 User	980,43
NOVELL Netware VZ 2 50 User	1949.68
NOVELL Netware V2.2 100 User	3169,57
NOVELL Netware V3.11 20 User	1902.17
NOVELL Netware V3.11 100 User	3804.35
NOVELL Netware V3 11 250 User	
NOVELL Life	CALL
ASHTON TATE dBase IV LAN Pak	
BORLAND Quattro Pro Network Node	244.30
BRIGHTWORKS PS Print	
CC Mail Products	
DELTA TECH Direct Net Monu	
HARVARD GRAPHICS LAN Pack	
LOTUS 1-2-3 2.3 Server	
LOTUS 1-2-3 2.3 Network Node	
LOTUS 1-2-3 3.1 Server	
LOTUS 1-2-3 3 Network Node	349.50
MICRORIM Rbase V3.1 LAN 6 Users	
MICROSOFT Word 5.5 Network Node	
MICROSOFT Excel Network Nodes	
NORTON LAMBERT PRODUCTS	CALL
ONTRACK Disk Manager For Novell	98.65
W-10-6	



Word Perfect

WORD PERFECT	5.1 5 Pack	1099.37
WORD PERFECT	Office 5-User V.3.01	297.31
WORD PERFECT	Office 20PK V.3.01	923.08
WORD PERFECT	Draw Perfect Server	269.53
WORD PERFECT	Draw Perfect Add. Station	165.93

TAPE & FLOPPY DRIVES

IRWIN

FWN SX 40-120 MB Internal	\$181.61
FRWIN SXE 40-120 MB External	295.45
IRWIN 80 SX 80-250 MB Internal	237.50
IRWIN 80 SXE 80-250 MB External	354.54
IRWIN 2120 120MB Internal	507.53
IRWIN 445A 40MB External	449.60
IRMN 250 PC Internal	280.89
IRWIN A120E-120 MB High Speed External	292.13
IRWIN A250E-250 MB High Speed External	
Call For Controllers, Accessory Kits and	



MOUNTAIN 525MB Filesale External	\$2369.43
MOUNTAIN 2.2 Gigabyte Ext. Tape Drive	4398.9
MOUNTAIN 250MB External Backup	599.23
MOUNTAIN 250MB Internal Backup	474.42
MOUNTAIN 1.3 Gigabyte External Filesale	3519.2
MOUNTAIN 120MB Internal Tape Drive	
MOUNTAIN 120MB External Tape Drive	
MOUNTAIN 250MB Internal Filesate	
MOUNTAIN 250MB ExternalFilesafe	
Call For PS/2 Drives, Controllers, Acc	essory

COLORADO Jumbo 250	285
COLORADO OFA700	724
A	

PLOTTERS, DIGITIZERS & SCANI	VERS
= CalComp	
= CalComp	

HUBTA'

12 x 12 XLP\$288.70	12 x 17	\$538.27
Summa	glaphics-	
Summagraphics Summa II 1 Summagraphics Summa II 1	2 4 18	\$299.60 542.66
PANASONIC FX-RS307U 6		
COMPLETE PC Full Page S EPSON ES300C Color Scar	scanner	533.30
14.80	USION	

	11 1 1/211	WHEN	
DMP-61	\$2463,33	DMP-62	\$3095.84
DMP-161	2795,42	CMP-162	3495.40
	(PA	WLETT	
HP7575 DXL		LAME	\$3079.88
HP7475A			1236.26
HP7550B			2696.50
HF7570A			2529.36
HP7576A EXL			3967.25
HP SCANJET	*		664.45

CAD MONITORS & CARDS

write interior	TOTIO & OTHER
MITSUBISHI HL6915ATK	\$1959.77
SIGMA Laserview 19" W/	Controller
NEC Graphics Engine 25	6/16892.04 / 599.36
MITSUBISHI HL6935 AT	KL 19" 1798.91
HERCULES GB1024 Gra	phics Station653.40
CALCOMP 3401	CALL

PAX & ACCESSORI	-
A-B Switching Box (AB X Box)	\$28.00 / 34.95
BROWN-WAGH Sound Blaster	155.96
CHPRODUCTS PS/2 Gamecard III	47.25
CH PRODUCTS XT/AT Gamecard III w/Y Cat	
CHPRODUCTS Flort Stok	47.00
CHPRODUCTS Fight Sick	85.40
CH PRODUCTS Mach III Joystick	31.20
COMPLETE PC Communicator	409.56
COMPLETE PC Portable Fax	307.67
Flectronic 4-Way Switchney Parallel	89.50
Electronic 4 to 2 Parallel Blow 5TH GEN. Logical Connection 256K/512K	109.50
5TH GEN. Logical Correction 256K/512K	CALL/ 438.59
INTELLICOM Long Link	117.70
KENSINGTON Masterplece/Plus	84,70 / 97.64
KEYTRONICS 5151 IBM or AT&T	
KEYTRONICS 101+	93.50
PANASONIC UF300 Plain Paper Fax	1545.18
PRACTICAL PERIPH, 32K Inline Parallel	Buffer 123.60
PRACTICAL PERIPH, PAINK Parallel Ex	
BOY AND Sound Card (ASVS	268.63
SOTA 286I-12 Accelerator	260.45
SOTA 386i-16 Accelerator	465.70

CompleteFax9600_	\$399.50	PHYASONIC UF170.	3664.3
Fax 9600	527.65	SHAPPFO331	687.9
SHARP FO-216.			516.3

XT Power Supply 150 Watt AT Power Supply 200 Watt

CD-ROM & OPTICAL	DRIVES
HITACHI 3600/3650	\$456.81 / 495.68
HITACHI 1700S External	467.43
MAGNAVOX 461RS Ext., w/CD Bundle	419.00
NEC COR 36 External Portable	388.40
NEC CDR 73 External	
NEC CDR 83 Internal	539.10
PANASONIC LF5010 Worm External	
PANASONIC LF5014 Worm Internal	
PANASONIC LF7010 Ext. 1 Gb Erasable	
SONY CDU-7201 External CD-ROM	
SONY COU-53111 Internal CD-ROM	
SONY CDU-54101 Internal SCSI CD-RO	
SONY SMO-5501 650M6 Erasable Option	
TOSHIBA 3301 External	646.0
TOSHIBA 3301 Internal	
CD-ROM Software 5 CD's Bundle	169.5

SOFTWARE	
ACT Caltings S.D.	C215 E6
ACT Software 2.0 ALPHA FOUR 1.1 Relational Database	200 50
ASTION TATE DISISE IV AUTODESK Autosketch AUTODESK Animator BANAER BLUE Org. Plus Acher cool BORLAND Refex BORLAND School: V20	142.69
AUTODESK Animator	277.48
BANNER BLUE On Plus Advanced	62.30
BORLAND Refex	157.96
BORLAND Solohook V 2.0	54.67
BORLAND Turbo C++	64.75
BORLAND Turbo Pascal	
BORLAND C++ V2.0	299.17
BORLAND Paracta V 3.5 BORLAND Quattro Comp Upgrade BORLAND Quattro Pro 3.0 BRODERBUND Print Shop	483.52
BORLAND Quatro Comp Upgrade	200.70
PRODERRIND Post Chan	299.ZZ
CENTRAL POINT PC Tools V7.0 CLARION Professional Developer COMPUTER ASSOC. Super Project Expert COMPUTER SUPPORT Arts & Letters CUSTOM Freedom of the Press Postscript.	99.43
CLARION Professional Developer	445 95
COMPUTER ASSOC, Super Project Expert	413.30
COMPUTER SUPPORT Arts & Letters	439.12
CUSTOM Freedom of the Press Postscript.	241.44
DAC Easy Accounting 4.1	85.33
DAC Easy Bonus 4.0	169.31
DATAEASE File Management	455.10
DAC Easy Accounting 4.1 DAC Easy Bonus 4.0. DATAEASE File Management FIFTH GENERATION Mace Util. 1990. FIFTH GENERATION Fastback 3.0.	89.80
FIFTH GENERATION Fastback 3.0	109.70
FIFTH GENERATIONS Direct Access	58.69
FIFTH GENERATIONS Direct Access. FORM TOOL 3.0. FOXBASE Foxpro 2.0. GIBSON Spinwite 2.0 V.1.1 BM Displaywith 5.0 INTUIT Quicken. LAN Spool 286/386. 257.1	57.90
FOXBASE Foxpro 2.0	434.44
GIBSON Spinwrite 2.0 V.1.1	61.95
IBM Displaywrite 5.0	235.50
INTUIT Quicken	37.84
LAN Spool 286/386257.1	0 /362.21
LOTUS 1-2-3 V23	200 66
LOTUS Angeda V2 0	275.76
LOTUS 1-2-3 V2.3 LOTUS 1-2-3 V 3.1 Plus LOTUS Agenda V2.0 LOTUS Freelance Plus	309 25
LOTUS Magellan	95.85
LOTUS Magellan LOTUS Manuscript LOTUS Symphony	309.79
LOTUS Symphony	473.62
LOTUS Upgrades MICRORIM Roase V 3.1 For DOS	CALL
MICRORIM Roase V 3.1 For DOS	449.50
MICROSOFT C Compiler 6.0	109.37
MICROSOFT C Compiler 6.0	298.60
MICROSOFT DOS 5.0 Upgrade	59.50
MICROSOFT Flight Simulator 4.0. MICROSOFT Fortran Compiler 5.0. MICROSOFT Quick Basic Compiler 4.5.	39,50
MICROSOFT Fortran Compiler 5.0	274.44
MICROSOFT Quick Basic Compiler 4.5	64.75
MICROSOFT Upgrades. MICROSOFT Visual Basic.	LOZE
MICHOSOFT Word VS.5	200 7
NANTUCKET Clipper V5.0	485 50
NORTON Advanced Utilities V6.0	109.90
POWER UP! Calendar Creator Plus	45.60
PROCOMM Plus	63.87
QUARTERDECK Desqview 386 V.2.4	129.86
QUARTERDECK QEMM 386 Manager	58.70
QUARTERDECK CRam & Manifest	46.20
OUARTERDECK CRam & Manifest for PS2.	59.00
QUALITAS 386 Max 5.0	64.19
REFERENCE Grammatik 4 V.2.0	55.78
SOFTLOGIC Software Carousel	53.40
SOFTLOGIC Software Carousel SOFTWARE PUB. PFS: Write SYMANTEC Q&A V4.0 SOFTWARE PUB Harvard Graphics V3.0	154.30
CONTRACE OF B Hannel Contract Co	249.6
TORIAS Managing Your Manage	06.4
TRAVELING SOFTWARE Landon III	85 50
TRAVELING SOFTWARE Deskink	97.60
WORDPERFECT 5 1 5 25 or 3.5	247.45
TOBIAS Managing Your Money. TRAVELING SOFTWARE Laubink III TRAVELING SOFTWARE Desklink WORDPERFECT 5 15 25 or 3.5 XEROX Ventura Software Version 3.0.	479.20
ZSOFT PC Paintbrush IV Plus	109.80

AT CDW® YOU GET MORE COMPUTING FOR YOUR BUCK. CALL NOW!

CDW® means Service **CDW**® means Savings **CDW**® means Business **CDW**® means Experience **CDW**® means Technology **CDW**® means Networking **CDW**® means Computing **CDW**® means Computing

FREE TECHNICAL SUPPORT FOR CDW° CUSTOMERS.

(800) 359-4CDW WE SELL NAME BRANDS FOR LESS!

ALWAYS WORKING TO KEEP YOUR COMPUTING ONE STEP AHEAD.



COMPUTER DISCOUNT WAREHOUSE



PANASONIC CF370/H6

Notebook Size Laptop Computer

 20 MHz, 80386SX Processor
 1 MB of RAM
 1.44 MB Floppy Drive • 60 MB Hard Drive • 84-Key Keyboard • Backlit Triple Supertwist LCD Screen

CDW® Price.....

\$2649.00



CES YOU BETTER

2400B MNP

MAGNAVOX

MAXSTATION

386SX/16 Personal Computer 1 MB Standard RAM, Expandable To 8 MB • 3 Expansion Slots (16-Bit)

To 8 MB • 3 Expansion Slots (16-Bit)
• 3 Drive Bays, 2-External, 1-Internal
• 101-Key Keyboard • AT-IDE Hard Disk And Floppy
Controller Built-In • 3.5° Floppy Disk 1.44 MB High Density
• 5.25° Floppy Disk 1.2 MB High Density • 40 MB Hard
Drive • Super VGA • 800 x 600 DPI • 256 k Video RAM
• Parallel Port/Serial Port/Video Port • Novell Workstation
Approved, Windows 3.0 Certified • MS-DOS 4.01,
MS-DOS Shell, GW-BASIC, LIM EMS 4.0 Drivers

CDW® Price....

intel

PRACTICAL PERIPHERALS

\$107.75 2400 External\$163.94 179.98 2400 External MNP 207.69 487.40 PS 2 Internal 2400 223.22

\$899.98

HARDWARE, SOFTWARE & PERIPHERAL

MAGNAVOX	
MAGNAVOX SX16 40MB VGA Ac. 2 Dr. MAGNAVOX SX16 40MB CD-ROM	1359.30
MAGNAVOX SX16 40MB CD-ROM MAGNAVOX SX20 80MB, 2 MB, VGA, 2 Dr.	1274.41
MAGNAVOX SX20 80MB, Int. CD-ROM MAGNAVOX 386 33 120MB, En VGA, 2MB, 2	1595.40 Dr 1838.37
MAGNAVOX 286 VGA Notebook 20MB	1398.50
MAGNAVOX 386SX/16 VGA Notebook 40M PACKARD BELL	B1998.08
Packard Bell 286 Notebook	\$1348.50
Force 486/25, 130 MB HD, 2 Drive, VGA Force SX15, 44 MB VGA Interface	3098.33 1029.32
Force SX 15, 44 MB VGA Interface Force SX 20 MHz, 105 MB, VGA, 2 Driver Force SX 30 MHz, 130 MB, 2 Dr. Modern	1479.61
Force SX 20 MHz, 130 MB, 2 Dr., Modern Force SX 20 MHz, 210 MB, 2 Dr., Fax Board 386S X 16 Notebook 40MB, 2 MB BAM	1673.25
SUOSIC TO HOLEBOOK HUND, E INID FIAM	1979.22
Panasonic CF170 XT 10MHz 20MB Notebook Lapton	\$1393.55
CF 270 286 16MHz 20MB VGA Notebook	1548.38
CF 270 286 16MHz 60MB VGA Natebook CF 370 3865X 20MHz 60 MB VGA Natebo	1897.85 cs. 2549.00
ALR	
ALB Power Vena 486/33 101	\$1629.25 4599.78
CALL FOR THE LATEST MODELS FRO	829.11 OM ALR
COMPAC	
LTE 286 Mdl. 20. \$1574.60 DP386/20E Mdl	1 \$2297.46
LTE 386 60 MB 3938.00 CPO 386 33 L. DP386S20 Mdl 1 1709.20 SLT 386S20 Md	CALL
	60 4129.26
SAMSUNG SD716 3865X 16 Base	2000 00
SAMSUNG Notemaster SX16 40 MB	2295,40
TEXAS INSTRUMENTS	
TEXAS INSTR. TravelMate 2000	\$989.50 2176.92
TM 3000 SX Notebook 40 MB	2259.34
TM 3000 SX Notebook 60 MB.	2583.50
1MB Module CPO - 386,386S, 20E/25E 2MB Memory Board CPO LTE 286	
2MB Memory Board CPQ LTE 286	597 40
AMD Marroy, Based COO LTE 005	\$97.40 168.83
4MB Memory Board CPO LTE 286	168.83 431.25 616.89
4MB Memory Board CPO LTE 286	168.83 431.25 616.89 195.00
4MB Memory Board CPO LTE 286	168.83 .431.25 616.89 195.00 399.00
AMB Memory Board CPO LTE 286. AMB Memory Card CPO LTE 3868. AMB Memory Board CPO SLT 386. AMB Memory Board CPO SLT 386. BM Bemory Board CPO Desagro System P AMB Module CPO 386 3868 267.255	168.83 .431.25 .616.89 .195.00 .399.00 .595.60 .253.24
4MB Memory Board CPO LTE 286	168.83 .431.25 616.89 195.00 399.00
AMB Memory Board CPQ LTE 286. AMB Memory Card CPQ LTE 386. 2MB Memory Board CPQ SLT 386. AMB Memory Board CPQ SLT 386. AMB Memory Board CPQ SLT 386. AMB Module CPG Design System P AMB Module CPG - 386, 3865, 20E/25E. AMB CPQ Exp. Bd. 3865, 20E/25E. AMB AST Cupid Simms. AMB AST Cupid Simms.	168.83 431.25 516.89 195.00 399.00 253.24 299.95 66.93 246.25
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 3868 MB Memory Board CPQ SLT 336 MB MC MEMORY BOARD MB MC MEMORY BOARD MB MC CPQ SAMP MB MC	168.83 431.25 516.89 .195.00 399.00 595.60 253.24 299.95 66.93 246.25 249.75
AMB Memory Board CPQ LTE 286. 4MB Memory Card CPQ LTE 386. 2MB Memory Board CPQ SLT 386. 4MB Memory Board CPQ SLT 386. 4MB Memory Mod CPQ Designs System P 4MB Module CPG - 386, 3865, 20E/25E. 4MB CPQ Exp. Bd 3865, 20E/25E. 4MB AST Cupid Simms. 4MB AST Cupid Simms. 4MB AST Cupid Simms. AST Exec 386SX 4 MB Module 2MB Upgrade HP Laser-Let II // III. 4MB Upgrade HP Laser-Let II // III. 4MB LOGGRADH HP Laser-Let III // III. 4MB LOGGRADH HP Laser-Let III // III.	168.83 431.25 616.89 195.00 399.00 595.60 253.24 299.95 66.93 246.25 249.75
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 3868 2MB Memory Board CPQ SLT 386 AMB Memory Med CPQ 1886 AMB CPQ Exp Bd. 3868. 20E/25E AMB AST Cupid Simms. AMB AST Exec 386SX 4 MB Medule AMB Upgrade HP Laser-Let III / III AMB Upgrade HP Laser-Let III / IIII AMB Upgrade HP Laser-Let III / III	168.83 431.25 616.89 195.00 399.00 595.50 253.24 299.95 66.93 246.25 249.75 165.32 89.40 165.32
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 3868 MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Module CPQ - 386 MB Memory Med CPQ Description MB AST Cupid Simms AMB AST Cupid Simms AST Exec 386SX 4 MB Module 2MB Upgrade HP Laser-Let III / III MB Upgrade HP Laser-Let III / III BM Personal System II Memory 2MB Memory Medule IBM PS2 Med 70/9 WB MEMORY Medule MB PS2	168.83 431.25 616.89 195.00 399.00 595.60 253.24 299.95 66.93 246.25 249.75 165.32 89.40 165.32 295.00 CALL
AMB Memory Board CPQ LTE 286 4MB Memory Card CPQ LTE 3868 2MB Memory Board CPQ SLT 386 4MB Memory Board CPQ SLT 386 4MB Memory Board CPQ SLT 386 4MB Memory Med CPQ Deserro System P 4MB Mcdule CPQ - 386, 3865, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB AST Cupid Simms 4 MB AST Cupid Simms AST Exec 386SX 4 MB Module 2MB Liggrade HP Laser-Let III / III 2MB Upgrade HP Laser-Let III / III 4MB Upgrade HP Laser-Let III / III 4MB Upgrade HP Laser-Let III / III 4MB Upgrade System II Memory 2MB Memory Mcdule IBM PS/2 Mod 705 AMB OKIT Laser 400.	168.83 431.25 616.89 195.00 399.00 253.24 299.95 66.93 246.25 249.75 165.32 89.40 165.32 295.00 CALL
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Description System 4 MB Module CPQ - 386, 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB AST Cupid Simma 4 MB MODULE CPQ - 386S, 20E/25E 1 MB LOGRADH PLASE-LET IIP / III 2 MB Upgrade HP Lase-Let III / III 3 MB Upgrade HP Lase-Let III / III 3 MB Upgrade HP Lase-Let III / III 4 MB Upgrade HP Lase-Let III / III 5 MB Upgrade HP Lase-Let III	168.83 431.25 616.89 195.00 399.00 70 595.60 253.24 299.95 66.93 246.25 249.75 165.32 295.00 CALL 07 142.85
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Description System 4 MB Module CPQ - 386, 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB AST Cupid Simma 4 MB MODULE CPQ - 386S, 20E/25E 1 MB LOGRADH PLASE-LET IIP / III 2 MB Upgrade HP Lase-Let III / III 3 MB Upgrade HP Lase-Let III / III 3 MB Upgrade HP Lase-Let III / III 4 MB Upgrade HP Lase-Let III / III 5 MB Upgrade HP Lase-Let III	168.83 431.25 616.89 195.00 399.00 70 595.60 253.24 299.95 66.93 246.25 249.75 165.32 295.00 CALL 07 142.85
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 3868 MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Descrip System MB AST Cupid Simms AMB AST Cupid Simms AMB AST Cupid Simms AMB AST Cupid Simms AMB Lograde HP Laser-Let III / III MB Upgrade HP Laser-Let III / IIII MB Upgrade HP Laser-Let III / I	168.83 431.25 516.89 195.00 339.00 70 595.60 253.24 299.95 66.93 246.25 249.75 165.32 295.00 CALL 07. 142.85 102.59
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Description System 14 MB Module CPQ - 386, 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB AST Cupid Simma 4 MB AST Cupid Simma 4 MB AST Cupid Simma 5 MB AST Cupid Simma 4 MB AST Cupid Simma 4 MB MODULE CHIP / III 2MB Upgrade HP Laser-Let III / III 2MB MEMORY Module BM PS/2 MB 700S 2MB Memory Module IMP S/2 MB 3100SX 2MB 3100SX 149.35 2MB 3200SX 4MB 3200SX 324.67 3MB 3200 2MB Memory Module TOSHIBA 5200 2MB Memory Module TOSHIBA 5200 2MB Memory Module TOSHIBA 5200	168.83 431.25 616.89 195.00 399.00 253.24 299.95 66.93 248.25 249.75 165.32 225.00 CALL 07 142.85 102.59 532.46 27 149.35
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Description System 14 MB Module CPQ - 386, 386S, 20E/25E MB CPQ Exp. Bd 386S, 20E/25E MB AST Cupid Simma AMB AST Exce 386SX 4 MB Module 2MB Upgrade HP Laser-Let III / III) MB Upgrade HP Laser-Let III / III) MB Upgrade HP Laser-Let III / III MB Upgrade HP Laser-Let III / IIII MB Upgrade HP Laser-Let III / IIII MB Laser-Let IIII / IIII MB Laser-Let III / IIII MB	168.83 431.25 616.89 195.00 399.00 195.00 195.55.80 255.24 299.55 66.93 246.25 65.93 246.25 102.59 149.35 102.59 149.35 273.00 149.35
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Description System 14 MB Module CPQ - 386, 386S, 20E/25E MB CPQ Exp. Bd 386S, 20E/25E MB AST Cupid Simma AMB AST Exce 386SX 4 MB Module 2MB Upgrade HP Laser-Let III / III) MB Upgrade HP Laser-Let III / III) MB Upgrade HP Laser-Let III / III MB Upgrade HP Laser-Let III / IIII MB Upgrade HP Laser-Let III / IIII MB Laser-Let IIII / IIII MB Laser-Let III / IIII MB	168 83 431,25 616 89 195,00 399,00 399,00 253,24 299,95 66,93 244,25 249,75 165,32 295,00 CALL 07 142,85 273,00 149,35 599,00
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Desarro System 4 MB Medick CPQ - 386 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB AST Cupid Simma 4 MB AST Cupid Simma 4 MB AST Cupid Simma 4 MB AST Cupid Simma 5 MB AST Cupid Simma 5 MB AST Cupid Simma 6 MB Ligarde HP Laser-Let II P / III 2MB Upgrade HP / III / III 2MB Upgrade HP / IIII / III 2MB Upgrade HP / III / III 2MB Upgrade HP / IIII / IIII 2MB Upgrade HP / IIII / IIIII 2MB Upgrade HP / IIII / IIII 2MB Upgrade HP / IIII / IIII 2	168.83 431.25 616.89 195.00 399.00 195.00 195.55.80 255.24 299.55 66.93 246.25 65.93 246.25 102.59 149.35 102.59 149.35 273.00 149.35
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Mod CPQ Descriptor System PMB Module CPQ - 386 386S, 20E/25E 4MB ACT Cupid Simma 4 MB AST Cupid Simma 4 MB AST Cupid Simma 5 MB AST Cupid Simma 5 MB AST Cupid Simma 6 MB Upgrade HP Laser-Let III / III 2MB Memory Module IMB MPS2 Mod 70/9 1MB OKI Laser 400 KINGSTON FOR TOSHIBA 2MB 1200XE \$149.35 4MB 3100SX 2MB 3100SX \$24.67 3MB 3200S 2MB Memory Module TOSHIBA 5200 2MS STOSHIBA 5200 2MS MEMORY Module TOSHIBA 5200 2MS STOSHIBA 5200 2MS Memory Module TOSHIBA 5200 2MS STOSHIBA 5200 2MS Memory Module TOSHIBA 5200 2MS E 50/60 Amber or Green or While WYSE 165 VT320 Amber Green or While WYSE 150 Amber or Green or While WYSE 150 Amber or Green or While WYSE 150 Amber or Wenter or While WYSE 150 Amber or Green or While WYSE 150 Amber or Gr	168.83 431.25 616.89 195.00 399.00 0 555.80 253.24 299.95 66.93 246.25 249.75 165.32 260.41 107.122.59 \$324.67 149.35 273.00 149.35 273.00 1515/279.92 1,98/274.89 345.60
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 3868 SMB Memory Board CPQ SLT 386 AMB Memory Mod CPQ Descriptor System AMB AST Cupid Simma AMB Lograde HP Laser-Let III / III AMB Upgrade HP Laser-Let III / IIII AMB Upgrade HP Laser-Let III / III AMB Upgrade HP Lase	168.83 431.25 616.89 195.00 399.00 0 595.80 253.24 299.95 66.93 246.25 249.75 165.32 295.00 149.35 5324.67 149.35 530.00 149.35 589.00
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 3868 2MB Memory Board CPQ SLT 386 AMB Memory Mod CPQ Descrip System PMB Module CPQ - 386 3865, 20E/25E AMB CPQ Exp. Bd 3865, 20E/25E AMB CPQ Exp. Bd 3865, 20E/25E AMB AST Cupid Simma AMB AST Cupid Simma AMB Lograde HP Laser-Let III / III) AMB Upgrade HP Laser-Let III / III) AMB Upgrade HP Laser-Let III / III AMB Upgrade HP Laser-Let III / IIII AMB Upgrade HP Laser-Let III / III AMB Upgrade HP Laser-Let II	168.83 431.25 616.89 195.00 399.00 0 595.80 255.24 299.95 66.93 248.25 249.75 165.32 295.00 149.35 579.00 149.35 599.00 149.35 599.00 149.35 599.00
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Med CPQ Desagra System AMB Module CPQ - 386, 386S, 20E/25E AMB CPQ Exp. Bd 386S, 20E/25E AMB CPQ Exp. Bd 386S, 20E/25E AMB AST Cupid Simma AMB AST Cupid Simma AST Exec 386SX 4 MB Module 2MB Upgrade HP Laser-Let IIP / III AMB Upgrade HP / III AMB Upgrade HP / III AMB Upgrade HP Laser-Let IIP / III AMB Upgrade HP Laser-Let IIP / III AMB Upgrade HP Laser-Let IIP / III AMB Upgra	168 83 431,25 616 89 195,00 399,00 755,24 299,95 66,93 248,25 249,75 165,32 295,00 CALL 07,142,85 102,59 \$324,67 149,35 573,00 149,35 579,00 \$15,577,92 98,274,89 345,60 260,45
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Med CPQ Desagro System AMB Module CPQ - 386 , 386S, 20E/25E AMB CPQ Exp. Bd 386S, 20E/25E AMB CPQ Exp. Bd 386S, 20E/25E AMB AST Cupid Simma AST Exce 386SX 4 MB Module AMB Upgrade HP Laser/Let II / III A	168.83 431.25 616.89 195.00 399.00 0 593.00 253.24 299.95 66.93 246.25 249.75 165.32 299.00 CALL 07.142.85 102.59 \$324.67 149.35 573.00 260.45 149.35 579.00 260.45
AMB Memory Board CPQ LTE 286 MB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Board CPQ SLT 386 MB Memory Mod CPQ Descrip System 14 MB Module CPQ - 386 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB CPQ Exp. Bd 386S, 20E/25E 4MB AST Cupid Simma 4MB AST Cupid Simma 4MB Lograde HP Laser-Let III / III 2MB Upgrade HP Laser-Let	168.83 431.25 616.89 195.00 399.00 0 595.80 253.24 299.95 66.93 246.25 249.75 65.32 265.02 265.02 275.00 149.35 273.00 159.00 169.00 17
AMB Memory Board CPQ LTE 286 AMB Memory Card CPQ LTE 386S 2MB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Board CPQ SLT 386 AMB Memory Med CPQ Desagro System AMB Module CPQ - 386 , 386S, 20E/25E AMB CPQ Exp. Bd 386S, 20E/25E AMB CPQ Exp. Bd 386S, 20E/25E AMB AST Cupid Simma AST Exce 386SX 4 MB Module AMB Upgrade HP Laser/Let II / III A	168.83 431.25 616.89 195.00 399.00 0 595.60 253.24 299.95 66.93 248.25 249.75 165.32 295.00 0 149.35 500 149.3

