

*Exclusive: Street Prices for the Top 30 PCs!*

# PC WORLD

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# 386 STAYING POWER

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19 On-Line Data Bases  
37 CD ROM Drives***



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# PC WORLD

## COVER STORIES

### REVIEWS

**33-MHz 386s: Survival of the Fastest** Last year's big-ticket item has made it to the top of many shopping lists, and for good reason. The latest 386s have the power you need, a price that won't break you, and the endurance to last long into the nineties/**Scott Spanbauer** .....112

**More Profits From Personal Finance** Even if you're guarding your company's bottom line, that's no guarantee you can manage personal investments—or balance your checkbook. Choose one of these four personal finance packages to ensure your fiscal fitness/**Suzanne M. Colvin** .....129

**Easier Tools for the On-Line World** Even power users grumble when it's time to fire up the modem. This roundup of 14 communications packages—including 4 *Windows* programs—shows which products take the hassle out of accessing on-line services and remote PCs/**Judy Heim** . . . .141

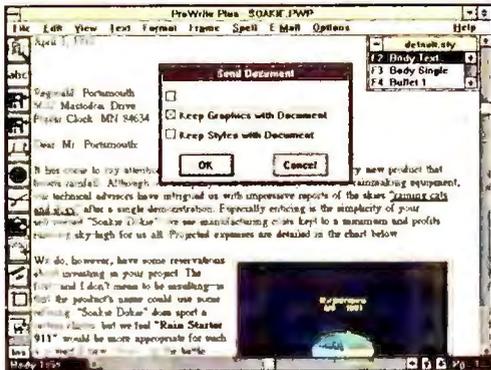
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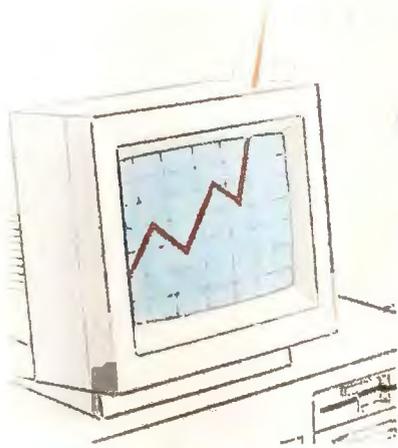
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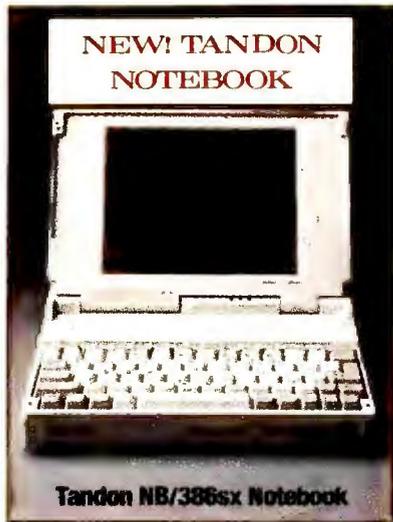
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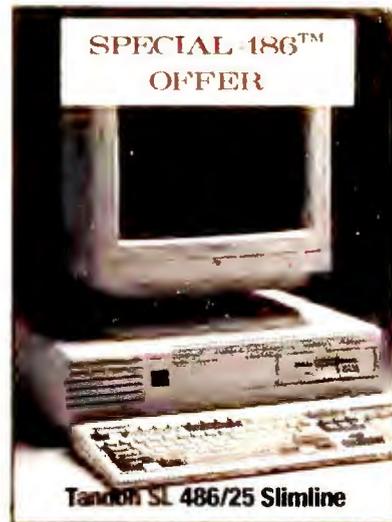
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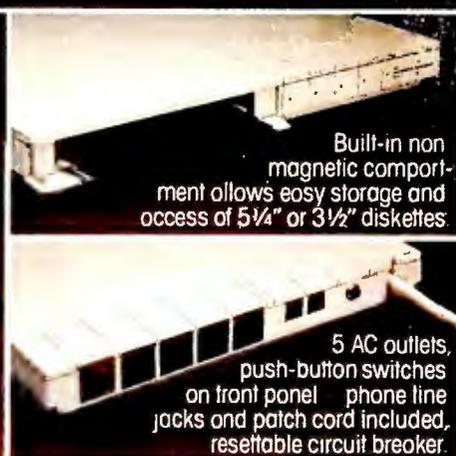
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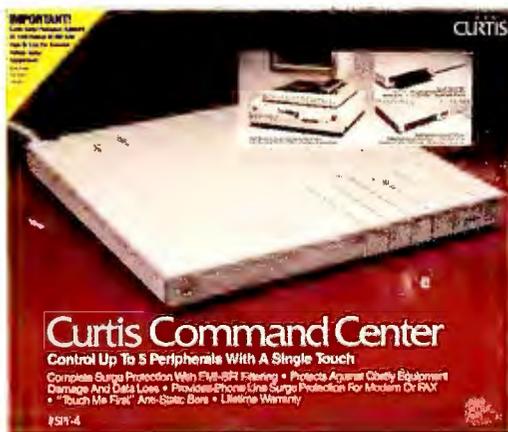
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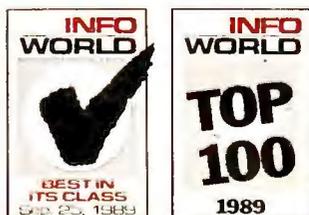
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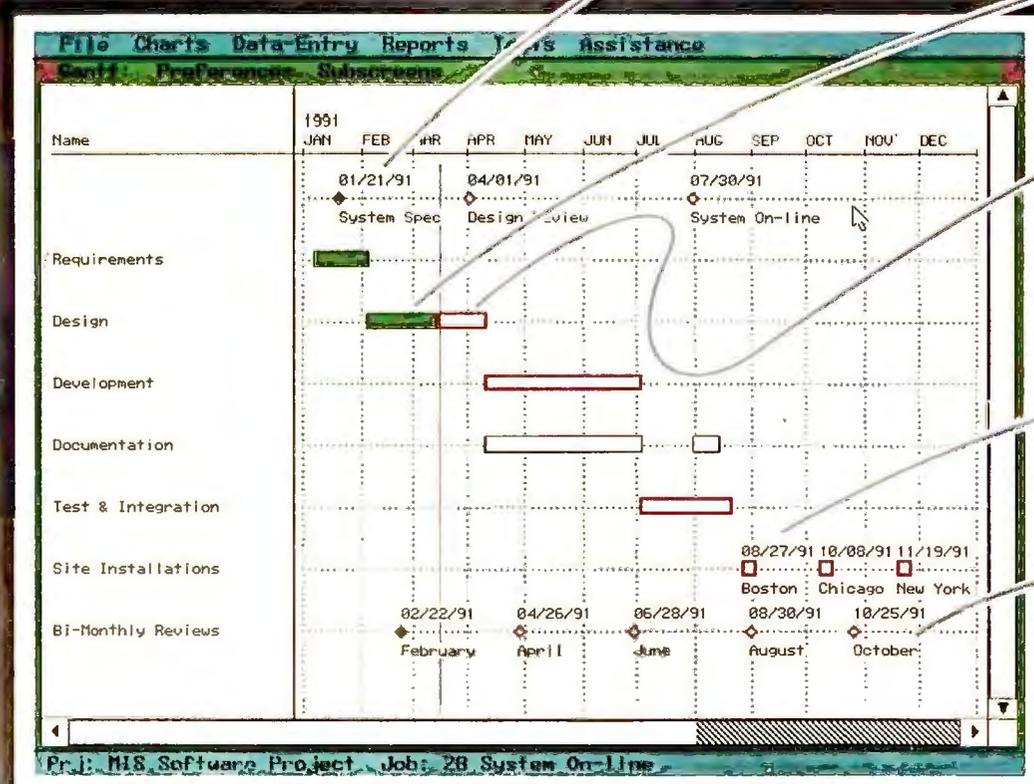
Gantt chart shows you more of what you want to see.