DOT MATRIX &	LASER PRINTERS	
EPSON'		
LX810 \$154.00 LQ870 435.00	FPL 7000 Laser 789.00	
LQ2550 859.00	EPL 7500 Laser PS 1899.00	
FX1050 399.00	LQ1170 596.00	
Action Laser (EPPM 687.00	LQ1070 349.00	
N	EC	
Stentwriter 90 \$1549.50	P6300 New Model _\$623.11	
P3300 24-pin374.19	P3200 24-pin	
DICON	X by KODAK	
150 Parallel (150 Sens)	\$329.07 / 339.07	
OKII		
	MIN	
OKILASER 400595.86	ML391+ 596.41	
OKILASER 800 926.96	ML380 224.61	
OKILASER 830 1314.50	ML393+ 937.20	
ML320 314,68	ML321 438.44	
Pana	sonic	
1124 \$279.09	1624 \$343.93	
1123 210.00 1695 360.21	1180/1654149,99/539.86 2624436.56	
4450l Laser 1099.12	4455 PostS. Laser, 1769.70	
4420 Laser Printer	759.00	
(4)	ACKARD	
H-P LaserJet Model IIID H-P Deskiet 500 H-P Laser	\$2379.22 et IIP 474.50/849.00	
H-P Laterat N1548.00	H-P Lanev III SI CALL	
H-P LaserJet IIIP	H-P Paintet XL 1648.35 1028.00	
H-P LaserJet IIIP CANON BJ10EX Bubble CITIZEN GSX 140	Jet 323.68 289.44	
QMS PS410	1649.00	
PACIFIC DATA 25 in 1 Cart PACIFIC DATA Page Posts	LAS3 \$259.00	
PACIFIC DATA Page Posts PACIFIC DATA Cornect 1.2	cript 4 HP LAS3 349.44	
FACIFIC DATA 1 MB Upgra	confor Laker let II 169.00	
PACIFIC DATA 1 MB for 2P POSTSCRIPT CART W/2N	/III 108.46 //B HP LAS2 339.00	
CPI JETMEMORY 1MB to	HPIIPAIMID 107.60	
CPI JETPAGE for HP IIP/IIIC CPI SUPERSET - 425 Fort	MII Postscript 208.72 Is for all HP Lasers 208.72	
DRIVES, TA		
COMPAQ 360KB (SLT)	SLT) \$179.00 SLT) 209.00	
COMPAQ 360KB (LTE)	189.00	
COMPAQ 1.2 MB/360KB (CONNER 40 MB / 120 MB		
CONNER 84 MB / 209 MB	357.65/585.88	
PLUS Hardcard IIXL 105M	B	
TO USE Mandenson the Co. Lt.	160 90	
SYSGEN 5.25" /3.5" Exten	nal Floppy	
TOSHIBA (All Models) EPS	SON LT360KB. 179.00 189.00	
TOSHIBA 1.2 MB/360KB	189.00	
Seagate		
ST225 20 MB \$180.23 ST236 30 MB 193.02	SEAGATE 4097 80 \$348.37 SEAGATE ST-2511. 236.05	
ST2383E1178.16	ST4766E, 676 MB. 1495.22	
1102A 84 MB305.88 ST1144A 124 MB IDE	ST157A 44 MB 35 182.18 409.29	
ST1239A 211 MB IDE	609.47	
MICROPOLIS		
1654-7 182MB HH \$747.67 1684-7 340 MB \$1109.86		
1664-7 345MB HH	985.44	
1568-15 676MB ESDI	1358.65	

200	PHACTICAL PERIPHERAL	5
	2400 V 42 Int\$158.81 2400 Int	\$79,48
	2400 V 42E0S Ext. 187.50 2400SA	163.63
.11	2400 V 42BIS Est. 187.50 2400SA 9500 V 32 42BIS 433.58 Pocket 2400	98.00
21		
	HAYES	
	2400 External\$323.84 24008 Internal	\$224.45
.07	ULTRA 9600 External	609.98
N/E	Optima 9600 V 32	439.50
	Hayes Pocket Edition.	117,92
22		
41	Robotics	
.61		EE7 20
.20	Counter 2400 264.61 V.32 9600E	567,80
50	Dual 14,400 HST _789.65 14,400 HST	557,77
44	MH ₂	
-	A TELL SEA	
	2400 for TOSHIBA 127.33 2400 for COMPAQ	LTE \$15421
.93	CPI VIVA 2400 Internal/9600 External79	9.40/429.82
.86	CPI VIVA 2400 External Faxsend Modern	99.40
56	CPI VIVA 2400 External Hardware MNP	139.73
70		
00	MULTI-TECH	
	MULTI-TECH 2400EH 2400 Ext	\$279.43
	MULTI-TECH 696EA 9600	448 32
22	MULTI-TECH MT932EAB 9600	497.52
.00		
.35	BOARD & COMM PRODUC	TS
00		\$449.75
68	DICIDOADO DOS Intelligent 9 Court	3449.75
44	DIGIBOARD PC/8i Intelligent 8 Serial	/99.60
00	DIGIBOARD PC/16i Intelligent 16 Serial	1172.34
00	KINGSTON 386SX Now	349.75
.44	EVEREX 2400 Internal Modern	78.75
58	EVEREX 2400 External MNP w/Sft	189.88
.00	EVEREX 2400 MNP Internal	145.34
.46	IRMA III 3270 XT/AT/PS/2	399.60
.00	WORLD PORT Modern/Fax Ext	312.90
.60	AST SixPack 286 0K INTEL Above Board Plus 6 w/2 MB INTEL Above Board Plus 512K	96.60
.60 .72 .72	INTEL Above Board Plus 6 w/2 MB	397.71
72	INTEL Above Board Plus 512K	279.16
	INTEL Inboard 386/PC	469.60
	INTEL SatisFAXtion Fax Board	369.00
.00	INTEL SatisFAXtion Fax Board INTEL Snap In 386SX/20	359.52
.00		
00	BATTERY BACKUP AND	UPS
.00		
90	AMERICAN	
88	AME-1200VX \$735.95 AME-520ES	5311.36
.50	AME-360SX 204 54 AME-BOORT	552 50
46	AME-350SX 204.54 AME-800FT AME-450AT 257.81 AME-600LS AME-Smart 400 307.95 AME-Smart 900.	434.50
80	AME Danie AND DATE OF AME CONTACTOR	434.68
.25	AME-Smart 900.	609.12
.56	(m)	
.00		
.00	BC-275 \$163.41 BC-500 LAN BC-375 198.54 BC-750 LAN	\$279.24
	BC-375 198.54 BC-750 LAN	458.61
	BC-500259.76 Omni 450 LAN	299.54
37	100	·
.05	MICE	
22	MICE	
18	Super Mouse II W/Windows	579.75
47	LOGITECH ScanMan PC/Scanman 25617	
	LOGITECH Trackman Senal	78.62
	HICOCOCT Marine (Dura Marine)	05.50
00	MICROSOFT Mouse (Bus Version)	
86	MICROSOFT Mouse (Sera) Version)	95.50
44	MICROSOFT Mouse w/Windows 3.0	144.95
65	MICROSOFT Ball Point Mouse	
	MICROSOFT Serial. No Software	
60		
55	LOGITECH Mouseman Senal	
	LOGITECH Mouseman PS/2	69.35
95	LOGITECH Mouseman Bus	
00		
10	LOGITECH Mouseman Cordless	105.54
	PC Ma	annel.
I I all a	terror and the state of the sta	

	AME	RICAN	
E-1200VX	\$735.95	AME-520ES	\$311.36
E-360SX	204.54	AME-800RT	552.50
E-450AT	257.81	AME-600LS	434.68
E-Smirt 400	307.95	AME-Smart 900.	.609.12
		(unt)	
		BC-500 LAN	
		BC-750 LAN	
500	259.76	Omni 450 LAN	299.54
per Mouse II	WWindow	CE T	579.75
per Mouse II	WWindow	5	
GITECH Sca	W/Window anMan PC/S	Scanman 256 177.	89/278.45
GITECH Sca	W/Window anMan PC/S	5	89/278.45
GITECH Sca GITECH Tra CROSOFT N	WWindow anMan PC/S ackman Sen Mouse (Bus	Scanman 256 177. al. Version)	89/278.45 78.62 95.50
GITECH Sca GITECH Tra CROSOFT N	WWindow anMan PC/S ackman Sen Mouse (Bus	Scanman 256 177. al	89/278.45 78.62 95.50
GITECH Sca GITECH Tra CROSOFT M CROSOFT M	WWindow anMan PC/S ackman Sen Mouse (Bus Mouse (Sen	Scanman 256 177. al. Version)	89/278.45 78.62 95.50 96.50
GITECH Sca GITECH Tra CROSOFT N CROSOFT N CROSOFT N	WWindow anMan PC/S ackman Sen Mouse (Bus Acuse (Sen Mouse wWi	Scanman 256 177. al Version)	89/278.45 78.62 95.50 95.50 144.95
GITECH SCE GITECH TRA CROSOFT NO CROSOFT NO CROSOFT NO CROSOFT NO CROSOFT B	anMan PC/S ackman Sen Mouse (Bus Mouse (Sen Mouse w/Wi Ball Point Mo	Scanman 256 177. al	89/278.45 78.62 95.50 95.50 144.95
GITECH Sca GITECH Tra CROSOFT N CROSOFT N CROSOFT N CROSOFT S CROSOFT S CROSOFT S	WWindows anMan PC/S ackman Sen Mouse (Bus Mouse w Wa Ball Point Mc Senal, No Sc	Scanman 256 177. al	89/278.45 78.62 95.50 95.50 144.95 118.90 79.80
GITECH SCA GITECH TRA CROSOFT N CROSOFT N CROSOFT N CROSOFT N CROSOFT B CROSOFT B CROSOFT B	WWindow anMan PC/S ackman Sen Mouse (Bus Mouse w/Wi Sall Point Mo Senal, No So suseman Se	Scanman 256 177. al Version) al Vesion) ndows 3.0 ouse oftware	89/278.45 78.62 95.50 96.50 144.95 18.90 79.80 69.35
GITECH SCA GITECH TRA CROSOFT N CROSOFT N CROSOFT N CROSOFT B CROSOFT B CROSOFT S GITECH MO GITECH MO	WWindow anMan PC/S ackman Sen Mouse (Bus Mouse wWi Bail Point Mk Serial, No So suseman Se suseman PS	Scanman 256 177. al Version) al Version) ndows 3.0 bouse bloware	89/278.45 78.62 95.50 95.50 144.95 118.90 79.80 69.35

WINDOWS SOFTWAR	Ē
MICROSOFT Windows 3.0	\$92.75
ADOBE TypeManager For Windows	63,50
ALDUS Pagemaker 4.0 for Windows 3.0	469.10
ASYMETRIX Toolbook	279.00
BITSTREAM Facelift for Windows	59,50
BUMBLEBEE DB Fast for Windows	188.75
CAERE Omnipage 386.	429.97
CAERE Omnipage Professional	589.42
CALERA Wordscan + for Windows	599.42
COREL SYSTEMS Corel Draw	365.55
CROSSTALK for Windows 3.0	
DELRINA Par. Form Pro for Windows 3.0	299.84
DMP PC Anywhere IV	96.60
HDC First Apps for Windows 3.0	
HDC Windows Express	
IBM Current for Windows	217.73
INFORMIX Wingz for Windows	
LOTUS 123 For Windows	
LOTUS AMI Professional for Windows 3.0	283.61
MICROGRAFX Designer 3.1 for Windows	
MICROGRAFX X-Port for Windows 3.0	134.42
MICROGRAFX Draw for Windows 3.0	
MICHOGRAFX Chansma	
MICROSOFT Excel for Windows V3.0	297.09
MICROSOFT Powerpoint for Windows 3.0	
MICROSOFT Productivity Pack for Windows	
MICROSOFT Project for Windows 3.0	
MICROSOFT Windows 3.0 Developers Kit	297 20
MICROSOFT Word for Windows 3.0	
NORTON Desktop For Windows	
PRECISION SFT. Superbase 4 for Windows	399.33
REFERENCE Grammatik for Windows	
SPINAKER Works for Windows	
XEROX Ventura Gold for Windows 3.0.	479.62
XEROX Formbase for Windows	208 22
ZSOFT Soft Type Fonts	108.86
MONO & COLOR MONIT	ORS
CDW* Color / Mono Cards w/P	59.00
SAMSUNG 12' Amber	84,10
SAMSUNG 14" White SAMSUNG RGB Color	105.68

VGA & EGA MONITO	RS
LCOMP 3060 20" MultiSync 1280 x	1024 CALL
GNAVOX Super VGA 28mm 7CM3	21 334.40
GNAVOX CM9032 .42mm VGA Col	249.50
GNAVOX 7BM749 Mone 14" VGA	119.50
C Multisync 4DS/SD	939.56 / 2159.34
C Multisync 2A / Multisync 3DS	399.60 / 549.70

VGA & EGA PRODUCTS

CAL NE 335.56 PACKARD BELL 8528 1024X768. 118 50 335.42 856.92 429.50 / 589.60 524.17

VGA & EGA DISPLAY CARDS

ATI VGA Wonder XL 1 MB/512	5279.63/219.32
ATI Graphics Ultra 1 MB/512K	564.04/435.95
ATI Integra89.38 ATI Ba	sc 16 VGA 77,16
ATI 8514 Ultra 1 MB	509.11
ATI Vantage 1MB/512K	379.68/325.62
BOCA BASE VGA	64.50
PARADISE 1024: 256K /512K	145.63/207.36
PARADISE VGA / VGA + 16	109.54/133.33
ORCHID Prodesigner IIS 512K	198.18
ORCHID Prodesigner IIS 1MB	258.62
VIDEO 7 1024I 512K/256K	
VIDEO 7 VRAMII VGA 1 MB	319.79
VIDEO 7 VRAM II VGA 512K	256.22
VIDEO 7 VGA 16	98.41

ST ORDERS RECEIV BY 5:00 P.M. C.S.T. SHIP SAME DAY

IF YOU FIND A BETTER PRICE CALL US BEFORE YOU BUY 2840 MARIA, NORTHBROOK, IL 60062 FAX (708) 291-1737

rine says..."You may find a better deal here than anywhere else.

WHY WAIT? CALL COMPUTER DISCOUNT WAREHOUSE" NOW! WE SELL NAME BRAND ITEMS FOR LESS!

EXTENDED HOURS 7:30-7:30 CST Mon-Fri 9:00-3:30 CST Sat. 8:00-7:00 CST Mon-Fri

@1991 MPK Computing, Inc.



In Illinois

SURGE SUPPRESS

DATASHIELD S100 DATASHIELD S85... KENSINGTON MP+

FAX (708) 498-1426 (708) 291-1737

Credit card



COMPUTER DISCOUNT
WAREHOUSE**
SERVICING YOUR PC NEED
SINCE 1982 - DON'T ACCEPT ANY
MITATIONS

PCW321

Apply for the CDW Credit Card



We Export!

EPSON PRINTERS

LX 810\$155	LQ860\$549
FX 850\$289	LQ870\$435
FX 1050\$395	LQ1010\$359
LQ 200\$229	LQ1070\$359
LQ 510\$245	LQ1170\$569
LQ 570\$259	LQ2550\$849
EPL7000 — Laser P	rinter\$789
Action Laser	\$699
DFX 5000 - 533 cg	os, 160 nig\$1269
DFX 8000 - 1066	cps, 160 nig .\$2139

KENOSHA COMPUTER CENTER

SALES LINE OUTSIDE WISCONSIN

1-800-255-2989



NOTEBOOKS

AST Premium Exec 386-63VCall Everex Tempo LX 386-40Call Everex Tempo LX 386-60Call
마이크 10 10 10 10 10 10 10 10 10 10 10 10 10
Everex Tempo LX 386-60Call
Packard Bell 386SX-40\$1899
Panasonic CF270/CF370\$1599/Call
T.I. TM 200-40\$1199
T.I. TM 3000-40\$2249
T.I. TM 3000-60\$2569

HEWLETT-PACKARD &



by COMPLTER PERIPHERALS INC.
Laserjet IIP
Laserjet IIIP
Laserjet III/III SI\$1545/3649
JETWARE Superset Plus —
425 Fonts in one\$209
JETPAGE II and III - postscript
emulation in a cartridge\$215
Action Set - 102 fonts in one
for HP, Epson, and Toshiba\$139
1 MG Upgrade\$99
2 MG Upgrade\$139
4 MG Upgrade\$229
256K Upgrade for Deskjet 500\$119

PANASONIC

1123/1124i\$199/\$275
1180/1191\$149/\$219
1624/1654\$339/\$539
2624\$399
4420/44501\$749/\$1079
4455 Postscript Laser\$1749
2mg. Upgrade for 4420 & 44501\$149
C1381 1024 x 768 VGA Monitor\$329
C1395 1024 x 768 Non-Interlaced\$539
CF170 NotebookCall
CE270 Notebook Call

LASERS & UPGRADES

.\$879
\$1195
1499
Call
.\$329
.\$249
\$699
\$259

LAPTOP MEMORY

4 MB AST Premium Exec	.\$359
1 MB Compaq LTE 386	.\$219
2 MB Everex Tempo LX	.\$199
2 MB Toshiba T1600	
2 MB Toshiba T2000 SX	\$169
2 MB Toshiba T3200SX	. \$129
2 MB Toshiba 5200	\$139
All other models	CALL

PLOTTERS & DIGITIZERS

HOUST	ONI IN	CTDIIA	AENITE
DMP-52			\$2000
DMP-61			\$2499
DMP-61DL.			
DMP-62			\$3369
DMP-62DL.			\$3999
Summasketo			
Summasketc	n IZX	4	
Summasketo	h 12v1	0	CE40
Julilliaskett	11 140	0	

Kcc Computers

- All systems include 1 year on-site service.
- All KCC systems come with a 30 day money-back guarantee.
- Toll-free technical support for all KCC systems.
- One Year Limited Warranty.

KCC 386 SX/20 with 1.2 MG Floppy,	
1 MG, 40 MG Hard Drive, with DOS	\$899
KCC 386-25 2 MG RAM, 1.2 MG Floppy, 40 MG Hard Drive, with DOS	\$1099
KCC 386-33 with 64K Cache, 1.2 MG Floppy, 4 MG RAM, 89 MG Hard Drive, with DOS	\$1499
KCC 486-33 with 256K Cache, 1.2 MG Floppy, 4 MG RAM, 211 MG Hard Drive, with DOS	\$2299

We will custom configure all KCC Computers with the name brand peripherals of your choice. Call for a quote!!!

HARD DISKS

SEAGATE	
40MBfor AT ST251-1	\$229
40MB 157A Kit	
80MB for AT ST296N Kit	\$299
89MB 1102A	\$279
120MB 1144A	\$439
106MB 3120A	
211MB 1239	\$599
PLUS HARD CARDS	
20MB/40MB\$48	9/\$549
ONAAD	CEGO

PSII Hard DrivesCALL

TAPE BACK UP

Maynard 60MB External	\$829
Mountain 40MB Internal	\$299
Mountain 40MB External	
All other models	CALI

HOLUTORS

MONITORS	
Mitsubishi EGA	\$339
Mitsubishi Diamondscan	\$489
Mitsubishi HL 6605 16"	.\$1029
Mitsubishi HL 6935 20"	
NEC Multisync IIA	
NEC Multisync IIID	
NEC Multisync IVD	
NEC Multisync VD	
Panasonic C1381 1024×768	
Panasonic C1395 1024×768	
All Goldstar Monitors	.CALL

Prices and availability subject to change

KENOSHA COMPUTER CENTER 2133 91st St. Kenosha, WI 53140

SOFTWARE

D Base IV	479
Harvard Graphics 3.0	389
Lotus 123 2.2/3.1\$329/5	
Microsoft Mouse	.\$89
Microsoft Excel	5299
Microsoft Windows 3.0	.\$79
Microsoft DOS 5.0	.\$79
Multimate Version IV	\$239
R Base for DOS	5439
Symphony	\$459
Ventura Desktop Publ	
Word Perfect 5.1	

GRAPHICS CARDS

ATI Basic 16	.\$89
ATI Wonder XL	
ATI 8514 1MG	\$489
Everex VGA VRAM	
NEC Graphic Engine	
Orchid Pro Designer IIS 1MG .	\$269
Paradise VGA 1024	\$139
Paradise VGA Plus 16	\$179
Boca Super VGA 1MG	\$169
Hercules Station	\$649

OKIDATA PRINTERS

ML320\$31	9
ML321	9
ML380\$21	9
ML390\$43	9
ML391\$59	9
ML393	9
OLC 400 Laser	9
OLC 800 Laser \$93	9
OLC 820 Laser	9
Okilaser 400 2MB Upgrade\$14	9

			Ε												
Netware	2	.2	5	ι	Js	•	er								\$499
Vetware	2	.2	10)	u	Js	e	r				i			.\$1099
Netware	2	.2	50)	u	Js		r				v			.\$1949
NE1000															\$139
NE2000															
ARCNET															

ARCNET PC 500FS \$289/\$79
ARCNET PC 500FS \$175
Thomas Conrad 6142 8-bit \$99
Thomas Conrad 6045 16-bit \$199 LANTASTIC

2MB Starter Kit/Adapter ..\$349/145 10MB Ethernet Starter Kit ..\$469 Adapter ..\$209 Accessories ..Call

intal



Intel Snap-In 386															.5	369
80287-XL																
80387-16 DX/SX											\$	19	9	5/	15	129
80387-20 DX/SX											Ś	1	9	5/	Ś	139
80387-25MHz or	3	3		١	1	۱	12	z							.s	195
80487-SX									į.	Ĺ					.Ś	449
The Intel Plus-8	w	/	2	٨	И	E	3								.5	399
Intel 9600 Ext. M																
Satisfaxtion (Fax																

MEMORY UPGRADES COMPAQ MEMORY

386 1MB/4MB N	ODULES	.\$119/\$259
386 1MB/4MB B	OARDS	\$169/329
SLT 286 1MB		
LTE 286 2MB		
Other Models		
	JPGRADES	
2 MR Kit 30-286		\$139

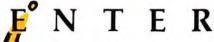
CHIPS & LASER UPGRADES All Simm & Drams . Call Panasonic 2MB . \$159 OKI LASER 400 2MB . \$149 Pacific Data 25-in-1 Font Pacific Page \$329

MODEMS

Everex 2400 int/ext\$79/	155
Hayes V Series int\$	199
Hayes Ultra 9600\$6	639
Intel 2400 ext5	159
Intel 2400 ext w/MNP	209
Intel 9600 ext\$4	
Practical Perp. Pockett Modem\$	
US Robotics 2400 int/ext\$129/	
US Robotics 14.4 int/ext\$549/5	
US Robotics V-32 int/ext\$549/	
US Robotics Dual Std	

No charge for MasterCard or Visa: American Express add 5%. We will ship COD on a cash or cashier's check basis only. Shipping & handling 3%—56 minimum, AK and Hi slightly higher. 15% restoking charge on returned items. Purchase orders accepted from Fortune 1000, Covernment institutions, schools and universities. 2% shipping discount available on orders over \$2000 of prepad by check.

Circle 141 on reader service card



★★ CALL TOLL-FREE 800-433-3726 ★★

* HOT BOX *

NEC Prospeed 386SX-20, 4Meg, PC43-22 \$419.00

Compaq LTE 3865/20, 4Meg, 121125-002 \$419.00

Compaq SLT/386, 4Meg, 118305-001

\$469.00 HP 2, 2D, 3, 3D, 3P, 2P

2Meg - \$125.00 4Meg - \$195.00 Turbo 25 gives you 150 fonts for H.P. printer \$119.00

We have memory for all laser printers.
(SEE BELOW)

Individual D-RAM Chips

M				
	60NS	70NS	BONS	100NS
tMeg x 1	5.75	5.00	4.50	4.15
4Meg x 1	_	_	34.00	_
1Meg x 4	5-3	-	31.00	-
1Meg x 4 (Zip Pack)	-		29.00	-
256 x 4 (Video Zip)				14.95
256 x 4	6.00	5.75	5.50	5.55
256 x 1	2.65	2.40	2.00	1.70
64 x 4	-	-	3.25	3.00
64 x 1	-	-	-	1.50

SIMM MODULES (Add \$500 for SIPP)

14.74.66	60NS	70NS	80NS	100NS
1Meg x 9 (IBM)	49.00	46.00	44.00	39.00
4Meg x 9 (IBM)	219 00	189.00	169.00	-
256 x 9 (IBM)	23.00	21.00	18.00	17.00

INTEL Math Chips					
8087	59.00	80387-16	149.00		
8087-2	79.00	80387-16SX	149.00		
8087-1	119.00	80387-20	219.00		
80287-6	69.00	80387-20SX	159.00		
80287-8	89 00	80387-25	219.00		
80287-XL /50%	tasteri 109.00	80387-33	219.00		
	h faster) 119.00				

IIT ADVANCED MATH CO-PROCESSOR

2-3 limes faster than Intel • Plug & object code compat. w/Intel
 5 Year 2C87-8MHr - 89.00 2C87-12.5MHz - 104.00
Warranty 2C87-10MHz - 94.00 2C87-20MHz - 129.00

WORDSTAR SOFTWARE BLOWOUT

. BELOW WHOLESALE PRICES .

. Wordstar 6.0. factory sealed. factory boxes - \$139.00 Wordstar 2000 release 3.5, revision C - \$139.00

AST MEMORY MODULES

MODEL# AMT. UP	GRADED	AST PART#		PRICE
Premium 386/25, 16 SX	1Meg	500718-001		65.00
Premium 386/33	1Meg	500718-002		69.00
Premium II	1Meg	500780-003	WPB	85.00
386SX20, 486-25, 25E, 33	4Meg	500780-004	WPB	229.00
Premium Tower, 386/33TE, 486/25TE, 486/33TE	8Meg	500780-001		

ZENITH MEMORY UPGRADES

MODEL# AMT.	UPGRADED	ZENITH PART#	PRICE
Z386/33	1Meg	ZA3600ME	89.00
Z386/25,20, 3800	4Meg	ZA3600MK	299.00
Z248, Z286LP Z386SX	2Meg	Z-605-1 modules	149.00

BOCA AT PLUS

16 BIT MEMORY BOARD FOR 286, 386 AT

1 X 9 SIMM 139.00 9" LONG

BOCA XT 8 BIT BUS

Expanded memory for XT • Lim 4.0 compat. 0-2Meg • Uses 256x1-150
 O-K \$109.00 1Meg \$170.00 2Meg \$229.00

IBM PS/2 SIMM MODULES

IBM PART NO.		RADE'S PRICE
30F5348 (512K)	30-286	38.00
30F5360 (2Meg)	30-286, 50 MTHR BD.	110.00
6450375 (1Meg)	80-041	55.00
6450379 (2Meg)	80-111, 311	139.00
6451060 (4Meg)	80-A21, A-61, 80-A31, 80-111, 80-311	249.00
6450603 (1Meg)	35SX, 40SX, 55SX, Model-70's, P-70	52.00
6450604 (2Meg)	35SX, 40SX, 50Z, 55SX, 55LS, Model 70's, P-70	99.00
6450608 (2Meg)	70-A21, A-61, B-21, B-61	105.00
78X8955 (128K)	25	35 00
34F2933 (4Meg)	35SX, 40SX, 55SX, 65SX	219.00
87F9977 (4Meg)	55SX, 55LS, 65SX, 40SX, 35SX, 35LS	219.00
1383679 (512K).	(2Meg) P/S1 50.00.	139.00
6450902 (2Meg)	57SX.90, 95, P-75	99.00
6450128 (4Meg)	57SX, 90, 95, P-75	309.00
6450129 (8Meg)	35SX, 40SX	499.00
6450130 (8Meg)	57SX, 90, 95, P-75	519.00

COMPAQ MEMORY MODULES

MODEL#	AMT. UPGRADED	CMPQ PART#	PRICE
System Pro	2Meg Module	115144-001	139.00
DeskPro 486/25	2Meg Module	115144-001	139.00
	8Meg Module	116561-001	799.00
DeskPro 386/33	2Meg Module	115144-001	139.00
DeskPro 386/25, 386/20	1Meg Module	113131-001	59.00
	4Meg Module	113132-001	219 00
DeskPro 386S	1Meg Exp Bd	113633-001	139.00
	4Meg Exp Bd	113534-001	299.00
	1Meg Module	113646-001	79.00
	4Meg Module	112534-001	229 00
DeskPro 386/20E	1Meg Exp Bd	113544-001	129.00
DeskPro 386/25E	4Meg Exp Bd	113545-001	299.00
	1Mcg Module	113131-001	59.00
	4Meg Module	113132-001	219.00
DeskPro 286N.	1Meg Module	118688-001	59.00
386N, 386SX20	2Meg Module	118589-001	119.00
	4Meg Module	118690-001	269.00
DeskPro 386/16	1Meg Kit	108071-001	119.00
	4Meg Kil	108072-001	269.00
	1-2Meg Exp Bd.	108069-001	309.00
	4-8Meg Exp Bd	108070-001	699.00
DeskPro 286	512K Kit	113012-001	79.00

MEMORY UPGRADES FOR COMPAQ PORTABLES AND LAPTOPS

Portable 386	1Meg Kit	107651-001	169.0
	4Meg Exp Bd	107653-001	479.00
	4Meg Daght, Bd	107654-001	479.00
Portable III	2Meg Kit	107332-001	119.00
Compag SLT/286	1Meg Module	110235-001	129.00
	4Meg Module	110237-001	469.00
Compag SLT/386	1Meg Module	118303-001	129.00
	2Meg Module	118304-001	219.00
	4Meg Module	118305-001	469.00
Compag Lte 286	1Meg Bd	117081-001	89.00
0-13-4-V-1	2Meg Bd	117081-002	159.00
	4Meg Bd	117081-004	399.00
Compay Lte 386S/20	1Meg Module	121125-001	169.00
Compag Lte 386S/20	4Meg Module	121125-002	419.00

MEMORY BOARDS IBM Compatibles, Compaq & PS/2

EXT/EXP MEMORY BOARD, BOCA 50Z

0-2Meg for PS/2 50, 50Z, 60 • 0 wait state ram • Uses 1Megx1-80NS 0-K board only \$129.00 2Meg with board \$224.00

. WE WILL TRY TO MATCH OR BEAT ANY ADVERTISED PRICE .

BRAT 99
ADVERTISED PRICE *
WEES All products Brand New & Guaranteed * We Buy Excess Inventory
X 9 SIMM Trademarks are registered with their respective companies.



20930 South Normandie • Torrance, CA 90502

1-800-433-3726

TOSHIBA LAPTOP MEMORY

LAPTOP MODEL #	UPGRADED	TOSHIBA PART #	L.A. TRADE'S COMPT. PRICE
T1000SE/XE/LE	1.5Meg	PC14-PA8311U	
T1000SE/XE/LE	2Meg.	PC14-PA8312U	
T2000/T2000SX	1Meg	PC18-PAB316U	
T2000/T2000SX	2Meg	PC18-PA8317U	
T2000SX/T1000LE	4Meg	PC-PA8314U	399.00
T2000SX/T1000LE	8Meg	PC14-PA8315U	
T2000SXE/2200SX T2000SXE/2200SX	2Meg 8Meg	PC-PA2000U PC-PA2001U	
T2000SXE/2200SX	8Meg	PC-PA2002U	
T1200XE	2Meg	PC13-PA8306	
T1600	2Meg	PC8-PA8302U	119.00
T3100e	2Meg	PC9-PA8340U	
T3100SX	2Meg	PC15-PA8308U	
T3100SX	4Meg	PC15-PA8310U	
T3200	3Meg	PC6-PA7137U	219.00
T3200SX	2Meg	PC12-PA8307U	119.00
T3200SX	4Meg	PC12-PA8909	
T3200SXC	2Meg	PC19-PA8318U	
T3200SXC	4Meg	PC19-PA8319U	289.00
T5100	2Meg	PC7-PA8301U	119.00
T5200/T8500	2Meg	PC10-PA8304U	119.00
T5200/T8500	8Meg	PC10-PA8313U	769.00

BRANDNAME LAPTOP MEMORY

Leading Edge D/LT 386SX Bondwell B310	1Meg		119.00
NEC Prospeed 286, 386SX-16		PC21-21	139.00
NEC Prospeed 286, 386SX-16		PC21-21 PC21-22 PC31-21 PC31-22 PC43-21 PC43-22 CE 621B	499.00
		0021.22	
NEC Prospeed 386		PG31-21	179.00
NEC Prospeed 386	8Meg	PL31-22	829 00
NEC Prospeed 386SX-20	1Meg	PG43-21	169.00
NEC Prospeed 386SX-20	4Meg	PC43-22	519.00
Sharp PC-6220	1Meg	CE 621B	159.00
Sharp 6640	2Meg		179.00
Sharp PC-6220 Sharp 6640 TI Travelmate 2000	1Meg	2568034-0001	149.00
TI Travelmate 3000	2Meg	2566996-1	139.00
Zeos 386SX Notebook	2Meg	ZA-300-1	189.00
Zenith Master Sport 386SX	2Meg	ZA-300-1	199.00
Zenith Super Sport -	2	2,000	100.00
286 286F	1Meg	7A-180-66	125.00
286, 286E 286E, SX	2Meg		199.00
SX Alpha	2Meg	ZA-180-86	199.00
Everex Tempo LX	21400		179.00
ACT Matabash Dram From	Alleg	E00011 003 3055730	
Came 17/19 119	ameg	500814-003, 386SX20	170.00
Sallyo 17/10 NB	Zmeg	MBC-NBMEM2 CF-BA165	179.00
Panasonic CF1/U, CF2/U	IMeg	CF-BA105	159.00
IBM P/52 LX40 2Meg.	ameg	. 8Meg 179.00, 399.00.	
Epson NB3	IMeg.	4Meg 129.00.	349.00

LASER PRINTER MEMORY UPGRADES

A. B. Garage	1Meg. 2Meg.	4Meg		1Meg.	ZMeg.	4Meg
HP 2, 20, 3, 30 3P 2P	89 00, 125 00	195.00	Panastnic 4455	-	249 00	
Panasimir 4420/44501	105 00 149 00	249.00	NEC 90, 290	-	249.00	-
Panasonic 4450	149 00 -	-	QMS 410	129.00	189.00	299 00
Epson 6000, Action			Brother HL-4	129.00		
19361	119 00, 159 00,	259 00	Konica 3110	199.00		
Toshiba Page Laser 6	119.00 169.00	259.00	11 XL/PS17.PS35	89.00	2	-
Packard Bell P89500	119 00, 169 00	259 00	QMS PS 815/825	Call	Cat	- 04
06 400	129 00 179 00		Canon LBP4	209.00.	259.00	-
IBM Laser 4019, 4019E	99 00, 145 00,		AT&T 593	149 00.		299.00
HP III SI	79.00 -	229.00	STA 1 574		199 m	

H.P. COMPATIBLE FONT CARTRIDGE

18M LASER PRINTER FONT CARD Similar to Turbo 25, 205 Fonts 199.00 TURBO 25 contains every English language font in Pacific Data's current 25 CARTRIDGES IN ONE! Cartridge, plus 2 Headline Fonts with 6 additional U.S. Fonts — Made for HP Printers 119.00

TURBOSCRIPT gives you 47 scalable fonts in any point size. 12 more than Pacific Data or HP Adobe Postscript, supports the very latest Adobe Type 1 Font Formats—Made for HP Printers 245

HO SURCHARGE FOR MASTERCARD, VISA OR DISCOVER. PURCHASE ORDERS ACCEPTED FROM FORTUNE 2000, GOVERNMENT & INSTITU-TIONS. Trice & availability subject to change California orders add 0 25% tales. SORRY, NO REFUNDS AFTER 30 DAYS - EXCHANGES ACTURE PART #'S ART FOR REFERENCE CINU

EVEREX

EV-3000, EV-159 0-3Meg. 4.0 Lim compatible . Uses 256x1 chips 599.00 EV-8000, EV-178

0-8Meg, 4.0 Lim compatible • Uses 1Megx1 chips • Supports multi-tasking & DMA multi-tasking in hardware \$219.00

ORCHID RAM QUEST 16/32

0-8Meg of Backfill, Expanded or Extended Memory
Works with P/S2 Models 50, 502, 555X, 60, 70, 80
Full Support for LIM/EMS 4.0 and 0S/2 — 0 Wait State Ram
4 Year War. — Comes w/Ser, Par Ports and Free Ser Cable
USING 9-10 0K — \$239.00 2Meg — \$359.00
MEG 2 9-10 4Meg — \$469.00 8Meg — \$577.00

AST 6-PK. MEMORY BOARDS

AST 6-Pak Plus for PC, XT, 64K ... 129.00 - with 384K ... 159.00

ESTAB. Mon-Fri, 8:00 a.m. to 5:00 p.m. PST 1985 Sat. 10:00 a.m. to 12:00 noon

Lowest Prices!

Large Selection!

Fast Service!

SPECTRUM

Call our tollfree order line: 1-800-388-8550

We offer the lowest LaserJet prices in the industry!

Free 6' cable with every LaserJet order.

HEWLETT-PACKARD

LaserJet Blowout!

LaserJet IIISI	Call
LaserJet IIIP	\$ 959
LaserJet IIP	
LaserJet III	
LaserJet IIID	Call
DeskJet 500	490
ScanJet	Call
ScanJet +	
PaintJet XL	1,595
LaserJet Toner	75
Lower Cassette Tray	250
1MEG Upgrade	
2 MEG Upgrade	
4 MEG Upgrade	

EPSON PRINTERS

LX810	
FX 850 264 cps, 54 nlq	279
FX 1050 264 cps, 54 nlq	388
LQ200	Call
LQ510 225 cps, 75 nlq	Call
LQ850 330 cps, 88 nlq	430
LQ860	539
LQ1010 225 cps, 75 nlq	370
LQ1050	589
LQ2550 400 cps, 108 nlq	865
EPL 7000	Call

OKIDATA PRINTERS

ML390	.\$ 435
ML391	615
ML393	919
ML320	310
ML321	425
ML380	279
OLC 400	Call
OLC 800	Call
OLC 820	Call

PANASONIC

K	K-P1123 2	4 Pin/192 cps	\$ 225
K	K-P1124i 2	4 Pin/240 cps	3254
			149
			205
K	X-P1624 2	4 Pin/192 cps	, 132 col .368
K	X-P1654 2	4 Pin/375 cps	, 132 col.Call
K	X-P1695 9	Pin/330 cps,	132 col405
K	X-P4420 8	ppm Laser	810
K	X-P4450i L	aser, 11pp./n	nin1,175
K	X-P4455 F	ost Script Pr	interCall

CITIZEN

Prices Too Low List!

GSX140 GSX145 GSX200 HSP500

LAPTOPS TOSHIBA

1000SE	
1000XL/LE	Call
1200XE 20 MB	Call
1200XE 40 MB	Call
2000SX 20 MB	2,545
2000SX 40 MB	
3100SX	Call
3100E 20 MB	
3100E 40 MB	Call
3200SXC	5,600
5200	
40MB/100 MB	Call
Laptop Memory Also A	Available.