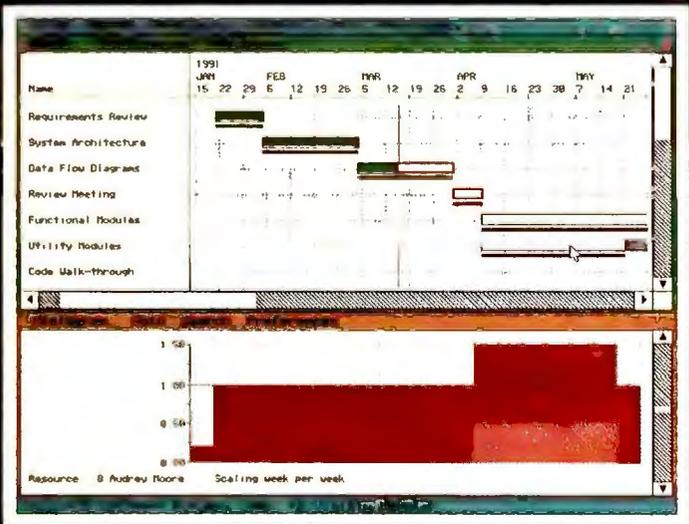
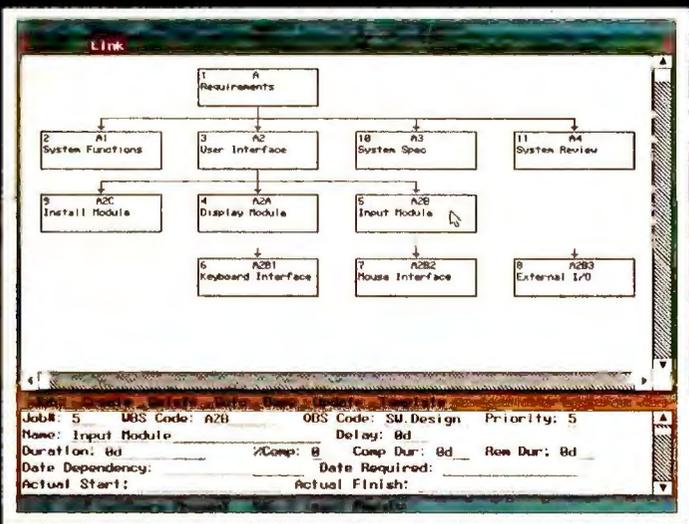
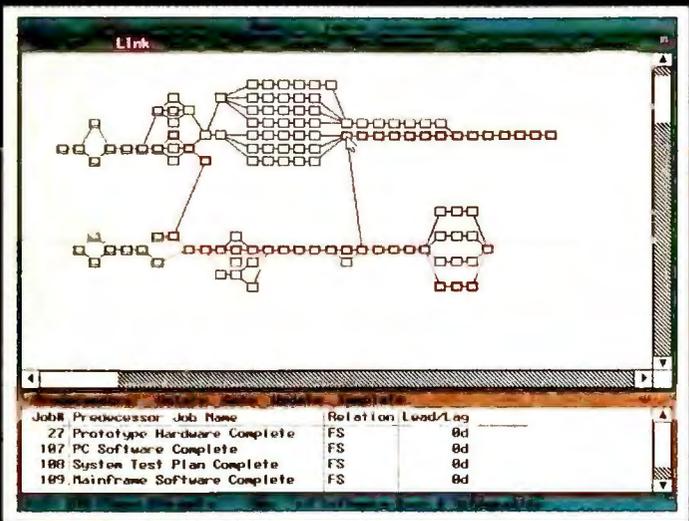
Shaded areas illustrate "percent complete" for each job.

The critical path is always clearly visible, indicated by a heavy red outline.

You can annotate your chart with information such as when and where an event takes place, even at summary levels.

Information can be categorized and labeled – all on the same line – maximizing vertical screen space and helping you create tighter, crisper presentations.





● **Flexible zoom options (top).** Project Scheduler 5's network diagram gives you an easy-to-read overview of dependencies at five selectable zoom levels. It also lets you define links across projects within and across work groups.

● **Organizational tree structures (middle).** Tree structures let you easily organize your project by both Work Breakdown Structure (WBS) and Organization Breakdown Structure (OBS) codes. This dual organization capability lets you tailor the structure and reporting of your project to fit your unique needs. You can create codes from your tree, or create the tree from your codes — whichever is more convenient.