I/O CARD

2S, 1P, 1G XT M/1028	XT I/C 1S, 1P, 1G, FDC, CLK	S 24
720K/1 2MR/1 44 MR FOC 30		
7 2010 1.21VID/ 1.44 IVID 1 00	720K/1.2MB/1.44 MB FOC	30

HARD DISK CONTROLLER

XT-GEN MFM HDC	\$ 47
XT-27X RLL HDC	47
AT-(1:1) MFM HDC	49

HARD DRIVES

Seagate Hard Disks	
ST157A IDE 40 MB 25ms	\$ 205
ST1102A IDE 89 MB 19ms	
ST1144 IDE 125 MB 20ms	
ST1239A IDE 210 MB 15ms	689
ST251-1 MFM 40 MB 28ms	225

Conner CP3000 IDE 42MB 25ms 3-1/2 ... \$ 235 CP3184 IDE 84MB 25ms 3-1/2405 CP3104 IDE 104MB 19ms 3-1/2399

FLOPPY DRIVES

CP3204 IDE 209MB 19ms 3-1/2 675

Teac	
1.2MB	S 65
1.44MB	65
720KB	
360KB	59

VIDEO CARDS

VGA 16-bit 1MB 1024x768	128
VGA 16-bit 512KB 1024x768	75
VGA 16-bit 256KB 1024x768	70
Color Graphic Card w/ PP	25
Monochrome Graphic Card w/ Pl	225

MONITORS

Nec	
Multisync 2A	\$ 460
Multisync 3D	575
Multisync 4D	980
Multisync 5D	Call

Samsung	
14" VGA Multisync 1024x768.28	\$ 810
14" VGA 1024x768.28	
14" VGA Multi-Sync 800x600 .31	
14" VGA 640x480 .31	
12" Monochrome Monitor	75

TERMS: VISA, MC accepted. COD add \$3.75. P.O.s must be mailed in. All products shipped via UPS/Federal Express/DHL. Overseas orders welcome. No surcharge on VISA/MC.

ORDER TODAY **1-800-388-8550** Computer Spectrum 201 E. Pacific Coast Hwy. Wilmington, CA 90744 (213) 518-2321 FAX (213) 518-3123

Paradise

ORDER TOLL FREE: U.S. & Canada - 1 800 348-4PCP (4727)

Japan - 0031-11-1865

In Hawaii (808) 875-1100 Australia - 0014-800-126-943

FAX - 1 (808) 875-0061

Shipping & Technical Assistance - 1 (808) 875-1108

COMPUTERS
IBM PS/2
L40 SX
PS/2 Mod 35 SX/ 40Mb 1450/1650
PS/2 Mod 40 SX 40/80 Mb 2195/2395
PS/2 Mod 50 Z 30/60 Mb 1250/1410
PS/2 Mod 55 SX 40/80 Mb 1995/2100
PS/2 Mod 57 SX 80/160 Mb 2895/3100
PS/2 Mod 65 SX 60/120 Mb3550/3725
PS/2 Mod 70 A81/A16 3920/4300
PS/2 Mod 80 80/160/320 3275/3625/5075
PS/2 Mod 90/95-486
COMPAQ
LTE 386 SX 30/60
SLT 386 60/120 Mb
DPro 386 S 20 Mod 1/40 Mb 1655/2150
DPro 386 E 40/110 Mb 2750/3033
DPro 386/25 E (All Models)Call
DPro 386/33 L 120 Mb
TEXAS INSTRUMENTS
Travelmate 2000
Travelmate 3000 20/40/60
AST
Premium Exec Notebook 286 20/40
1925/2200
Premium Exec Notebook 386 20/40/60
Premium 11 386 SX/201275
Premium II 386/33
Premium II 486 SX/202299
Premium II 486/33
TOSHIBA
T1000 SE/LE
T1200 XE 20/40 Mb 1570/1795
T2000 SX 40/60 Mb 2937/3295
T2000 SXE 40/60 Mb3295/3495
T2200
T3100 SX 80 Mb
T3200 SX 40/120 Mb 3239/3550
T3200 SX Color
T5200100/200/Color 4199/4688/5924
DFI
286-12 Mhz
386-16 Mhz
386 SX-20 Mhz
386-25 Mhz
386-33 Mhz
486-33 Mhz
1-year on-site warranty
Call for Custom Configurations
PANASONIC
CF-370
MONITORS & TERMINALS
MONO/COLOR
IBM 8503/8512
Samsung RGB200
Amber 12" TTL85
VGA/EGAMONITORS

IBM 8506/07/08

Mitsubishi 1381/HL6935

IBM 8513/14/15

Magnavox VGA .

Mitsubishi EGA

. 899/629/928

485/1900

..... 525/1150/699

NEC 2A/3DS
NEC 4DS/5D
Packard Bell 8529/8541/8510
275/290/339
Panasonic 1381/1391369/459
Samsung VGA/4581/4592 344/430/309
Sony CPD 1304
Zenith 1492 595
VIDEO BOARDS

TIDEO DOMINO
ATI Graphics Ultra/Vintage 575/380
ATI VGA Wonder 256/512 + 199/240
EGA 640 x 480 89
Hercules GB 1024/1024+2 532/699
NEC Graphics Engine
Orchid ProDesigner II 512/1 Mb 239/299
Paradise VGA/+16
Paradise VGA 1024 256/512 159/199
Herc/Mono/w Parallel Card 45
VGA 1024 256/512109/139

VGA 1024 256/512 .	
PRIN	TERS
CANON	
BJ 10E	
BJ 300/330	Call
CITIZEN	
GSX 130/140 + /145	259/299/399
HSP 500/550	
DICONIX 150	
P/S	
EPSON	
LX 810 173	LQ 1010 365
FX 850 289	LQ 1170 595
FX 1050 399	LQ 2550 849
LQ 570 265	EPL 7000 789
LQ 870 445	EPL 7500 1899
LQ 860 549	
HEWLETT-PACKARD	
Mac & 220V availa	able
	1549/2399
Laserlet 3SI	
	479
	680
Paintlet/XL	
FONTS & MEMORY	
Pacific Data 25-1	259
Pacific Data 1/2/4 Mb	129/159/265
Pacific Connect Laser	Share 299
Pacific Page PE/XL .	
Pacific Data Plotter in	a Ctg 239
LaserJet Memory 1/2	/4 Mb 119/149/245
	ules
IBM/Toshiba Memor	y Call
	425+ 299/259
	125
IBM	
4019 E/4019 Laser	
Personal Printer II .	
Proprinter 24P	
ExecJet	
NEC	440.00
P-3200/3300	

Quality at the best prices under the sun.











Specializing in International Orders

Silent Writer 2 Mod 90 1559
OKIDATA
ML 182
ML 320/321 324/451
ML 380
ML 390 + /391 + 449/613
ML 393+/393+color 968/1055
OkiLaser 400/800 639/965
OkiLaser 820/840 1276/1949
PANASONIC
1123/1180 214/147
1124i/1624 279/349
1654/1695/2624548/364/479
4420/4450/4455779/1129/1883
Manager 1 1444 7 7 10

TERMINALS

Wyse 50/60			5										375/300
Wyse 30/85				,				ì					310/339
Wyse 150/1	8	5	,	+		Ų	•	,	+	+	,		289/379

SOFTWARE

Aldus Pagemaker 4.0 495
Ashton Tate dBase III +/IV 419/479
Borland Quattro Pro.2.0 295
Carbon Copy 6.0
Clarion Prof. Developer
Compaq/IBM DOS Call
Harvard Graphics 3.0
IBM Displaywrite 5.0
Lotus 1-2-3 2.3/3.1
Microsoft All Titles-Lowest Price
Microsoft Windows 3.0 93
Norton Adv. Util 6.0
Procomm Plus
Quicken 5.0
Ventura Publisher V 3.0
WordPerfect 5.1
400 Additional Titles In Stock
PLOTTERS AND DIGITIZERS

HEWLETT-PACKARD
7475A/7550B 1349/2699
7570A/7575A 2699/3350
7576 EXL 3999
SUMMAGRAPHICS
Summasketch 2 12X12/12X18 335/565
CALCOMP
Pacesetter 2000 3150/3995
12X12/12X18
MULTIFUNCTION BOARDS/CARDS/CHIP
IBM 5250 Emulation 695
AST 5251 Emulation 499
AST 6-Pack w/384 k
Intel AboveBoard Plus w/512 k 289
Intel InBoard 386 PC 492
Cyrix Fasmath Call
Sept 10 1 desitional and a second second second second
80287-XL

ATI 9600 ETC

CPI 2400 Internal

CPI 2400 Ext Fax

CPI 2400 Ext MNP

CPI 9600 Ext
Everex 2400i/2400 MNP 99/164
Hayes 2400/2400B 319/218
Hayes Ultra 96
Practical Pocket Modem
Intel 2400/9600 217/499
Megallertz Laptop Moderns Call
Practical Perif. 2400/9600 132/479
US Robotics HST/Dual 585/799

FAX MACHINES

Sharp FO 216/240/334	.559/699/795
Intel Satisfaction/MCA	385/421
JT Fax 9600 B	
CPI 2496 IF	173
Man	

MICE

Logitech C9/Bus/PS2				,					82	
Logitech Mouseman	ú						,		72	
Logitech ScanmanPC/PS2					1	6	9,	2	40	
Microsoft Mice/+Windows	3	.() .	ì	1	0	3	1	45	
Microsoft Ballpoint		¥	. ,	,			,	1	29	

DRIVES & TAPES

Colorado DJ10/20
Conner 40/100/200299/499/610
ST 225/238 189/192
ST 157A/251-1
Plus II XL50/105 388/578
Mountain
Panasonic LF5010 Optical Drive 2215
Procom Ext 5.25 PS/2199
Procom PS2 Hard Drives 120/200 Mb . Call
Procom Laptop Floppy Call

NETWORK

NEIWORK
ARTISOFT
Lantastic 2 Mb Starter Kit 338
Lantastic 2 Mb Adapter
Lantastic 10 Mb Starter Kit
Lantastic AE3 Starter Kit 539
Lantastic 10 Mb Adapter 199
NETWARE
Netware 2.2 5-User
Netware 2.2 10-User 1159
Netware 3.11 20-User 2049
Netware 3.11 100-User
NE 1000/NE 2000 159/179
NE/2 /NE 3200 (EISA) 249/749
SMC
Arcnet PC 130 8 Bit99
Arcnet PC 500 fs 16 Bit 289
Arcnet PC 500 ws 16 Bit 179
MISC & ACCESORIES
Keytronics KB101 +

AB Switch Box 27

Applite 450/1200/2000 ... 296/618/1175

6 outlet surge Win 25

A Free

Hawaii Vacation 1

No purchase necessary

Most orders shipped insured next or second day air FEDERAL EXPRESS / 24-hour worldwide order tracking / Printer Orders received by 9 PM CST can be shipped same day / All credit card and COD orders checked electronically / We accept Amex, Visa, MC, JCB, Discover, Diners Club, COD's, Wire Transfer, Letter of Credit, TERMS & LEASE AVAILABLE (one day approval) / Credit cards not charged until product shipped GOVERNMENT AND EDUCATIONAL P.O.'S ARE WELCOME / Allow 10 days for personal checks to clear / Prices reflect a 3 per cent cash discount / Non-defective returns subject to a restocking charge / All warranties good through Paradise Computer Products / Prices subject to change without notice.

.... 476/645

HOURS: 8:30 AM TO 8:30 PM CST MON-FRI, 10 AM TO 4 PM CST, SAT.
Paradise Computer Products Ltd. P.O. Box 890553 Dallas, TX 75389-0553

Silent Writer 290/990



69

123







The **S** Difference

Guaranteed Lowest Price

We will meet or beat any nationally advertised price on shareware that we carry. We will not be undersold!

Unconditional Lifetime Money Back Guarantee

Reasonable Solutions was the first, (and still the only!) shareware company in the world to offer a Lifetime Unconditional Money-Back Guarantee. We have offered that guarantee since we started business more than 3 1/2 years ago. Many of you asked us how we can do that, or why we offer such a great guarantee. The answer is simple: We carefully select and believe in the products we carry. But most importantly, we value the customers that we serve. Give our products a try. If you're not satisfied, for any reason, send them back, anytime for a complete, prompt and courteous refund. "If we can't guarantee it, we won't carry it!"

Easy to Use

All of the programs we carry come with easy to use instructions on the disk. We've taken that one step further and developed what we call Quick Menus. These menus, which were designed and developed by Reasonable Solutions, help make the software as user friendly as possible. The easy to use Quick Menus will allow you to run the program, print out documentation, or display the documentation on the screen. All you have to do is type "GO". We even include a help guide on the back of every invoice! We back all this up with the best technical support department in the shareware industry! Our technical support department is highly trained and will get you the answers you need in a timely manner.

Value

We often put more than one program on each disk. For example, our Screen Savers for Windows disk offers 8 different screen savers on one disk. Some of our competitors offer Screen Peace on one disk, and Magic on another disk. We offer you both of those, plus 6 more, all on the same disk! You get more for your money when you buy our disks. If you need 3 1/2" disks, they are just 50 cents more per disk! Reasonable Solutions also guarantees that all the software that we carry is Virus Free! In the 3 1/2 years that we've been in business, we have never sent out any infected software. We use the best techniques available!

ASP Approved Vendor

Reasonable Solutions is an approved vendor of the Association of Shareware Professionals. This means that we comply with the high standards that they require of vendors who distribute shareware.

Fast Service

We strive to ship all orders on the same day that they are received! We can do this because we have state of the art disk duplicators that actually duplicate, label and sleeve vour order the same day it is shipped. We won't be sending you disks that have been collecting dust as they are waiting to be sold. This guarantees that you get the latest versions available! Reasonable Solutions also offers Federal Express Next Day, Federal Express 2nd Day and COD service at reasonable prices.

When you look at the differences, there's really only one choice:

Reasonable Solutions!

The **RS** Collection

- ☐ Amortization Table 3.51 (1115) Handles all types.
- □Brother's Keeper 4.5C (3 disks) (3120) Excellent, full featured genealogy program that's easy to use. (HD)
- □ Diet (3 disks) (2910) Lose weight and feel great!
- Express Check 4.04 (2 disks) (1110) Agreat program to manage your checking accounts! Even prints checks!
- □FormGen 4.1a/FormFill 1.5 (2 disks) (3240) Avery versatile form generator and form filler. Create and/or fill out any kind of form for home or business on any printer, Includes numerous sample forms to get you started!
- ☐ Home Inventory 4.0 (3137) Helps you keep track of everything you own. Great for insurance
- ☐ Home & Business Legal Guide 7.0 (3 disks) (3330) Over 150 legal forms for almost everything including contracts, wills and living trusts. (Valid in all 50 states) (HD)
- ☐ Mealmaster 6.15S (2 disks) (3160) A complete recipe filer. Comes with over 1200 recipes to start you off. (HD)
- □ Names & Dates 4.1(2 disks) (3140) Great personal informa-
- tion manger! Keeps track of anything and everything. (HD)

 Painless Accounting 5.0 (3 disks) (1120) Complete, easy to use accounting! Includes GL/ ARVAP, billing, and more (HD)
- Painless Payroll (2 disks) (1140) Does everything from figuring state & federal taxes to writing checks and reports. (HD)

 PC-Write 3.04 (3 disks) (3820) - Easy to use word processor
- that is loaded with features including spell checker. (HD)
- PrintPartner (2 disks) (3260) PrintMaster/PrintShop clone that prints banners, signs and more. Includes 200+ graphics. ☐ Resume Creators & Job Finders (2 disks) (3270) - Create a.
- customized resume and find the job that is right for you.

CLIP ART (PCX)

Note: These disks contain clip art in PCX (PC-Paintbrush) format. They can be used with WordPerfect 5, 075, 1, Pagermaker, Core/Draw, Ventura Publisher, Windows or any other programs that can tead PCX files.

- ☐ Accents & Dingbats (2617)
- ☐ Holidays (2616) ☐ Alphabet Soup (2 disks)(2890) ☐ Houses (3 disks) (2680) ☐ Kids/Cartoons (2 disks) (2820) ☐ Birds (2 disks) (2620) ☐ Ladies (2 disks) (2690)
- ☐ Business (2 disks) (2630) ☐ Church (4 disks) (2550)
- ☐ Education (2 disks) (2640)
- □ Family (3 disks) (2650) ☐ Food (2 disks) (2660)
- ☐ Wedding (3 disks) (2850) Complete Clip Art Collection (58 disks) (2990) - 1400+ images!

EDUCATION

☐ Medical (2 disks) (2560)

☐ Misc 1 (4 disks) (2760)

□ Sports (2 disks) (2790)

- □ Algebra Tutor (2 disks) (1820) Leam Algebra easily! (CGA-HD) ☐ First Aid Tutorial 3.0 (1465) - Learn basic First Aid treatment skills for common medical emergencies
- □Lotus 2.2 Learning System (5 disks) (1480) Learn Lotus 2.2 easily and quickly. (An RS exclusive!) (HD)

 Skyglobe 2.5/Earthwatch 1.2 (2 disks) (1880) - Look at the
- stars or the earth. Shows constellations, planets, stars, and more. Fascinating program with great graphics. (CGA)
- □ Spelling/Vocabulary Tutor (3 disks) (1870) Improve your spelling and vocabulary
- ☐ Typing Teacher (2 disks)(1440) Learn to type, or improve your typing speed with this set of programs.
- □Tutor DOS 1.2 (4 disks) (1450) The ultimate DOS tutorial, everything you wanted to know about DOS and more. (HD) □ Verbal Vanguish (1848) - SAT Verbal preparation!
- (CGA) Color Graphic Adapter (EGA) EGA Graphics (HD) Hard Disk

- □ CGA Tetris Collection (2 disks)(1970) Six great variations of the popular game. (CGA)
- ☐ Chess Challengers & Tutorial (2 disks)(4340) Three very good games and a superb tutorial. (CGA)
- □ Kids' Games (2317) Fun for the under 12 set.
- □ Super Solitaire (2 disks) (2460) 15 great versions. (CGA)

EGA/VGA GAMES

- Note: These games require EGA or VGA graphics.

 GEGA/VGA Tetris Collection (3 disks) (1920) 8 high resolution variations including a couple of 3-dimensional ones!
- □EGA Mouse Solitaire (3 disks) (1930) Eight fabulous Solitaire card games that use a mouse.
- □ Commander Keen (1926) One of the most spectacular games available! Superb sound, graphics!
- □ Captain Comic 4 (1925) Great sound, graphics & more!
- Duke Nuk'em (1965) A new game that's probably the finest arcade style game available on a PCI (HD)
- □ Dark Ages (1928) From the creators of Commander Keen!

MISCELLANEOUS

- ☐ Best DOS Utilities (4 disks) (3520) Essential utilities for DOS. File finders, and numerous other handy utilities that will save you time. Very easy to use
- ☐ MenuDirect Gold (2 disks) (3540) Outstanding file/directory/ program manager that does it all! (HD)
- Online Bible 5.0 (14 disks) (3170) Complete KJV Bible. Includes Greek/Hebrew Lexicon and Cross Reference. (HD)
- □Screen Savers for DOS (2 disks) (4790) Asuperb collection of screen blankers for DOS!
- □ Vaccines and Virus Killers Ver. 80 (4 disks) (3510) Protect your system from viruses! This set will find (and destroy!) over 200 viruses and 500+ virus strains.

WORDPERFECT 5.0/5.1

- □By Design (4255) Unleash the true potential of WordPerfect 5.1!. Turns WordPerfect into a design studio! (HD)
- □WordPerfect Art/Graphics 1 (2 disks) (3710) Over 90 graphics for WordPerfect 5.0/5.1 & WP for Window
- □WordPerfect Art/Graphics 2 (2 disks) (3770) Over 90 graphics for WordPerfect 5.0/5.1 & WP for Window
- WordPerfect Art/Graphics 3 (2 disks) (3780) Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows
- □WordPerfect Art/Graphics 4 (2 disks) (3790) Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows
- ■WordPerfect Art/Graphics 5 (2 disks) (3910) Over 90 graphics for WordPerfect 5.0/5.1 & WP for Windows.
- □WordPerfect 5.0/5.1 Tools (2 disks) (3750) 17+ great utilities for WordPerfect 5.0/5.1.
- □WordPerfect 5.1 Learning System (3 disks) (4230) Learn how to use WordPerfect 5.1 easily and quickly with this great tutorial (WordPerfect 5.1 is NOT required.)
- □WordPerfect 5.1 Macros (2 disks) (4220) Over 100 helpful macros for WordPerfect 5.1
- □PC-Draft II & III (3 disks) (3760) Create clip art & graphics for WordPerfect 5.0/5.1/Windows. (CGA) (HD)

FREE catalog of over 300 programs with every order or by request.

GUARANTEED LOWEST PRICE! WINDOWS

UNCONDITIONAL LIFETIME

MONEY BACK GUARANTEE!

- □ATM Fonts for Windows Vol.1 (4 disks) (4710) 30+ fonts for Adobe Type Manager, Will work with all Windows applications.
- (Requires Adobe Type Manager.)

 ATM Fonts for Windows Vol.2 (4 disks) (4720) 30+ additional fonts for Adobe Type Manager.

 ATM Fonts for Windows Vol.3 (4 disks) (4730) - 30+ addi-
- tional fonts for Adobe Type Manager.
- □ATM Fonts for Windows Vol.4 (4 disks) (4740) 30+ additional fonts for Adobe Type Manager. AtIUS for Windows (4126) - A fun and educational altas of the
- United States. You can even add your own entries!
- ☐ Chess for Windows (4639) Play the great game of chess.
 ☐ Information Managers for Windows (3 disks) (4120) A
- collection of personal information managers, address & phone books, calendars, and reminders with alarms.
- ☐ The Complete Icon Collection (4 disks) (4580) Over 3200 of the best icons available!
- □ Cursor Utilities (4885) Change the cursor and hourglass into any shape you choose!
- □ Fractals & Mandelbrots for Windows (2 disks) (4680) -Fascinating visual effects and startling graphics.
- ☐ Games for Windows 1 (4591) Great games including Klotz (Tetris clone), Worm War (Centipede clone), Atmoids, Lunar Lander, Checkers, Backgammon and more!
- ☐ Games for Windows 2 (4592) Space Walls, Hextris, Mines, Tic Tac Toe, and more.
- ☐ Games for Windows 3 (4593) Tetris, Concentration, Taipei, Arachnid (solitaire variation), Alien Force, and more
- Games for Windows 4 (4594) PacMan, Blitzer, Missile Com-
- mand, Cubic (Rubik's cube), Triplets, Pipe, Tetwin, and more. Grab Plus 6.0 for Windows (2 disks) (4570) - Address and
- print out envelopes from within any Windows application. ☐ Hyperdisk 4.2 (4539) - Make Windows run 2 to 10 times faster! (Will also help other programs run faster.)
- □ Icon Utilities (3 disks) (4260) Acomplete set of utilities to create, modify, view and manage icons
- ☐ File Utilies for Windows (3 disks) (4110) Utilities for finding, deleting, moving, copying, searching and viewing files!

 Menu Systems for Windows (4 disks) (4880) - Makes Win-
- dows even easier to use.
- Metz Utilities (2 disks) (4690) The utilities that received an Editor's Choice from PC Magazine!
- ☐ Screen Savers for Windows (4615) Eight different screen savers for Windows
- □Utilities for Windows (4 disks) (4510) 50+ utilities that will help you get the most out of Windows, as well as making Window easier to use. A must for any Windows user!
- □Windows Drawing & Paint (2 disks) (4310) Three programs for most types of drawing including desktop publishing, CAD and object oriented drawing
- □ Windows Tetris Collection (4575) Six different Tetris variations for Windows!
- □Windows Wallpaper 1 (4 disks) (4520) 75+ backgrounds. □Windows Word Processors & Editors (3 disks) (4320) Two word processors and four text editors that are more powerful than Windows Write and Notepad.
- □Word for Windows Macros (2 disks) (4930) The most complete collection of macros for Word for Windows!
- Shareware programs require separate payment to the authors if found useful.

VISA

Order Toll Free: 800-876-3475

10 disks or more

Disk size: \$\square\$ 51/4" \$\square\$ 31/2" (add 50c per disk if you require 31/2") No. Disks 4.00 □ Shipping S Business/Company (if applicable) ☐ Federal Express, Next Day (add \$7) ☐ Federal Express, 2nd Day (add \$5) □ COD (add \$5) City/State/Zip Canada (add \$2) ☐ Foreign outside U.S./Canada (add \$4) TOTAL ORDER: S All checks must be payable in US funds. We cannot accept Eurocheques.

Method of Payment: □Check/Money Order □Visa/MasterCard COD (US Only)



Reasonable Solutions

Signature

2101 West Main, Medford, Oregon 97501 Toll free 800-876-3475, or 503-776-5777, Fax 503-773-7803

GREAT SAVINGS ON CAD DE COMPUTERS AND PRODUCTS

CAD ONE COMPUTER

(Mini Tower or Desktop) (CO386C33-64)

386-33 w/64K Cache......\$1,995.00 C&T Chipset, AMI Bios, 4 MB Memory, 1.2 MB Floppy, 89 MB Harddrive, VGA Video 1024 x 768, 2S/1P/1G Port, S-VGA 1024 x 768,101 Keyboard, 3 Button Mouse, MS DOS 5.0

CABLE AND **ACCESSORIES**

We offer a complete line of cables and accessories. Please CALL for product need and pricing.

CAD ONE COMPUTER DESIGN, Inc.

United Innovations Mural Flatbed Plotters

UI-9999 Mural 9000, A-E Size......\$3,372.20 UI-8999 Mural 8000, A-D Size \$2,527.20 UI-9000 Mural 9000, A-E Size \$2,953.60 UI-8000 Mural 8000, A-D Size \$2,108.60 UI-7999 Mural 7000, A-C Size \$2,190.50

CAD ONE COMPUTER

(Mini Tower or Desktop) (CO486C33-256)

486-33 w256 Cache.....\$2,795.00 C & T Chipset, AMI Bios, 4MB Memory, 1.2 MB Floppy, 89 MB Harddrive, VGA Video 1024 x 768, 2S/1P/1G Port, S-VGA 1024 x 768, 101 Keyboard, 3 Button Mouse, MS DOS 5.0

LEADING TECHNOLOGY NOTEBOOK COMPUTER

(LTI9800NB) 386SX-20 Notebook Computer\$1,960.00 20 MB Hard Drive, 2 MB RAM (exp. to 6 MB), 9" B/W VGA LCD (640 x 480), 1 Ser., 1 Par., Ext. Monitor & Keyboard Port, Carrying Case

CAD ONE is continually upgrading and adding to our inventory. If you can not find what you are looking for PLEASE call our toll free number at 1-800-524-1005.

PACKARD BELL NOTEBOOK COMPUTER

(PB386SXNB2) 386SX-16 Notebook Computer.....\$2,378.60 40 MB Hard Drive, 2 MB RAM (Exp. to 5 MB), B/W VGA LCD (640 x 480), 1 Serial, 1 Parallel, Mouse & Ext. Floppy Drive Port

We carry a complete line of memory products and math co-processors. Due to daily market fluctuations on memory and chip products, please call for current pricing.

MOTHER BOARDS

486 & 386 without CPU's 286 & 386SX with CPU's All boards contain AMI BIOS 486-33 w/256 K Cache \$536.50 486-25 w/128K Cache \$413.25 386-40 w/64K Cache\$362.50 386-33 w/64K Cache \$282.75 386-25 OPTI Chip\$171.10 386SX-20 C & T BIOS\$282.75 386SX-16 C & T BIOS\$239.25 286-16 Suntec Chipset \$139.20 (IDE HDD/FDD/2S/1P)

VIDEO BOARDS VGA Oak Chipset 256K\$58.00 640 x 480 CAD ONE S-VGA 512K 1024 x 768\$88.40 VGA Oak Chipset 512K\$102.95 800 x 600 TVGA 9000 Chipset 1MB 1024 x 768 \$78.30 S-VGA Trident Chip 1MB 1024 x 768 \$136.00 TVGA 8900C Chipset 512K 1024 x 768\$98.60

I/O & CONTROLLER BOARDS

MT-ITO - AT I/O (2S/1P/1G) \$16.68 Super I/O (IDE, FDC, 2S/1P/1G) . \$29.00 IDE HDD/FDD\$17.40 ADAPTEC 1522K SCSI Controller MFM-XT Controller (8 Bit) \$56.55 MFM-AT Controller\$75.40 PSI IDE Hyperstore Cache Controller (Exp. 4 MB) \$599.20 (Cache Access Time of 0.3 MS or less)

AMERICAN POWER BACK-UPS

360VA Rated \$241.65 450VA Rated \$298.80 600 VA Rated (Sine Wave) \$476.25 800 VA Rated \$589.20

TRIPP LITE BACK-UPS

350W 4 Outlet SPS\$249.75 500 VA/450W 4 Outlet SPS \$297.70

FAX/MODEMS

Cardinal Internal MNP-5 TX/RX Fax Modem \$194 90 Adtec Micro TX/RX Fax Modem \$157.41 Teleshare Auto Fax/Phone Modem Switch. \$134.93

IDENTITY MODEMS

Internal 2400 Baud\$98.40 External 2400 Baud \$120.00 Internal 2400 Baud w/MNP 5 \$129.80 External 2400 Baud w/MNP 5 \$165.00 Internal 9600 Baud V.42 BIS MNP 5\$414.40

MONITORS

Packard Bell Monitors

14" Super VGA.28 DP 1024 x 768 \$355.60 14" VGA .28 DP 640 x 480 \$304.00 Identity Monitors 14" S-VGA .28 DP 1024 X 768 \$344.80 14" S-VGA .31 DP 1024 x 768 \$302.80 14" VGA .41 DP 640 x 480 \$254.80 **KFC Monitors** 14" S-VGA .39 DP 1024 X 768 \$298.00 14" Multisync 1024 X 768 \$406.00 CTX Monitors 14" S-VGA .28 DP 1024 X 768 \$335.20 14" VGA .39 DP, 640 X 480\$294.40 14" VGA .29 DP, 640 X 480 \$313.60

INPUT DEVICES

Chicony/Liteon Keyboards

101 AT w/Soft Click \$69.95 101 AT w/Trackball\$99.95

MUSIC/SOUND

Media Vision

SPECIAL PRICE

Thunder Board\$153.45 Pro Audio Spectrum \$354.95

CO386C33-64 Cache Computer

U.I. 8999 D Size Plotter, Drafix CAD Ultra

DATA TRANSFER

Electronic

4 Position Par. Smart Switch \$131.81 8 Position Par. Smart Switch \$180.38

AB Switch Box (DB25 F) \$18.41 ABC Switch Box (DB25 F) \$26.36 ABCD Switch Box (DB25 F) \$27.10 ABCDE Switch Box (DB25 F) \$44.40

Print Buffers

64K Parallel Print Buffer \$145.69 256K Parallel Print Buffer \$249.75 Exp. to 1 MB (Chips)

Multispoolers

4 to 1 Parallel 256K (Exp. 1 MB) \$276.11 8 to 1 Parallel 256K (Exp. 1 MB) \$333.00

CAD ONE SOFTWARE

Foresight Resources Corp. Drafix CAD Ultra \$348.53 386 Up-Grade \$172.13 Drafix Windows CAD \$592.69

CAD ONE NETWORK SUPPLIES

Star 16 Bit ARCNet Card \$108.00 Star 8 Bit ARCNet Card \$61.50 ARCNet 8 Port active Hub \$172.50 16 Bit ETHERNet Card \$156.00 8 Bit ETHERNet Card \$138.00

WE CARRY A COMPLETE LINE OF NETWORK SUPPLIES - CALL FOR PRODUCTS AND PRICE!

ID MOUSE Identity

3 Button MS Compatable \$39.95 w/Dr. Halo Paint Set

COMDEX SPECIAL(Computers configured as in ad above)
Cache Computer | CO486-33-256K Cache Computer U.I. 8999 D Size Plotter, Drafix CAD Ultra\$5595.00 SPECIAL PRICE....

HARD DRIVES

Seagate - IDE 40 MB, 3.5", 28 MB \$195.00 71 MB, 3.5", 29 MS \$282.00 89 MB, 3.5", 19 MS \$326.30 130 MB, 3.5", 18 MS \$422.50 Maxtor 40 MB, 3.5" X 1", 19 MS \$227.50 80 MB, 3.5" X 1", 19 MS \$311.25 Western Digital 40 MB, 3.5" X 1", 19 MS \$188.75 40 MB, 3.5" X 1", 19 MS \$230.00 80 MB, 3.5" X 1", 18 MS \$308.75 Connor CALL FOR PRICES! Seagate (SCSI)
71 MB, 3.5", 29 MS
89 MB, 3.5", 19 MS
130 MB, 3.5", 18 MS\$422.50 Maxtor 40 MB, 3,5" X 1", 19 MS\$227.50 80 MB, 3.5" X 1", 19 MS\$311.25 Western Digital 40 MB, 3,5", 28 MS\$188.75 40 MB, 3.5" X 1", 19 MS\$230.00 80 MB, 3.5" X 1", 18 MS\$308.75 Connor CALL FOR PRICES! Seagate (SCSI)
Maxtor 40 MB, 3,5" X 1", 19 MS \$227.50 80 MB, 3.5" X 1", 19 MS \$311.25 Western Digital 40 MB, 3,5", 28 MS \$188.75 40 MB, 3.5" X 1", 19 MS \$230.00 80 MB, 3.5" X 1", 18 MS \$308.75 Connor CALL FOR PRICES! Seagate (SCSI)
40 MB, 3,5" X 1", 19 MS\$227.50 80 MB, 3.5" X 1", 19 MS\$311.25 Western Digital 40 MB, 3,5", 28 MS\$188.75 40 MB, 3.5" X 1", 19 MS\$230.00 80 MB, 3.5" X 1", 18 MS\$308.75 Connor CALL FOR PRICES! Seagate (SCSI)
80 MB, 3.5" X 1", 19 MS\$311.25 <u>Western Digital</u> 40 MB, 3.5", 28 MS\$188.75 40 MB, 3.5" X 1", 19 MS\$230.00 80 MB, 3.5" X 1", 18 MS\$308.75 <u>Connor</u> CALL FOR PRICES! Seagate (SCSI)
Western Digital 40 MB, 3,5", 28 MS
40 MB, 3,5", 28 MS
40 MB, 3.5" X 1", 19 MS
80 MB, 3.5" X 1", 18 MS \$308.75 <u>Connor</u> CALL FOR PRICES! Seagate (SCSI)
Connor CALL FOR PRICES! Seagate (SCSI)
Seagate (SCSI)
Seagate (SCSI)
80 MB, 28 MS\$296.25
80 MB, 23 MS\$321.25
94 MB, 18 MS\$687.50
110 MB, 18 MS\$770.00
211 MB, 3.5", 15 MS \$690.00
337 MB, 10.7 MS\$1,468.75
676 MB, FH, 15 MS \$1,641.25
1.2 GIG, FH, 14 MS\$2,302.50
Maxtor
200 MB, FH, 14 MS\$802.50
320 MB. FH, 16 MS \$1,328.75
Seagate (MFM)
20 MB, HH, 65 MS\$232.50
80 MB, FH, 28 MS\$587.50

FLOPPY DRIVES

Mitsubishi	
360 K	\$69.95
1.2 MB	\$79.95
1.44 MB w/Bracket	\$79.95
Toshiba	
360K	\$69.00
1.2 MB	\$76.50
TEAC	
1.2 MB	\$82.50
1.44 MB w/Bracket	\$79.50

TAPE BACKLIPS

TAPE BACKUPS
Identity 120-250 MB Internal Tape \$294.00
120-250 MB Internal Tape \$294.00
w/Software
120-250 MB External Tape \$391.50
w/Software



APUTER DESIGN, Inc. 270 Communication Way, #4D

Hyannis, MA 02601 PHONE 508-778-1895 FAX 508-778-1887



COMPANY LEASING

\$4895.00



your hardware and software needs and provide a high quality custom documentation service.

Due to daily market fluctuations on 386 and 486 CPU chips, please CALL toll free for current price of mother boards with CPU'S installed. Thank you.

CAD ONE is a full service company. We can accomodate

AVAILABLE

Order Toll Free (USA/Canada) (800) 628-4517

International Orders (301) 899-1118

24-HR Worldwide FAX Orders (301) 899-1888



The Desktop Publishing Experts

GRAPHIC 8.

The Nation's Largest Dealer of Desktop Publishing & Multimedia Products ... Hours: M-F: 8:30 - 6pm Eastern Time, FAX ORDERS ANYTIME

Hercules

Graphics Station

Software Titles	LASER PRINTERS, UPGR
Adobe PostScript fonts prices vary - please cal	
Adobe Type Manager	
Adobe Type Manager Plus Pack (more fonts for ATM) . 125 Adobe Type Align	
Aldus FreeHand for Windows (new product) CAL	
Aldus Persuasion for Windows 315 Arts & Letters Graphics Editor 396	
Arts & Letters Graphics Editor 399 Bitstream Facelift for WordPerfect 5.0 / 5.1 99	F3-410 W/2-Mid HAIM, 43 IONIS, A1M, F0Stachpt 1633
Charisma by Micrografx 334	PS-410 W/3-MB HAM, 45 fents, ATM, PostScript 2059
CorelDraw / CorelDraw on CO-ROM more clip-art 358 / 49: Harvard Graphics v3.0 (newest version)	
Micrografy Designer 43	PS-410 w/6-MB RAM, 45 fants, ATM, PostScript 2359 Ne
PageMaker 4 0 for Windows w/Adobe Type Manager 485	LEV
PowerPoint for Windows by Microsoft 29 Ventura Publisher v3.0 (DOS/GEM or Windows version) 485	THE THOU TEST CONTROL CASE IN THOSE GAINS
Multimedia & "Print-to-Video"	MK => Multiple Resolution PostScript &F
Authoring Software	Switchable between 300x300 & 600x600 dpi Mi
ASK-ME 2000 (hypertext, sound, graphics)	PS-815 MR 600 x 600 dpi laser 4656 mo
IBM Storyboard Live v1 1 289	PS-825 MR 600 x 600 dpi laser 5490 mic
CO-ROM Disk Players & Erasable Optical Disk Drives	mi
Hitachi CDR-1750S ext player & interface 1695	ColorScript 100 model 10 (8½ x 117) 46395 mie
NEC COR-36 player & interface (external unit) 499 NEC COR-73 player & interface (external unit) 669	ColorScript 100 model 30 i (11" x 17") 8895 mis
NEC CDR-73 player & interface (external unit) 699	ColorScript consumables CALL mic
NEC CDR-83 player & interface (internal unit) 999 Sony CDU-7205 CD player (PC Mag Editor's Choice) CALL	BEST OF 1990 — PC Magazine mic
Panasonic UF-7010 ext. read / write / eraseable / removable 1-GB (1 billion bytes) optical disk unit w/ interface; 3499	1990 Eddy Award — MacUser
Panasonie LM-D707W L-GB disks for LF-7010 239	
Pinnacle Micro REO-130 130 MB removable w/intf 2259	WACOM Drawing Tablets
Pinnacle Micro REO-650 650 MB removable w/ intl _ 3559 Computer Asimation & Modeling	Wacom drawing tablets are a top choice for artists. Wacom
Animator from Autodesk	fablets respond to the pressure as well as movement of the
Grasp 4.0 from Paul Mace 199 Computer-Digital Sound Recording & Audio Editing	cordless pen. The harder you press, the thicker the line be-
Sound Blaster / Sound Blaster Pro audio card 144 / 249	comes. Or use the pen to control color, density or whatever else the software can be set to do. Draw faster with CorelDraw.
Jovian GLORIA (CD-quality stereo digital sound) 489	IMAGE-IN COLOR & other programs. Windows 30 compatible.
MicroKey/AudioCard (CD-quality sound) 479 ProAudio Spectrum sound board from Media Vision 279	Wacom 6" x 9" drawing surface and pen
NTSC Frame Grabbers / NTSC Digitizers	Wacom 12" x 12" drawing surface and pen
Computer Eyes Color Professional frame grabber 4295 Computer Eyes RT (real-time frame grabber) 479	Scanning Software & OCR
Jovian SonerVIA (16-bit color/8-bit may realtime) 635	OCR (Optical Character Recognition)
VIDEOLINX:Framebuffer (frame capture & display) 495	Calera WordScan - PC Mag Editor's Choice
Willow Publisher's Cotor (16-bit color realtime) 655 NTSC Encoders / Decoders / Gentock / Overlays	Calera WordScan Plus - PC Mag Editor's Choice 665
Everex Vision VGA w/Overlay 1-ME 1629	Catchword OCR for Logitech hand scanners 145 OmniPage 386 Professional by Caere (trainable) 639
Jovian GENIE professional scan converter (external) 1295	ReadRight for Windows / ReadRight v201-00S 314/299 Scanner Software for Image Manipulation & Editing
Jovian VIN Plus NTSC encoder (external unit)	Deluxe Paint II Enhanced by Electronic Arts
Willow VGA-TV GE/O (w/V)dea Titler s/w) 635	Gray F/X by Xerox-Datacopy (DOS application)
Video Titling Software broadcast-quality titling Video Titler by Entropy Engineering 1365	PhotoStyler by Aldus (U-Lead) 695
Integrated Multimedia Systems from Video Associates	PhotoStyler by Aldus (U-Lead) CALL Picture Publisher Plus by Astral/Micrografx 469
MicroKey/A - audio, video, VGA and more \$1429	Publisher's Paintbrush for Windows by Z-Soft
DigiView - flash capture digitizer board 859 Genlock - broadcast quality genlock/overlay 669	Tempra Pro by Mathematica (DOS application 24-bit) 345 WinRix for Windows (color image editor) 295
LinkPlus - antiflicker filter, composite color keyer 379	
New Media Graphics - Windowed video for MS Windows II Super Video Windows Board w/ software \$895	Color & Grayscale Scanner Systems
Super Video Windows Tuner Board (for TV input) 295	
Super Video Windows Developer's Kit	Logitech ScanMan 32 scans up to 400-dpi and
Video Monitors & Controllers	32 gray levels. Bundled with software
IDEN	Logitech Scanman 256 400 dpi, 256 grays, Windows 3.0 285
IUEK	Logitech Scanman 256 bundled w/ Catchword OCR 429
MF-5217 17 flat screen color 1024 x 768 non-interfaced	Microtek ScanMaker 600Z 600-dpi, 24-bit color, 8-bit
72-Hz refresh rate, 28-mm det pitch 1295 MF-5221 21 flat screen color, 1280x1025, 31mm CAL	grayscale. Bundled with PhotoStyler 1355
MF-5221 21 flat screen color, 1280x1025, 31mm	
Please call for other IDEK monitors not listed here	Microtek ScanMaker 1850 35-mm photo slide scanner
montrom.	Scans color and B&W 35-mm slides and negatives
MONITERM	Bundled with PhotoStyler, 1850 x 1850 dpi resolution 2149
VIKING two-page hi-res DTP monitor systems	
Viking 3/91M 20 monitor & controller 1139	w/ Image In Scan, Paint and Plus for Windows 229
Viking 3/91GS 20" 4/8-bit grayscale monitor & contr 199	
	Perceive Personal OCR software 335
Viking 3/2400M 24' manitor & controller	Perceive Personal ULA Software
Viking 3/2400M 24" manitor & controller	Niscan Spectra color hand-held scanner, 24-bit,
Viking 3/2400M 24" manitor & controller	Niscan Spectra color hand-held scanner, 24-bit, 16.7 million colors w/software 599
Viking 3/2400M 24" monitor & controller	Niscan Spectra color hand-held scanner, 24-bit, 16.7 million colors w/software
Viking 3/2400M 24" manitor & controller	Niscan Spectra color hand-held scanner, 24-bit, 16.7 million colors w/suftware

225 20 x 1024 coor monitor 225 flat screen 15', 70-Hz non-interlaced, AccuColor CALL flat screen 21' 70Hz non-interlaced, AccuColor CALL

The Radius Full Page Pivot lets you choose either landscape or tablot viewing on your PC or Microchannel computer system by outsing the monitor. The Pivot system leatures 1024/788 resolution, anti-glare screen, low radiation emission, 32,788 colors, & drivers for Windows, AutoCAD, Studio 30, & more. 7 year warranty on interface.

Radius Full Page Pivot Display (Monitor only)

SVGA MultiView Interface card (ISA bus version)

SVGA MultiView Interface card (Microchannel bus)

CALL

High Performance Video Cards

ATI VGA Wonder XL 1-MB PC Map Editor's Choice 288
Everex Viewpoint Premium w/ HColor 1-MB 229
Everex Viewpoint IC 24-bit color 1280 x 1024 1-MB 229
Crichid Proflessigner Ils w/ HColor 32,786 colors, 1-MB 235
Orchid Fahenheit 1280 graphics accelerator video board with windows accelerator speeds. Windows applications an average of 12 times faster than standard super VGA cards On-board graphics processor, 1-MB RAM, 1280 x 1024
maximum resolution, 72-Hz refresh rate
Video Y IRAM IL-MB ultra-last V IRAM wideo memory 399 maximum resolution, 72-Hz refresh rate
Video 7 VRAM II 1-MB ultra-last VRAM video memory ...
32K VGA GraphicsManager w/HiColor, 1-MB, s/w

out of Windows, CAD and other graphics intensive applicabons. The secret is the on board Texas Instruments 34010 graphics co-processor operating at 60 MHz. It frees the CPU from the drudgery of graphics processing an you won't have to wait for your screen to catch up to you Displays true color for photo-realistic images in 16 or 24-bit modes (32,768 or 16.7 million colors). Comes with drivers for Windows 3.0, AutoCAD release 10.8.11, 3D Studio, Autodesk Animator Pro, AutoShade and more.

The Hercules Graphics Station video card takes the wart

Graphics Station	1-MB for PC-AT ISA bus
Graphics Station	3-MB for PC-AT ISA bus 695
Graphics Station	1-MB for Microchannel bus 695
Graphics Station	4-MB for Microcliannel bus 969
Graphics Station	8-MB for Microchannel bus 1295
2 MAD VDARA House	ode for 1 140 Cranburg Station 100

TEXAS INSTRUMENTS microLaser

ASER PRINTERS, UPGRADES, SCANNERS, VIDEO — OUR SPECIALTY

New & upgraded printer line from Texas Instruments...

New microtaser Turbo models incorporate Adobe® PostScript Level Z POL and a Werlek 8220 RISC-based 16-MHz co-processor of high space (first-page-out printing Features 35 Adobe Post-script fonts, sutomatic emulation switching (between PostScript Forts, sutomatic emulation switching (between PostScript FCL), sutomatic port selection, 25-MB RAM (upgradable to 105-ME), straight-through pageer path. Optional SCSI hard disk. The upgraded P IVs: models are faster & can upgraded to TURBO models. Great price/performance and outstanding print quality.

microLaser Plus Basic HP LJ emulation, 300-dpi, 9-ppm	1959
microLaser Plus PS-17 PostScript, 17 fonts, 9-ppm	1359
microLaser Plus PS-35 PostScript, 35 fonts, 9-ppm	1629
microLaser XL PS-17 PostScript, 17 fonts, 16-ppm	2495
microLaser XL PS-35 PostScript, 35 fonts, 16-ppm	2795
microLaser Turbo PS-35 PostScript 2, 25 fonts, 9-ppm	2099
microLaser XL Turbo PS-35 PostScript 2, 35 feets, 16-ppm	3399

SketchMate A-size plotter:
JXY-100 8-pon A-B-size flathed plotter:
DXY-100 8-pon A-B-size flathed plotter:
DXY-1300 8-pon

DMP-52 0-size, single pen, 22-ips DMP-61 0-size, single pen, 32-ips, 0005 res DMP-61 0-size, 0-pens, 22-ips, 0005 res DMP-62 0-size, single pen, 24-ips, 0005 res DMP-62DL E-size, 8-pen, LCD control panel

XLP 12 x 12' tablet, pen, cursor, drivers IS/ONE 8's' x 11' tablet, pen, cursor, drivers IS/ONE 12' x 12' tablet, pen, cursor, drivers

IS/ONE 12' a 17 tablet, pen, cursor, drivers

SummaSketch II 12' x 12' 4 or 16-button ... SummaSketch II Pro 12' x 18' 4 or 16-buttor

Adobe Streamline (special while supplies last) DesignCAD 20 / DesignCAD 3D Draftx CAD for Windows Generic CAD level 5 0

DPX-2500 8-pen/pencil, 1-MB, A-C size DPX-3500 8-pen/pencil, 1-MB, A-D size

Roland

Houston Instruments

KURTA

SUMMAGRAPHICS

CAD Software Titles

3395

599

184 / 204

439 295

CANON - bubblejet & laser printers BJ-10e bubblejet printer 360 x 360 resolution. BJ-300 80 column 360 x 360 resolution. BJ-300 80 column 360 x 360 resolution. BJ-301 80 x 360 resolution. LBP-4 Plus 300-dpi resolution-enhanced laser. LBP-3T 300-dpi laser (duplex 2-sided printing).

NEC - PC Mag Editor's Choice PS Laser Printer entWriter2 Mod 90 300-dpi, 2-MB RAM PostScript 1559 entWriter2 Mod 90 300-dpi, 4-MB RAM, PostScript 1775 NewGen - High Resolution PostScript Printers

Turbo PS/400p	400 x 400 dpi, 4-MB RAM	12285
Turbo PS/630	500 x 300 dpi	CALL
Turbo PS/840	800 x 400 dpi, w/ ART	CALL
Turbo PS/840E	800 x 400 dpi, w/ ART & IET	CALL

OKIDATA		5-yr warranty on LED printhend	
01400 300	đợi,	HP PCL emulation	4635

OLS40 PostScript & scalable HP PCL fonts OLS40 PostScript, 35 fonts, 2-MB RAM 1799

Laser Printer Upgrades

Adobe PostScript Cartridge HP LJ II	1329
Complete Font Library card for HP LJ III & IIID	258
PacificPage PE PostScript Cartridge	395
PacificPage XL accelerated Postscript cartridge	799
Type City by Bitstream for HP LaserJet	258
25 Plus/Charisma font carts for HP LJ by Elite	249
25-in-One fost cartridge	269
HP LaserJet 1-MB RAM upgrade, 5-yr warranty	95
HP LaserJet 2-MB RAM upgrade, 5-yr warranty	
HP LaserJet 4-MB RAM upgrade, 5-yr warranty	239
QMS printer RAM upgrades, 5-yr warranty	CALL
Ti microLaser 1-MB RAM upgrade, 5-yr warranty	129
EP-L Toner Cartridge for HP, QMS, Canon, etc	
EP-S Toner Cartridge for HP, QMS, Canon, etc	85
High Res Toner for NewGen, LaserMaster, etc.	175
High Density Toner for NewGen, LaserMaster, etc.	. 175

Color	Printers
NEC	
ColorMate model 40 / mod	el 80 upgrade kit \$4695 / 1699
ColorScript 100 Model 10	812" x 11" PostScript '6395
ColorScript 100 Model 30i	11" x 17" PostScript 8895
SEIKO INSTRUMENTS	
ColorPoint CH5504 A-size n	ear-bleed-to-edge 5259
ColorPoint PSX 4 (ultra-fast	
TEXTRONIX - a better color	inkjet-PostScript compatible
ColorQuick color inkjet pr	inter PostScript compatible, Hi
PaintJet compatible, 216-de	resolution, 24-bit, 16.7 million

THE INTELLIGENT PRINTER CONTROLLER

True Point from DP-1EK turns a Canon LBP-4 or HP Laser Jet Seriex II or III into a true 600 x 600 dpi PostScript-com patible laser!!! Halltones, line-art and type look near photo-typeset. Simple to install. Fully compatible with all PostScript and EPS software. Adobe type 1 compatible Comes with 35 fonts, 4-MB RAM, Post-Script interpreter in hardware, cable, 15-H07/ ø manuals & 1-vr warranty

TruePoint List Price \$1695, your price CALL TruePoint bundled with Canon LBP-4 Plus Laser 12235 TruePoint bundled with HP LaserJet III Laser

color capability. Accepts paper or transparancy media up to 12" x 18" Best Buy-PC Computing Sept 1991 1995 **ELECTRONIC PHOTOGRAPHY**

Canon Professional Computer Imaging System



The Professional SV Computer Im The Professional SV Computer Imaging Systems a complete parkage solution for capturing and imputting high-quality still wdee images on an IBM-PC and competible computers. Comes with Cannot s RC-470 frame-ode camera, FV-540 frame digitizer code camera, FV-540 frame digitizer state, studio & outdoor photo.

Professional SV Computer Imaging System .

Canon

The Canon XAPSHOT (pre-nounced "Zapshot") is as simple to use as a 35 mm auto-focus, auto-exposure The Canonia-ration type-numed Zapshot is as simple to use as a 35 mm auto-focus, auto-exposure twith the use of a digitizer). Takes 50 shots per disk.

We Ship Worldwide

3113 EXPRESS

XAPSHOT Color Imaging Kit	1899
XAPSHOT camera pnly	445
XAPSHOT Lens attachments, disks, batteries	CALL







Orders (U.S.A. & Canada) (800) 628-4517 Orders (International) (301) 899-1118 FAX Orders (24-hr)(301) 899-1888

Customer Service (301) 899-1118

ORDERING INFORMATION

- Purchase orders welcome. Call for approval.
- COD's with cashier's or bank check, \$1000 max
- No credit card or other surcharges Your credit card is not charged until we ship.
- For your protection, we check for stolen credit cards

Mailing address: Laser Press & Graphics, 4888 Stamp Read, Marlow Heights, MD 20748 Make checks payable to: Laser Press & Graphics. Returns require authorization. Call for RMA. We do not guarantee compatibility. Non-defective returns aubject to a 15% restocking fee. Returns must be in resettable condition. Software is not returnable dipened due to copyright laws. We reserve the right to limit quantities. Prices subject to change without notice. PLAW 130.

PCW1291

DESKTOP PUBLISHING // MULTIMEDIA // CAD DESIGN & DRAFTING // COMPUTER GRAPHICS // MODELING & ANIMATION



Low Cost and High Quality

The Rose Hill Computers

286 ROSE 12MHz VGA

- 80286[™]-12MHz processor
- · 1MB RAM
- 1.2MB floppy drive or
- 1.44MB floppy drive
- · 40MB IDE hard drive
- · 2 serial, 1 parallel & 1 game ports
- · 101 key keyboard
- · 14" VGA monitor
- 16 bit VGA adaptor
- MS DOS 5.0
- Free shipping in USA

\$1099



- · 4MB RAM
- 1.2MB floppy drive
- 1.44MB floppy drive
- 80MB hard drive
- 2 serial, 1 parallel & 1 game ports
- · 101 key keyboard
- 14" VGA monitor 1024
- 16 bit VGA adapter 512K
- MS DOS 5.0
 - Windows 3.0 with mouse
 - Free shipping in USA

ROSE NOTEBOOK 386sx 20MHz

- 80386sx™-20MHz processor
- 2MB RAM (exp. to 8MB)
- 1.44MB floppy drive
- 60MB IDE hard drive
- Serial, parallel, KB, VGA. ext. floppy & bus ports
- Paper white VGA LCD with CCFT backlit & 64 gray scale
- 7.7 lbs. with 2 battery
- MS DOS 4.01
- Carrying case
- Free shipping in USA
- · Price does not include on-site service

\$2299



- . 80386sx™-20MHz processor
- 2MB RAM
- · 1.2MB floppy drive
- 1.44MB floppy drive
- 40MB IDE hard drive
- 2 serial, 1 parallel & 1 game ports
- · 101 key keyboard
- 14" VGA monitor 1024
- 16 big VGA adapter 512K
- MS DOS 5.0
- Windows 3.0 with mouse
- · Free shipping in USA

\$1599



 286 20MB 1MB RAM \$1399

- Free shipping in continental U.S.A.
- · 30 day money back guarantee
- · Two year warranty on labor
- One year warranty on parts
- Toll free technical support · Express air parts replacement
- Free on-site service at most locations
- Leasing available for commercial customers
- Custom configurations available
- The Rose is expert in custom networking and we are Novell authorized.



Call today toll free

1-(800) 248-ROSE

no charge for shipping

486 ROSE 25MHz CACHE

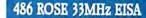
- 80486[™]-25MHz processor
- 128K high speed RAM cache
- 4MB RAM
- 1.2MB floppy drive
- 1.44MB floppy drive
- 120MB IDE hard drive
- 2 serial, 1 parallel & 1 game ports
- 101 key keyboard
- 14" VGA monitor 1024NI
- · 16 bit VGA adapter with 1MB
- MS DOS 5.0
- · MS Windows 3.0 with mouse
- · Free shipping in USA

\$2899





- 80486[™] 33MHz processor
- 128K high speed RAM cache
- 4MB RAM
- 1.2MB floppy drive
- 1.44MB floppy drive200MB IDE hard drive
- · 2 serial, 1 parallel & 1 game ports
- 101 key keyboard
- · 14" VGA monitor 1024NI
- 16 bit VGA adapter w 1MB
- MS DOS 5.0
- MS Windows 3.0 with mouse
- · Free shipping in USA



- 80486™-33MHz processor
- 256K high speed RAM cache
- 8MB RAM

--

- 1.2MB floppy drive
- 1.44MB floppy drive
- 330MB SCSI hard drive
- EISA 32 bit bus master controller
 - 2 serial, 1 parallel & -1 game ports
 - 101 key keyboard
- · 14" VGA mono monitor
- 16 bit VGA adapter
- MS DOS 5.0
- MS Windows 3.0 with mouse
- · Free shipping in USA



386 ROSE 33MHz CACHE

· 80386™-33MHz processor

64K high speed RAM

· 1.2MB floppy drive

1.44MB floppy drive

· 2 serial, 1 parallel &

1 game ports • 101 key keyboard

MS DOS 5.0

mouse

· 120MB IDE hard drive

14" VGA monitor 1024NI

16 bit VGA adapter with

· MS Windows 3.0 with

· Free shipping in USA

cache

4MB RAM





4865 Scotts Valley Drive • Scotts Valley, CA 95066 (408) 438-3871 • 800-248-ROSE • FAX 438-3642

Terms: C.O.D. cash, Visa, or MasterCard (no surcharge). Company and University P.O.'s accepted upon credit approval. All returns must have an R.M.A. number. Prices are subject to change without notice. MS DOS & WINDOWS 3.0, 286™, 386™SX™, and 386™ are trademarks of Microsoft Corp. and Intel Corp. respectively.

ve on Hard Drives at

"Drives include 30-Day Return and 1-Year Replacement policy.

Controllers/Adapters

ALWAYS

IN-2000	SCSI w/floppy	16bit	\$179
FUTUR	E DOMAIN		
TMC1680	SCSI 6H/4F	16bit	188
WESTE	RN DIGITAL		

	DIGITAL	•	
GEN2-PLUS	MFM	XT	75
1003V-MM2	MFM 2H/2F	AT	95
1006V-MM2	MFM 2H/2F	AT	1:1119
1007V-SE2	ESDI 2H/2F	AT	1:1199

ULTRASTOR

12F	32K	ESDI 2H/3F	AT:	1:1158
12C	1Mb	ESDI 2H/3F	AT	1:1398
24F	64K	SCSI 2H/3F	AT	1:1. 649
15C	1Mb	IDE 2H/3F	AT	1:1399
22F	64K	ESDI 2H/3F	AT	1:1549
22C	EISA	ESDI disk cach	ina	1:1 Call

MYLEX

DC376-0 SCSI w/cache OK 32bit . 699 SILICON VALLEY

ADP50	DE 2H	8bit w/BIOS 1:1 49
ADP20L I	DE 2H	16bit 1:119
ADP20LF1	DE 2H	/2F 16bit 1:125
60LIB I	DE 2H	16bit w/BIOS 1:1 59

SYOUEST Removeable 25ms 5.25" HH with Cartridge 44Mb Drive 44Mb Cartridge 20ms 5.25" HH with Cartridge 88Mb Drive

CD-ROM/OPTICAL DISK

88Mb Cartridge

SONY

CDU535 CD ROM int for PC\$449 CDU7205 CD ROM ext w/software . 599
Laser Library™ from SONY. Complete Plug-inand-Play external CD-ROM with over \$2000.00 worth of CD Disks. Six CD Disks included: 1. Comptons Family Encyclopedia

- . Microsoft Bookshelf
- 3. The Languages of the World 4. National Geographic Mammals
- 5. Mixed-Up Mother Goose
- 6. Software Toolworks World Atlas

IDE

since

1976

LPS52A			1 high \$228
LPS105A	105Mb	3.5"	1'high 378
PRO210A	210Mb	3.5"	HH 675
SCSI			
LPS52S	52Mb	3.5	1*high 269
LPS105S	105Mb	3.5	1"high 409
PR0210S	210Mb	3.5"	HH 695

Western Digital

2 VK. Warranty	100	2. 18/
"Caviar" Voice Coil 1"	HI.	1
3.5", 14.5ms, Formatt	ted Kit	Bare
41.2Mb IDE	\$155	\$189
42.5Mb IDE	\$230	5279
125Mb IDE	\$325	5399
18 Months Warranty		
209Mb SCSI	\$510	5599
212Mb AT IDE		
400Mb SCSI		

KL343	42Mb	3.5*	28ms	\$169
MFM KL320	21Mb	3.5"	40ms	128
RLL	00141	0.51	10	407

TOSHIBA°

IDE		
MK234FCF 105Mb ESDI	3.5	18ms \$35
MK358FA 676Mb	3.5	14ms 139

COLORADO

TAPE BACKUP

JUMBO DJ10 1	20Mb (internal)	\$238
JUMBO DJ202	50Mb (internal)	319
Attaches to flopo	v controller. Call to	r external

BACKTRAX

TAPE BACKUP

PHANTOM 250 250Mb w/tape (int) \$289 Also in stock Archive, Mountain and Maynard

Special Purchase!

ST 125N SCSI 5129.95 Miniscribe 302A 20Mb MFM w/Controller 5149.95

FLOPPY DISK DRIVES

5.25"	TOSHIBA	TEAC
360K	554	557
1.2 Mb	567	572
3.5"		
720K	559	562
1.44 Mb	567	572
The second second		

P	ESDI						PC PAK*	Bare
1	MC1355	159Mb	23ms	ESDI	5.25	FH	\$549	\$469
•	MC1654-7D	161Mb	16ms	ESDI	5.25"	HH	855	738
ı	MC1558-15	338Mb	18ms	ESDI	5.25	FH	1399	1199
•	MC1664-7	345Mb	14ms	ESDI	5.25	HH	1299	1049
ı	MC1568-15	676Mb	16ms	ESDI	5.25	FH	1745	1595
ı	MC1518-15	1345Mb	15ms	ESDI	5.25	FH	2699	2549
ı	SCSI							
	MC1375	153Mb	23ms	SCSI	5.25"	FH	562	478
	MC1578-15	332Mb	18ms	SCSI	5.25*	FH	1399	1199
,	MC1684-7	345Mb	14ms	SCSI	5.25	HH	1299	1049
	MC1588-15D	668Mb	16ms	SCSI	5.25*	FH	1745	1595
	MC1598-15	1049Mb	14ms	SCSI	5.25	FH	2449	2249
	MC1528-15	1345Mb	15ms	SCSI	5.25	FH	2699	2549

*PC PAKS include controller, cables, mounting hardware, software and manual

					AT VIA	
IDE					AT Kit*	Bare
CP3000	42.8Mb	28ms	IDE/AT	3.5	1*high\$229	\$195
CP3184	84Mb	25ms	IDE/AT	3.5	HH 388	348
CP3104	104.9Mb	25ms	IDE/AT	3.5	HH410	378
CP30104	120.7Mb	19ms	IDE/AT	3.5	HH378	429
CP3204	209Mb	16ms	IDE/AT	3.5	HH658	618
SCSI					SCSI Kit*	Bare
CP3040	42.8Mb	25ms	SCSI	3.5	1*highCall	239
CP3100	104.9Mb	25ms	SCSI	3.5	HHCall	399
CP30100	120.7Mb	19ms	SCSI	3.5	1*highCall	419
CP3200F	209Mb	19ms	SCSI	3.5	1'highCall	619

*AT Kits include16-bit hard/floppy controller with1:1 interleave or appropriate interface adapter card, and mounting kit including rails, cables, hardware, and installation instructions.

Seagate

IDE				RLL		
ST157A	44Mb	3.5"	28ms \$169	ST238R-1	32Mb	5.25" 28ms 179
ST1102A	89Mb	3.5"	19ms 277	ST277R-1	65Mb	5.25° 28ms 249
ST3120A	105Mb	3.5"	HH349	FSDI		
ST3120A	106.9M	b3.5"	16ms 379	CT1201E	160Mb	3.5° HH 15ms 795
ST1144A	125Mb	3.5	19ms 377	ST2182F	160Mb	5.25° FH 16.5 975
ST1239A	210Mb	3.5	15ms 599	ST4383F	330Mb	5.25° FH 1199
ST2383A	330Mb	3.5	16ms 1145			5.25° FH 16ms 1499
ST1480A	430Mb	3.5	HH1499			
SCSI				BA	-	
	1 49Mb	5.25	' HH229	IVE	四八	tor®
			COLUMN TO THE TAXABLE PROPERTY OF THE PARTY.	Committee of the Commit		

57N-1	49Mb	5.25" HH 229		~		
096N	84Mb	3.5° HH	IDE		-	
96N	88Mb	3.5° HH 28ms . 288	IDE			
162N	142Mb	3.5° HH 629	MX7040A	42Mb	3.5	1 high \$209
182N	160Mb	5.25° FH795	MX7080A	83Mb	3.5	1'high 288
383E	330Mb	5.25° FH 1199	MX7120A	120Mb	3.5	1"high 398
1200N	1.0Gb	5.25° FH 16ms 2195	MX213A	213Mb	3.5"	HH615
1650N	1.65Gb	5.25" FH 15ms 2675	MX340A	340Mb	3.5"	HH 1045
-84		0.20 111 10110 2010	CCCI			

MFM	,,,,,,,	0.20	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,	SCSI			
ST125-1	21Mb	3.5	28ms 199	XT4170	157Mb	5.25	FH795
ST138	38Mb	3.5"	28ms 219	MX8380	340Mb	3.5"	16ms 1188
ST225	21Mb	5.25	65ms 165	MX340S	340Mb	3.5	FH 1045
ST251-1	42Mb	5.25	28ms 227	MX8760S	675Mb	5.25	FH 1575
ST4096	80Mb	5.25	FH 28ms . 448	P012S	1059Mb	5.25	FH2295

Advanced Computer Products, Inc.

ST2

ST1 ST4

ST4

ST4

ST4

We accept MC/VISA/AMEX, no surcharge for credit cards. Your card not charged until we ship. "Our 30 Day Guarantee does not refund shipping and handling charges. Drive must be in original package and in original undamaged condition, 1 Year replacement may have some restrictions. Prices and availability subject to change without notice. We ship FEDEX or UPS.

Call Toll-Free 800-FONE-ACP (366-3227)



PC Magazine says "... Arlington offers worry-free mail order purchasing at reasonable rates!"

HEWLETT-PACKARD

Laserjet III w/Toner \$1549
Laserjet IIP w/Toner \$869
Laserjet IIIP w/Toner \$1059
1MG Upgrade \$99
2MG Upgrade \$129
4MG Upgrade \$219
Extra Toners \$79
Deskjet 500 \$489
Pacific Page/XL \$329/\$699
Pacific CFL \$259
Pacific Data 25 in 1 Font . \$249

EPSON PRINTERS

LX810	\$15	LQ570	. \$259	LQ2550 .	. \$849
FX850	\$289	LQ860	. \$549	EPL7000	. \$789
FX1050.	\$39	5 LQ870	. \$435	EPL7500	\$1959
LQ200 .	\$229	LQ1070 .	. \$359	DFX5000	\$1269
LQ510 .	\$245	LQ1170	\$569	DFX8000	\$2139
	(KIDATA PE	RINTER	IS	

	O	KIDATA	PRINTER	RS	
ML320	\$319	ML390	\$439	OLC 400	. \$639
ML321	\$439	ML391	\$599	OLC 800	. \$929
ML380	\$219	ML393	\$919	OLC 820	\$1239

PANASONIC

1123 \$199 1695 \$369	
11241 \$275 2624 \$399	
1180 \$149 4420 \$749	
1624 \$339 44501 \$1079	
1654 \$539 4455 \$1749	
4420/4450I 2MG Memory \$149	
CITIZEN	
CCV140: 6000 CCV000 6150	

7 3 - 2 - 2	GSX200	1 - 1 - 1 - 1

ARLINGTON COMPUTERS

386 SX-20, 1.2 Floppy, 1MG, 40 MG,
VGA (1024 × 768) Color Monitor,
DOS \$1249

386-25, 2MG, 1.2 Floppy, 40 MG, VGA (1024 × 768) Color Monitor, DOS\$1399 386-33W/64K Cache, 4MG, 89 MG, VGA (1024 × 768) Color Monitor,

Includes One Year On-Site Service and 30 Day Money-Back Guarantee!*

NOTEBOOKS

AST 43V, 386, 40 MG	\$2599
Epson NB3S, 40 MG	\$2899
Goldstar 620, 386SX20,	
40 MG	\$2149
Panasonic CF270,	
16 MHz, 20MG, VGA	\$1559
Panasonic CF270,	
16 MHz, 60 MG, VGA	\$1899
Panasonic CF370H6	
386SX-20, 60MG, VGA.	\$2649

TEXAS INST.

TM 2000/20 MG				. \$969
TM 2000/40 MG				\$1199
TM 3000/40 MG				\$2249
TM 3000/60 MG				\$2569
TM 3000/WINSX				\$2799
LASER STD				. \$879
LASER PS17				\$1199
LASER PS35		i		\$1499

SOFTWARE

D Base IV \$469
Harvard Graphics 3.0 \$389
Lotus 123 2.2/3.1 \$329/\$389
Microsoft Mouse \$89
Microsoft Excel \$299
Microsoft Windows 3.0 \$79
Microsoft DOS 5.0 \$79
Multimate Version IV \$239
R Base for DOS \$439
Symphony \$459
Ventura Desktop Publ \$499
Word Perfect 5.1 \$249

COMPAG

Model 386S w/40 MB \$1899
Model 386E w/40 MB \$2499
Model 386E w/100 MB \$2699
LTE 20 \$1699
LTE 286 20/40 \$2099/\$2399
LTE 386-60MB \$3999
6 Month Warranty

MULTIFUNCTION BOARDS

AST 6 Pack w/384K	\$159
AST Rampage Plus	\$329
Irma Board III	\$399
AST 5251-II Plus	\$439

intal

Intel	Above Board+	\$269
Intel	Plus 8 w/2 MG	\$399
Intel	386 PC w/1 MG	\$459
Intel	Satisfaxtion	\$359
Intel	Scanner Option	\$299
Intel	Snap-In 386	\$359

DRIVES & TAPES

Ext. 51/4" for PSII	\$159
Ext. 1.2 for PSII	\$159
Toshiba 31/2" 720K	. \$69
Toshiba 3½" 1.44	
Colorado Jumbo 120	\$249
Everex 60 MB Tape	\$209
SEAGATE HARD DISK	S
48 MB 31/2 (157N-Kit)	\$259
40 MB (157A)	

48 MB 3½ (157N-Kit)	\$259
40 MB (157A)	\$169
40 MB for AT (ST251-1).	\$229
80 MB for AT (4096)	\$399
80 MG 296 Kit	\$299
89 MG 1102A	\$279
106 MG 3120A	\$369
120 MG 1144A	\$439
211 MG 1239	\$569
IOMEGA	
90 MB Int. w/boot card	\$979

90 MB Ext. w/boot card .	\$999
PLUS	
Hard Card 40 MB	\$549
Hard Card 50 XL	\$369
Hard Card 80 MB	\$489
Hard Card 105 MB	\$550

CON	n	•	U	"	1	r	1.	A	r	u	U	L	"	۲,	П	1	ES .
40 MB.													,				\$199
100 MB												Ġ					\$349
200MB																	\$589

MODEMS

11 4000/0400 F + 6070/000
Hayes 1200/2400 Ext \$279/329
Hayes Pocket 2400 \$119
V-Series 9600 Int \$489
Hayes Ultra 96 \$609
Intel 2400\$139
Intel 2400 Ext \$159
Intel 2400 Ext. MNP \$209
Intel 9600 Ext \$479
Mghtz 2400 Tosh/CPQ \$129
Everex 2400 \$79
Everex 2400 External \$169
US Robotics 9600 \$569
US Robotics Dual Std \$799
Control of the free feet from the control of the co

CHIPS

256K/1	MG Chips . each \$4/\$
	MB Simms \$20/\$59
Compa	g 386 4 MB \$279
Compa	SLT 2 MB \$239
Compa	LTE 2MB \$159
Compa	LTE 386 4MB \$399
Compa	q Port 2MB \$27
	3 Upgrade \$129
IBM 2-8	MG Board \$349
	& 80 2 MB \$129
OKI Las	ser 2MB \$149

intal

Intel 8087-2	109
80287-10XL/XLT	\$89
80387-16/80387-SX . \$195/5	129
80387 SX-20 \$	139
80387-20 \$	
80387-25/80387-33 \$195	/195
80487 SX S	449

SCAN. & DIGIT.

Epson ES300C	\$999
Kurta XLP	\$249
Logitech ScanMan	\$159
Panasonic FXRS 3070U .	\$939
Summasketch 12×12	\$309
Summasketch 12×18	\$559

NETWORKING

Netware 2.2 5 User \$499
Netware 2.2 10 User \$1099
Netware 2.2 50 User \$1949
Lantastic 10BPS Starter . \$469
E143 Ethernet \$209
NE1000 Ethernet \$139
NE2000 \$159
Ethercard +/+16\$139/\$169
EtherLink II 3 Com \$189

VIDEO BOARDS

ATI 16 Basic\$89
ATI VGA Wonder XL \$179
ATI VGA Wonder 512 \$199
ATI 8514 1MG \$489
Boca Super VGA \$129
1024 VGA 16 Bit \$79
Genoa 6300/6400 \$169/\$219
NEC Grph Engine 256 \$849
Orchid Pro II 1MG \$269
Paradise VGA 1024 \$139
Paradise +16\$129

MONITORS

MITSUBISHI

EGA \$3	
VGA XC1429 \$3	389
Diamond Scan \$4	189
HL6615 16"\$10	29
HL6945 20"\$17	89
NEC	

	14	_	·	•					
Multisync	IIA .								\$409
Multisync									\$549
Multisync	IVD								\$979
Multisync	VD.	í		į					\$ 2099
	ANA	c	,	1	,,	,	•		

1381	VGA	1024×768	\$329
1395	VGA	1024×768	\$539

COLDSTAR

GOLDSTAN	
Color/EGA \$199/\$249	
VGA 1425+/1430 \$259/\$279	
VGA 1460 \$299	ı
VGA 1620+ \$699	

Arlington Products, inc.

HOURS C.S.T.
7:30 - 6:30 pm - Mon.-Frl.
9:00 - 1:00 pm - Saturday
1970 CARBOY
MT. PROSPECT, IL 60056

Prices and availability subject to change without notice. "Includes CPU only, in most U.S. locations, Money-back guarantee does not include shipping charges.

Circle 8 on reader service card

FOR ORDERS & SYSTEMS QUOTES: 800-548-5105

CUSTOMER SERVICE AND IN ILLINOIS 708-228-6333 SHIPPING 708-228-9748 TECHNICAL ASSISTANCE 708-228-1470

FAX 708-228-0516 We Export! No surcharge for MasterCard or Visa.



A Complete 486[™] System For Under \$2,000.

MIS continues to bring you the most current technology at best prices! We are now introducing our Micronics based 486 SX well below retail.

Utilizing the new Gemini chip set from Micronics, the MIS 486 SX has fewer components resulting in better reliability and greater speed and also provides up to 32MB of memory on a baby size motherboard! WHAT A GREAT WORK STATION!! At the same time, we are announcing our new on-site maintenance program! You now have no excuse not to try one of our fantastic computers!!!!!

MIS 486 SX - 20 MHz STANDARD

- 1MB 80NS RAM
- PHOENIX ROM BIOS
- TEAC 5.25" 1.2MB FLOPPY DRIVE
- TEAC 3.5" 1.44MB FLOPPY DRIVE
- 40MB AT HARD DISK DRIVE
- · 2 SERIAL, 1 PARALLEL AND 1 GAME PORTS
- 512K VGA ADAPTER
- 14" VGA COLOR MONITOR
- MICROSOFT COMPATIBLE SERIAL MOUSE
- NMB 101-KEY ENHANCED KEYBOARD
- · DESKTOP CASE WITH FIVE DRIVE BAYS
- 220W POWER SUPPLY
- · ONE YEAR PARTS AND LABOR WARRANTY
- 30-DAY MONEY BACK GUARANTEE
- FREE TECHNICAL SUPPORT
- ON SITE SERVICE NOW INCLUDED

Prices, specifications and terms are subject to change without notice. 30 days money back does not include shipping charge and damaged components. CA residents add appropriate sales tax. No surcharge on credit card purchases. Personal and company checks require 2 wks clearance. All names mentioned are registered trademarks of their respective companies.

486-33 MHz EISA STANDARD System w/ 64K Cache	\$ 2,995
486-25 MHz EISA STANDARD System w/ 64K Cache	\$ 2,695
486-33 MHz ISA STANDARD System w/ 64K Cache	\$ 2,295
486-25 MHz ISA STANDARD System w/ 64K Cache	\$ 2,195
386-33 MHz STANDARD System w/ 64K Cache	\$ 1,795
386-25 MHz STANDARD System	\$ 1,595
386SX-20 MHz STANDARD System	\$ 1,495
286-12 MHz STANDARD System	\$ 1,195
386-25/33 MHz PORTABLES	CALL
386SX-16/20 MHz NOTEBOOKS	CALL

VGA Monitor (1024x768) Upgrade	Add	\$	195
80MB AT Hard Drive Upgrade	Add	\$	150
120MB AT Hard Drive Upgrade	Add	\$	250
200MB AT Hard Drive Upgrade	Add	S	450
RAM Upgrade	Add	\$	60/MB
120MB Tape Backup Drive	Add	S	350
CALL FOR ADDITIONAL UPGRADE OPT	IONE		

MIS Computer Systems

P.O. Box 70897 Sunnyvale, CA 94086-0897

Order Now 1-800-733-9188





Office Hours: M-F 9:00 am-6:00 pm Pacific Time

Blacks



















PORTABLE PUNCH

NOTEBOOK:

- •INTEL 386TMSX 20MHz CPU
- •FCC CLASS B, UL, TUV, & CSA APPROVED
- •6.5lbs
- •8.5"x11.7"x2.0"
- •2MB RAM
- •3.5" 1.44MB FLOPPY
- •20(STANDARD)/40/60MB HARD DRIVE
- •640x480 VGA w/32 SHADES OF GRAY
- •(1) SERIAL, (1) PARALLEL PORTS
- •MS-DOS 5.0/4.01 w/GW BASIC INSTALLED
- •DURABLE CARRYING CASE

LAPTOP:

- •INTEL 386TMSX 20MHz CPU
- •FCC CLASS B, UL, TUV, & CSA APPROVED
- •14.7 LBS.
- •12.7" x 16.7" x 3.1"
- •1 MB RAM
- •40(STANDARD)/80/120MB HARD DRIVES
- •640 x 480 VGA w/16 SHADES OF GRAY •(2) SERIAL, (1) PARALLEL PORTS
- •MS-DOS 5.0/4.01 w/GW BASIC INSTALLED
- DURABLE CARRYING CASE

386SX/20 NOTEBOOK

386SX/20 LAPTOP

\$1695 \$1995

SX SAVVY

- INTEL 486/386TMSX 16/20/25MHz CPU
- •2MB RAM
- •(2) SERIAL, (1) PARALLEL PORTS
- •DUAL HARD/FLOPPY DISK CONTROLLER
- •1.2MB 5.25" FLOPPY DRIVE
- •1.44MB 3.5" FLOPPY DRIVE
- 40MB IDE HARD DISK
- •16BIT COLOR VGA CARD
- •14" VGA COLOR MONITOR
- •101-KEY ENHANCED KEYBOARD
- •MS-DOS 5.0/4.01

486SX/25 NEW 486SX/20 NEW

386SX/20 386SX/16

> INTRODUCING < OUR NEW, LARGER CORPORATE FACILITY

GSA # GS00K91AGS5225

ON-SITE SERVICE

DESKTOPS DELIVER

486:

- •INTEL 486™ 33/50MHz CPU
- 4MB RAM MEMORY
- 64K CACHE MEMORY
- •(2) SERIAL, (1) PARALLEL & (1) GAME PORT
- •DUAL FLOPPY/HARD DISK CONTROLLER
- •1.2MB 5.25" FLOPPY DRIVE •1.44MB 3.5" FLOPPY DRIVE
- •200MB IDE 15ms HARD DISK
- •16 BIT SVGA CARD w/1.0MB VRAM
- •14" 1024 x 768 SVGA MONITOR
- •101-KEY ENHANCED KEYBOARD
- •MS-DOS 5.0/4.01 INSTALLED

CALL

\$1995

\$1495

\$1395

- •INTEL 386™ 25/33MHz CPU
- SAME CONFIGURATION AS ABOVE
- •120MB IDE HARD DISK

486/50 NEW

CALL

486/33 EISA 486/33

\$3695 \$3095

386/33

\$2245

36/25 NON-CACHE

\$2095

STANDARD FEATURES

- •1 YEAR PARTS & LABOR WARRANTY
- •30 DAY MONEY-BACK GUARANTEE
- •1 YEAR GE ON-SITE SERVICE (EXCL. NOTEBOOK, LAPTOP)
- •LIFETIME TOLL-FREE TECHNICAL SUPPORT HOTLINE 1-800-231-TECH
- VOLUME PURCHASE DISCOUNTS
- COMPLETE CUSTOM CONFIGURATIONS



2031 O'TOOLE AVENUE SAN JOSE, CA 95131 Tel. (408)432-7500 Fax (408)432-1443

MEM





"The Only Source for Computer Memory!

WE ACCEPT INTERNATIONAL ORDERS AND PURCHASE ORDERS!

3 DAY INTERNATIONAL DELIVERY VIA FEDERAL EXPRESS, UPS, OR DHL!



- . ALL USER INSTALLABLE · QUALITY PRODUCTS
- SUPERIOR SERVICE FREE TECHNICAL SUPPORT
 - UNLIMITED SELECTION FLEXIBLE PAYMENT OPTIONS
- . GREAT PRICES
- EXCEPTIONAL WARRANTY

FAX: 714-588-9872 or CALL: 714-588-9866,

1011		
IBM	MEMO	ORY
PS/1		
2MB	IBM PN N/A	\$189.00
PS/2 L40SX Laptop)	
2MB	79F0999	\$289.00
4MB	79F1000	\$579.00
BMB	79F1001	\$999.00
PS/2 30-286, Exp.	Board 14972	259
2MB kit	30F5360	\$119.00
PS/2 70-E61/121.5		
1MB	6450603	\$69.00
2MB	6450604	\$129.00
PS/2 70-A21		
		\$139.00
PS/2 55SX/LS, 65S		
		\$299.00
PS/2 35SX; LS, 40S	X	Mar
8MB	6450129	\$599.00
PS/2 80-111/311		4.
2MB		\$139.00
PS/2 90, 95 and	P75 (Insta	all in pairs)
2MB	6450902	\$139.00
		\$279.00
Expansion boards		
		\$379.00
		\$439.00
Expansion boards		
		\$389,00
4-16MB w/4M	34F3011	\$499.00

	VV VV	001
COMP	AQ MEM	ORY
DeskPro 286-E,3	86-20/20E/25	
IMB	113131-001	\$89.0
4MB	113132-001	\$289.0
DeskPro 3865/16		
IMB		\$89.0
4MB	112534-001	\$299.0
DeskPro 286N, o	nd 386N	
OK Board	118700-001	\$89.0
DeskPro 286N	386N, 3865X/2	0. 386M .
and 486M		
My IMB	118688-001	\$79.0
4MB	118690-001	\$339.0
DeskPro 386N, 3		
2MB	118689-001	\$139.0
DeskPro 386-33,	486-33 & SystemP	10
2MB	115144-001	\$139.0
8MB	116561-001	\$789.0
DeskPro 386-206		
1MB Board	113644-001	\$139.0
4MB Board	113645-001	\$309.0
DeskPro 386S		
1MB Board	113633-001	\$139.0
4MB Board	113634-001	\$309.0
DeskPro 386/16		
1MB Board	1.08069-001	
2MB Board	108069/71-001	tana n

LAPTOP N	IEMC	RY
Many other brand name		i natebook
memories o		
COM		400000
LTE386S/20	1MB	
	THE REAL PROPERTY.	\$579.00
Portable LTE 286	IMB	\$109.00
	4MB	\$449.00
SLT-286	1MB	\$139.00
	4MB	\$469.00
SLT-386	1MB	\$139.00
	4MB	\$469.00
TOSE	HIBA	
T1000SE, XE, LE, T2000SX	1MB	\$139.00
	2MB	\$259.00
T1000LE, T2000SX	4MB	\$469.00
	8MB	\$999.00
T20005XE	2MB	\$289.00
Eller.	4MB	\$539.00
	8MB	\$999.00
T1200XE	2MB	\$149.00
T1600	2MB	\$149.00
T3100E		\$149.00
T3100SX		\$149.00
		\$279.00
		,277100
	-	

SX/Now! by Kingston

pgrade your 286 to a 386. SX/Now! Processor Upgrade offers 386 performance for your IBM A nd PS/2 Models 30/286, 50, 50Z, and 60

SX/Now! features:

- ✓ 16Kbytes of Cache memory
 ✓ 803875X Co Processor Socket
 ✓ Onboard 20 MHz clock
- ✓ Requires NO expansion slot
- ✓ Fully compatible with PS/2systems
 ✓ 5 year warranty

SX/Now! 20 MHz

\$439.00

Please call for any item not listed.

PRINTER MEMORY

Hewlett Pack	ard LaserJet IIIsl	
1MB	C2063A C2065A	\$59.00
4MB	C2065A	\$229.00
	ard LaserJet IIP, III, II	
2MB	33475B	\$139.00
4MB	33477B	\$239.00
	ard LaserJet II and II	
2MB	33444B	\$119.00
4MB	33445B	\$229.00
IBM Laser 40	19 and 4019e	
2MB	1039137	\$159.00
3.5MB	1039137 1038675	\$229.00
	II, BIIR, BIIT	
2MB	S63-1880	\$129.00
4MB	PN N/A	\$229.00
Panasonic 44	1501 and 4420	
2MB	KX-P441	\$159.00
4MB	PN N/A	\$249.00
Toshiba Page	Laser 6	
2MB	LS6-NB0090	\$159.00
OkiLaser 800	and 820	
2MB	OKI PN N/A	\$169.00
Laser printe	memory also ava	ilable for:
	QMS Epson	
	Brother AT&T	

SIMMS	DRAM
IBM	1MBX1
Mx9-80 \$169.00	188Y 1-10 \$4

IDI	A1	IMB	()
4Mx9-80	\$169.00	1MX1-10	54.99
1Mx9-10		1MX1-80	\$5.49
1Mx9-80		256K	1000
1Mx9-70		256KX1-10	
256x9-10		256KX1-80	
256x9-80	\$15.00	230KN1-00	\$1.90

AST MEMORY

Premium 3860	386/16	
1MB Kit	500510-007	\$69.00
Premium 3860	. 386/16, FASTRAM.	FASTboard
4MB Kit	500510-008	\$219.00
Premium 386,	386-20	
1MB Kit	500510 003	\$89.00
4MB Kil	500510-004	\$269.00
Premium WS/3	386SX, WS/286, Brave	0 286,386SX
2MB Kit	500510-002	\$109.00
Premium 386S	X, 16, 25, 33, all 486 m	odels
IMB	500718-002	\$69.00
Bravo 486/25		
2MB	500718-004	\$179.00
Premium II 3	3865X/20,5X/16, C	Cupid 32
My IMB	500780-003	\$69.00
	500780-004	\$349.00
Premium 386/	33T, 486/25, Bravo 4	86/25
8MB	500780-001	\$779.00

HEWLETT-PACKARD MEMORY

Vectro QS/16S & ES/12PC

Vectra QS/16	S and RS/20PC	
TMB Kit.	D1540A	\$69.00
4MB Kit	D1542A	\$219.00
Vectra QS/20	PC, RS/25PC, 20C at	nd 25C
1MB Kit	D1640A	\$69.00
4MB Kit	D1642A	\$219.00
Vectra 486 PC	(Install in pairs)	
1MB Kit	D2150A	\$69.00
4MB Kit	D2151A	\$339.00
Vectra 486PC	and 386/25 PC	W.
8MB	D2152A	\$589.00
Manten 204 /25	or HV	•

T3200SX	2MB	\$149.00
	4MB	\$279.00
13200SXC	M. 2MB	\$149.00
4° H	4MB	\$279.00
13200	3MB	\$229.00
T5100	2MB	\$149.00
15200,5200C,8500	2MB	\$149.00
	8MB	\$649.00
Z	ENITH	
SlimsPort	1MB	\$169.00
Slims, SupersPort SX, 2	86E 2MB	\$169.00

Slims, SupersPort 286E	4MB \$449.00
SupersPort 286, 286E	1MB Kit \$129.00
Mastersport 386SX	2MB\$289.00
Mastersprot 386SL	2MB
NE	C
UltraLite 286F, 286V	1MB \$209.00 4MB \$5649.00 IMB \$219.00
	4MB \$5649.00
ProSpeed 286, 386SX/16	IMB \$219.00
	4MB \$569.00

	HIVID	3307.00
ProSpeed SX/20	IMB	\$219.00
	4MB	\$529.00
ProSpeed 386	2MB	\$279.00
	8MB	\$1079.00
Powermate Portable SX	2MB	\$429.00
	8MB	\$1469.00
0.0	OID.	

1500 Series 4MB \$399.00

ZENITH MEMORY

Zenith Z-386/20/	25/33 & 33E	
IMB	ZA36/3800ME	\$69.00
4MB	ZA3800MK	\$339.00
Zenith 3600MQ E	xpansion Board	
2MB	ZA3600MG	\$139.00
Zenith Z-386 SX o	and Z-386SX/20	
2MB Kit	Z-605-1	\$119.00
Zenith TurboSpor	1 386e	
IMB	ZA-3034-ME	\$169.00

EXPANSION BOARDS

BocaRam XT

Up to 2MB for any XT or 8-bit compatible machines running up to 12MHz. Provides UM EMS 4.0 only. Uses 256K Dram

BocaRam/AT Plus

Up to 8MB for any AT or 16 bit compatible machines running up to 33MHz. Offers all memory, provides a maximum of 8MB LIM Uses 1x1 Dram or 1x7 SIMM modules.

2MB with DRAM's: \$219.00 2MB with SIMM's: \$239.00

NEC MEMORY

Powermate SX		_
	APC-H855	\$569.00
	APC-H853	
8MB Brd		
Powermate SX		
1-2MB Brd	APC-H850E	\$239.00
	NEC PN N/A	
4-8MB Brd	APC-852E	\$669.00
Powermate 5X	/20	
	OP-410-8101	\$239.00
	K OP-410-8100	
	OP-410-8102	
	OP-410-8103	
Powermate 38		
	APC-H655X	\$429.00
Powermate 38		V421.00
AA DAAR	ADC.HASSE	\$420.00
ENS BMB	APC-H656E APC-H656X	\$1329.00
SMB Rote	APC-H657X	\$1329.00
Powermate 38		V (02).00
	OP-410-5201	\$210.00
	OP-410-5202	
	5/33E and 486/25E	\$759.00
	OP-41-5101	\$299 nn

\$100 00

\$129.00



WE ACCEPT VISA, MASTERCARD AND AMERICAN EXPRESSI

No surcharge on Visa or Mastercard, AmEx add 4%,
Terms: AMEX, Visa: Mastercard, C.O.D., P.O.'s

**Terms: AMEX, C.O., C.O., C.O.D., P.O.'s

**Terms: AMEX, C.O., C.O., C.O., C.O.D., P.O.'s

**Terms: AMEX, C.O., C.O.

and refused orders. All items must be returned within 15 days with riginal documentation and package: RMA # required.

Manufacturers part numbers are for your con-

all products are third party. 100% compatible or full refund! 'We will beat any advertised price' valid only on identical b offer not good for SIMMs or DRAM

Prices and availability subject to change

INT'L 011-714-588-9866 U.S. 800-535-5892 FAX 714-588-9872

MAIL ORDERS TO:

FIRST SOURCE INT'L INC. 36 ARGONAUT, STE 140 ALISO VIEJO, CA 92656 FOLLOW YOUR PACKAGE EVERY STEP OF THE WAY!







FAST, INEXPENSIVE AND DEPENDABLE DELIVERY ANYWHERE IN THE WORLD! CHOOSE THE CARRIER TO FIT YOUR DELIVERY NEEDS AT LOW RATES, INFORMATION FOR TRACKING SHIPMENTS IS READILY AVAILABLE AT YOUR REQUEST!

REPLACE YOUR CASH REGISTER!

Business Solutions for Retail Stores, Liquor Stores, Video Stores, Hair & Nail Salons, Auto Repair Shops, Rental Stores and more! The One Stop Solution For All Your Hardware and Software Needs



Dealer Inquires Welcome 1-800-637-8268

MicroBiz offers a complete one-stop solution to computerizing your business, with twice as many features at half the price. * Computerize any retail store, auto repair shop, video store, hair & nail salon or liquor store. MicroBiz offers a complete solution including software, cash drawers, bar code readers, receipt printers and everything else you need to computerize your business. All MicroBiz products work on any IBM PC or compatible with 640K RAM and 40 megs of hard drive space (your computer or ours!!!).

- automatic credit card authorization
- bar code compatibility
- color/size matrix
- multiple pricing levels
- track inventory by size/color/style
- mailing labels
- track customer history
- aily closeout reports
- accepts split tender
- view in-stock status

- pull down menus
- pop-up windows
- 99 levels of password protection
- tracks promotional sales
- prints bar code labels
- reorder reports
- extensive sales reports
- item/invoice discounts
- tracks sales by employees set limited-time promos
- receiving reports
- links to One-Write Plus
- pop-up calculator
- built-in word processor
- works on any IBM PC or compatible with hard disk drive
- Multiuser and source code available
- dBase compatible compiled with Clipper...



Auto Repair Shop Controller

★ Maximize inventory, track detailed service history. guarantee repeat business, reduce billing errors, improve cash flow, schedule appointments and produce reports for smarter business decisions directly.



Video Store Controller

★ This "beginnerproof' video retail management system is flexible enough to work in any location. Scan a bar code or key in video membership information. Financial and rental information is always up to the minute.



Liquor Store Controller

★ Multi User for two or more stations. Used by thousands of growing liquor stores and chains nationwide. Monitor every sale, reduce theft, increase profits and meet the needs of your customers.



Hair & Nail Salon Controller

★ Imagine a computerized system that keeps in touch with your clients, sending out birthday cards, perm and color reminder letters. customer "thank you" notes...plus keeps complete financial control of your business!



CO/Session Host

★ Access files and programs on your office PC from home. CO/Session is fast, powerful and designed for the businessperson on the go. Use with a modem, and our support staff can see and operate your computer directly.

Unlimited Computers (S. Florida) 305-923-7937 • Computer Terminal (Canada) 416-372-3005 • Armstrong and Assoc. (New Zealand) 011-647-1348-111 Computer Trends (Wisconsin) 414-435-8088 - RDN Associates (Buffalo) 716-838-6747 - ABS Business Systems (N. New Jersey) 914-352-1215 - Desktop Data (Texas) 713-270-4288



MicroBiz 500 Airport Executive Park Spring Valley, NY 10977 Ph: (914)425-9500 Fx:(914)425-4598



1-800-637-8268



MicroBiz...programming your business for success.

ANTHONY RUSSO



THE HOME OFFICE

The practical guide to home/office computing

Steve Bass

t's getting easier to shop for a home computer—browse just about any discount store, and you can find computers between the refrigerators and microwave ovens. Whether it's an electronics store, membership club, or warehouse outlet, they all have figured that the time is ripe to knock over my old standby, the computer specialty retailer. And judging by the brand names and the low prices, they just may succeed.

In the past when friends asked about buying a computer, I'd listen to their requirements and budget limits, give them a shopping list, and direct them to a local computer store. And that's where I'd go myself. I like the small retailers because I can rely on them for quality components and good support.

Over the years I've developed a couple of simple guidelines for selecting a merchant. The first is the 5/15 rule: The retailer has to have been in business for at least five years, and be within 15 miles of where the computer is installed. I figure that if a store has survived that long, it'll probably be around for another five years; and if the computer goes down, I can get it back to the store pretty easily. I also want to form a rela-

tionship with the staff so I can ask those inevitable "quick" questions.

Next comes the *substitution* rule, which says I must be able to swap components easily when I put a custom system together. For example, if one machine needs to run *Windows*, I can have it configured with a bigger Hardcard or a larger monitor, say a 17-inch View-Sonic. The store also has to carry topname brands as well as no-name house brands. This way, I get to choose an inexpensive generic model for a workstation and stay with an IBM or AST for the file server.

But the corner computer store may be in trouble. America's computer buying habits are changing, and it's because users are more computer literate.



They've joined user groups, read magazines, and done their homework, and they need lots less hand-holding by the merchant—at least before the sale. The questions friends ask me have changed from a modest "What computer should I get?" to sophisticated queries about comparative disk transfer rates, dot pitch, and CPU megahertz—and they want store recommendations.

To the chagrin of small retailers not to mention the Businessland and ComputerLand franchises—mass merchandisers seem to have the answers for the economy-minded home computer buyers, offering bargain-priced but high-end ASTs, Dells, and Acers.

Circuit City, for example, sells AST's Advantage—20-MHz 386SX, 80MB IDE hard drive, two floppy drives, integrated super-VGA controller and super-VGA monitor, 2MB RAM, mouse, and keyboard—for about \$2250. A faster 20-MHz 486SX with more memory, larger hard disk, and built-in fax-modem, costs \$400 more. It includes a one-year on-site warranty and a toll-free support line. Astonishing.

At a recent Pasadena IBM Users Group meeting, a straw poll of 350 attendees yielded surprising results: 30 people had bought at a mass merchandiser, and another 80 said they were planning to do the same.

But don't expect support or answers to your technical questions from discounters. Instead, do your research ahead of time. Make a spreadsheet of the features you want and what you'll settle for—by brand, model, and store. Then assign a precise value to each variable. If you're concerned about the quality of the system's innards, call the manufacturer and ask about the components used. Remember, you needn't take what's on the shelf. Most mass merchandisers offer special-order options, so you can get the same flexibility as at the mom-and-pop shop.

Contributing Editor Steve Bass is a family therapist and president of Pasadena IBM Users Group.

THROW THIS IN THE MAIL NOW, SO YOU DON'T THROW YOUR MONEY AWAY LATER.

Send for the brand new Dell product catalog,

on our newest line of PCs, laptops, note-

loaded with information on all our award-winning

books and servers.

computers, service and support. Plus, get the details

7. Are you interested in leasing? Yes No

Return this card today, or call us.

7. Are you interested in leasing? ☐ Yes ☐ No

TO ORDER, CALL PLEASE REFERENCE 11D50.

800 - 873 - 1130

HOURS: 7AM-9PM CT M-F 8AM-4PM CT SAT

IN CANADA 800-668-3021. IN MEXICO 95-800-010-0664.

Start saving money now, send for your free Dell product catalog, loaded with information on all our award-winning computers, service, support and remarkably low prices. Plus, get the details on our newest line of PCs, laptops, notebooks and servers. Return this card today, or call us at (800) 873-1130. In Canada, call (800) 668-3021. In Mexico, call 95-800-010-0664.	Start saving money now, send for your free Dell product catalog, loaded with information on all our award-winning computers, service, support and remarkably low prices. Plus, get the details on our newest line of PCs, laptops, notebooks and servers. Return this card today, or call us at (800) 873-1130. In Canada, call (800) 668-3021. In Mexico, call 95-800-010-0664.
☐ Please have a Dell Representative call me.	☐ Please have a Dell Representative call me.
Name: (M)	Name: (M)
litle:	Title:
Company:	Company: (B Applicable)
Address:	Address:
City: State: Zip:	City:State:Zip:
Type of Business:	Type of Business:
Approx. # of Employees in Company:	Approx. # of Employees in Company:
Home Phone: ()	Home Phone: ()
Business Phone: ()	Business Phone: ()
Fax #: ()	Fax #: ()
1. Which products are you most interested in? 286-based systems 386"SX-based systems UNIX* based systems Laptops/Notebooks 486"SX-based systems Other:	1. Which products are you most interested in? ☐ 286-based systems ☐ i386"SX-based systems ☐ i386-based systems ☐ i386-based systems ☐ i486"SX-based systems ☐ i486"SX-based systems ☐ Other: ☐ Other:
2. Are you interested in computer products for: ☐ Home ☐ Business ☐ Resale	2. Are you interested in computer products for: ☐ Home ☐ Business ☐ Resale
3. If for resale, please identify your primary customers: ☐ General Business ☐ Government ☐ Education ☐ Medical	3. If for resale, please identify your primary customers: ☐ General Business ☐ Government ☐ Education ☐ Medical
4. How many PCs does your company plan to purchase in the next twelve months?	4. How many PCs does your company plan to purchase in the next twelve months?
Quantity Timeframe Quantity Timeframe Less than 1 month — 6-12 months 1-3 months — More than 12 months 3-6 months —	Quantity Timeframe Quantity Timeframe Less than I month 6-12 months 1-3 months More than 12 months
5. What do you plan to use computer products for?	5. What do you plan to use computer products for?
6. How many PCs do you have installed now at your company?	6. How many PCs do you have installed now at your company?

AD CODE 51D50

RIP THIS OUT, RIPPED FORE YOU GET

For A Free Catalog Of Dell's New Computers, Send This Card.



NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



AUSTIN, TEXAS

PERMIT NO. 6745

FIRST CLASS MAIL

BUSINESS REPLY MAIL

NO POSTAGE NECESSARY IF MAILED IN THE UNITED STATES



DELL COMPUTER CORPORATION

POSTAGE WILL BE PAID BY ADDRESSEE

9505 ARBORETUM BLVD

DEPT DH

AUSTIN TX 78759-9860

AUSTIN, TEXAS BUSINESS REPLY MAIL PERMIT NO. 6745

FIRST CLASS MAIL

POSTAGE WILL BE PAID BY ADDRESSEE

DELL COMPUTER CORPORATION

9505 ARBORETUM BLVD AUSTIN TX 78759-9860

NOW YOU DON'T HAVE TO BE RICH TO BE POWERFUL.

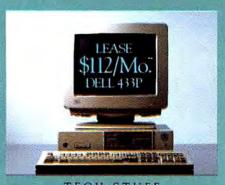
If you're power hungry, Dell has an i486™ screamer for just \$2,999 that's sure to satisfy. Because not only does this Dell® 433P pack a punch, it's also backed by the company that's known for doing things right. And at Dell, that means doing business directly with you.

Say you want to order a Dell, or ask a few questions. Easy. Just call us and you'll be in touch with the people who not only sell Dell computers, but design and provide award-winning support for them too. Not some detached middle man with middle man hype and a markup to match. But a person who really knows his stuff. In fact, customer feedback goes right to our R&D department where they use it to develop industry-leading computers. Year after year.

With a gung-ho attitude like that, it's no wonder we became a \$500+ million international company in just 7 years. Or that we'll be around to keep doing business for a long time to come.

So give us a call to order the Dell System® 433P today. We've got everything it takes to give power to the people.





TECH STUFF

Small footprint and a new, lower price \$2,999 or Leose for \$112hnornh**

##86 microprocessor running at 33 MHz Price includes VGA
Color Plus monitor, 2 MB RAM, 80 MB hard drive and free factory
installation of select MS-DOS* applications \$100, 200 or 320 MB
hard drive configurations available

SERVICE AND SUPPORT

Toll-free technical support telephone hotline for the life of your system ——One full year of on-site service included in the system price* ———Self-diagnostic software ———24-hour toll-free TechFax ™ line for instant occess to Dell technical information ——On-line Bulletin Board to communicate with Dell technical staff and other Dell users

COMPANY AWARDS

Dell has:

Won PC Week's Corporate Satisfaction Poll on imprecedented 8 times

Been ranked "Best Personal Computer in Customer Satisfaction in Small to Matham Sized Businesses" by J.D. Power and Associates'

Won PC World's 1991 World Class Award for Best Service & Supportel landware





800-388-8542

Please reference #11D48.

To order, please call In Canada 800-668-3021 In Mexico 95-800-010-0664 Hours: 7 cm - 9 pm CTM - F 8 cm - 4 pm CT See, 10 cm - 3 pm CT Sin.



All prices and specifications are subject to change without notice. **Flayment based on 36-month open end leave. Leasing arranged by Leasing Group. Inc. In Conada and Mexico, configurations and prices may vary. Dell'and Pell Systems are registered fruidemarks and Bethfail is a service mark of Dell'Gomputer Corporation. † 1991. 10. Prover and Associates' Computer find User. Satisfaction Study Phasel. Office Based Small to Medium Sized Businesses. Preposses, from Business Find User at 1784 business sates. Small to Medium Sized Businesses were based on office sites with between 1 and 499 employees. Bed Personal Computer in Office Based End User Satisfaction in Small to Medium Sized Businesses. 1D. Prover and Associates, 1886 and the first liniset Logo are trademarks of Lore for Corporation. MS DOS is a registered trademark of Microsoft Corporation. Dell'disclosure proprietary interest in the marks and raises of offices. A Service provided by third party service. On site service may not be available in certain remate locations. Shaping is handling and applicable sizes.

to not included in the prior D199) Dell Computer Corporation, All





Lease 9: \$354/month. **

The Dell System® 450SE. " Upgradeable 1486" microprocessor running at 50 MHz. - 320 MB UltraScan" 14C System - \$9,799 - Price listed includes 4 MB of RAM*. 100, 200, 330 and 650 MB hard drive configurations also available. 33 MHz upgradeable systems also available starting at \$6,599 and 20 MHz i486SX upgradeable systems starting at \$4,499 and 50 MHz systems starting also available starting at \$5,299.



Lease: \$134/month.

The Dell System 420DE. " Upgradeable i486SX microprocessor running at 20 MHz. - 100 MB UltraScan 14C System - \$3,699 - Price listed includes 4 MB of RAM*. 80, 200, 320, 330 and 650 MB hard drive configurations also available. Upgradeable i486 systems also available; 33 MHz at \$6,499.



Lease: \$127/month.*

The Dell System 333D." i386 microprocessor running at 33 MHz. - 80 MB Super VGA (1024x768) Color System - \$3,399 - Price listed includes 2 MB of RAM.* 50, 100, 200, 320, 330 and 650 MB hard drive configurations also available. 25 MHz systems also available starting at \$2,599.



Lease: \$64/month.

The Dell System 320SX.* 38 microprocessor running at 20 MHz. - 40 MB V Color System - \$1699 - Price listed includes 2 of RAM.* 50, 80, 100, 200 and 320 MB drive configurations also available.

IF YOU ALREADY BOUGHT AN EXPENSIVE COMPUTER, BURN THIS BEFORE YOUR BOSS READS IT.





Performance Enhancements: Within the first megabyte of memory, 384 KB (450SE, 433SE, 420SE, 450DE, 433DE and 420DE), 128 KB (320SX, 316SX and 320LT) and 96 KB (486D/25, 333D and 3 lease = Leasing arranged by Leasing Group, Inc. In Canada and Mexico, configurations and prices may vary. Dell and Dell System are registered trademarks, UltraScan is a trademark a Users at 1,784 business sites. Small to Medium Sized Businesses were based on office sites with between 1 and 499 employees. Best Personal Computer in Office Based End User Satisfaction Inside Logo are trademarks of Intel Corporation. MS-DOS is a registered trademark of Microsoft Corporation. Dell disclaims proprietary interest in the marks and names of others. "Service



Lease: \$60/month.**

The Dell System 316SX. 6 386SX microprocessor running at 16 MHz. – 40 MB VGA Color System – \$1,599 – Price listed includes 2 MB of RAM. 8 50, 80, 100, 200 and 320 MB hard drive configurations also available.



Lease: \$75/month.**

The Dell System 320LT. ** ii386SX microprocessor running at 20 MHz. – 40 MB VGA LCD System – \$1999 – Price listed includes 1 MB of RAM*. 120 MB hard drive configuration also available.

SERVICE AND SUPPORT

On-site desk-side service contract included in the system price the first years — Toll-free technical support hotline — Toll-free TechFax line for 24-hour system information — On-line Bulletin Board communication with technical staff and other users — Self-diagnostic software — Free factory installation of selected MS-DOS® software applications.

COMPANY AWARDS

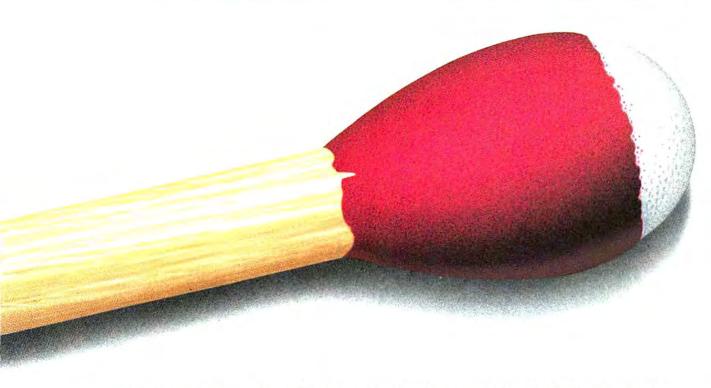
★ Dell has won PC Week Corporate Satisfaction Polls an unprecedented 8 times ★ Dell ranked Best Personal Computer in Small to Medium Sized Businesses in the J.D. Power and Associates Customer Satisfaction Index ★ Dell has won PC World's 1991 World Class Award for Best Service and Support/Hardware.



8 0 0 - 7 6 5 - 5 7 8 5

Please reference 11D49 when calling

Mon-Fri. between 7am-9pm CT, Sat 8am-4pm CT, Sun 10am-3pm CT In Canada, (800)668-3021 In Mexico, 95-800-010-0664 Shipped with a 30-day no questions asked money-back guarantee.



Finally, computers for users who need blazing speed, but don't have money to burn. Notebooks, desktops and servers packed with features and priced significantly lower than comparable machines sold through traditional retail channels.

And all backed by Dell, the company that's built a \$546 million international business by always going above and beyond the call. By putting them through tests the Marines would be proud of. And backing each one with a service and support package described as "overkill" by the editors of PC Week.

So if you need a computer you can fire up without getting fired, call Dell today. We promise you won't get burned.



5D) of memory is reserved for use by the system to enhance performance. Can be optionally disabled on all except 32011. All prices and specifications are subject to change without notice. "Payment based on 36-month, open-end at TechFax is a service mark of Dell Computer Corporation. 1991 J.D. Power and Associates' Computer End User Satisfaction Study. Phase I: Office Based Small to Medium Sized Businesses." Responses from Business End in Small to Medium Sized Businesses. J.D. Power and Associates is a service mark of J.D. Power and Associates. Contains an Intel® 1386° or Intel 1486° microprocessor. Intel is a registered trademark and 386, 1486 and the Intel is provided by third party servicer. On-site service may not be available in certain remote locations. Shipping, handling and applicable sales tax not included in the price. (1991 Dell Computer Corporation. All rights reserved.)

Fasten your seat belts. Because now you can get the speed and power of an i386" system without laying out any serious dollars. Or having to deal with a suspect company.

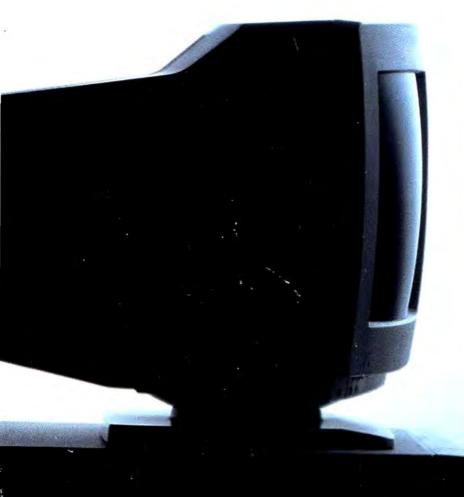
It's the Dell* 325P for only \$1,999. This full-blown 25 MHz, i386DX system with an 80 MB hard drive offers maximum performance at the lowest possible price. So it's ideal for any mainstream business application. And it comes from Dell, a company that has built a \$546 million international business in just 7 years.

When you buy from Dell, you always deal with us directly. So there's no high dealer margins or erratic support. You'll get a computer we designed, manufactured, and rigorously tested ourselves. And it comes with the service and support that helped us become one of the most awarded PC companies in the world.

So don't wait. Call us today for the Dell 325P.

Because even though the price is stripped down, the computer isn't.

IT'S KIND OF LIKE GETTING A PORSCHE FOR THE PRICE OF A YUGO.





Lease: \$75/MO.** - Call now for special promotional price. Expires 12/31/91

TECH STUFF

System includes 80 MB Hard Drive, VGA Color Monitor, and 2 MB RAM Upgrade options to boost performance: 32KB cache or 33 MHz H86™

SERVICE AND SUPPORT

On-site desk-side service contract included in the system price the first year* — Toll-free technical support hotline — Toll-free TechFax* line for 24-hour system information — On-line Bulletin Board communication with technical staff and other users — Self-diagnostic software — Free factory installation of selected MS-DOS* software applications

COMPANY AWARDS

★ Dell has won PC Week Corporate Satisfaction Polls an imprecedented 8 times ★ Dell ranked Best Personal Computer in Small to Medium Sized Businesses in the J.D. Power and Associates Customer Satisfaction Index²⁶ ★ Dell has won PC World's 1991World Class Award for Best Service and Support/Hardware





THE NUMBER

800-825-0044

Please reference 11DM1 when calling

Mon-Fri. between 7am-9pm CT, Sat 8am-4pm CT.
Sun 10am-3pm CT In Canada, (800)668-3021
In Mexico, 95-800-010-0664 Custom-built and
shipped with a 30-day no questions asked money-back guarantee