● **Interactive and automatic resource leveling (bottom).** By leveling resources interactively using a resource-filtered Gantt with the resource histogram in the lower window, you can quickly pinpoint overloads and make adjustments. With automatic resource leveling, the schedule is adjusted to fit within specified availability limits for each resource.

Feature	Project Scheduler 5	Microsoft* Project for Windows*	Time Line* 4.0
Project planning and tracking	●	●	●
Gantt and network charts	●	●	●
Work group project connectivity	●		
Tree structures	●		●
Staffing profiles	●		
Cost curves	●		
Cost inflation modeling	●		
True PERT analysis	●		
Batch reporting facility	●		
Graphical user interface	●	●	

### Integrated work group project connectivity.

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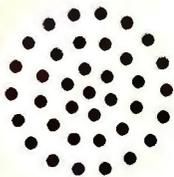
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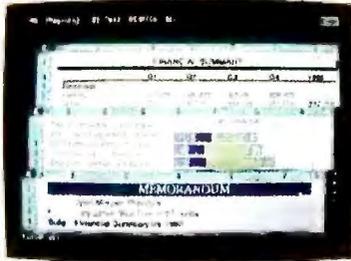
MATERIAL COLLECTION



Q4	1989
2,415,407	6,886,910
1,987,897	5,573,029
1,331,601	3,789,665
<b>5,734,905</b>	<b>16,249,604</b>
3,810,029	12,880,958

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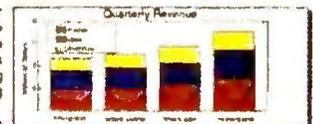
WeCycle Waste Corporation

Last year was a good year for the company. WeCycle was profitable and came very close to achieving our goals in a very uncertain economic and recycling climate.

Revenue by Product  
Material collections increased over the year. Plastics continue to bring in the most revenue and profit for the company. Prices for aluminum are still very soft and while we're continuing to collect more glass, markets for the raw material are still in their infancy.

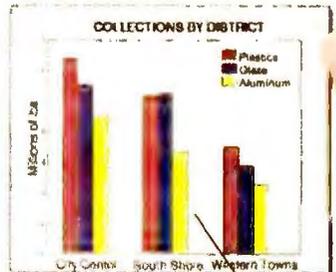
Revenue	Q1	Q2	Q3	Q4	1990
Plastics	1,600,785	1,252,024	2,378,307	2,836,183	9,068,199
Glass	1,700,504	1,052,135	1,898,430	2,600,864	8,032,753
Aluminum	1,148,864	1,182,022	1,499,421	1,601,783	5,420,090
<b>Total</b>	<b>\$4,738,173</b>	<b>\$3,520,180</b>	<b>\$5,737,248</b>	<b>\$7,089,430</b>	<b>\$22,541,022</b>

The graph at the right details our revenue by waste material for the four quarters of 1990. The revenue increases show that communities are building their recycling programs beyond just collecting plastics. Revenue from aluminum and glass have increased as their programs have gained volume. But, we're still seeing price pressure as the supply of recyclable materials continues to exceed the demand. We need to look for ways to expand our markets and increase the use of recycled materials.



Collections by District

Plastics	1990
City Center	8,403,829
South Shore	5,175,450
Western Towns	3,920,344
<b>Total</b>	<b>15,102,623</b>
Glass	
City Center	3,538,812
South Shore	5,247,830
Western Towns	2,869,356
<b>Total</b>	<b>11,646,197</b>
Aluminum	
City Center	4,555,539
South Shore	3,341,280
Western Towns	2,277,341
<b>Total</b>	<b>10,174,159</b>



A graphical WYSIWYG (what-you-see-is-what-you-get) environment shows you exactly what your output will look like. It's easier to work with, and there's no guesswork.

Mix bold, italics, underlines, colors and typefaces to create over 100 text-style combinations—

even display more than one more than any other spreadsheet. graph per page.

# Since 1983, 7 out of 10 spreadsheet buyers have chosen 1-2-3.\* Now we're going after the other 3.

Over 10 million business people are more productive and more insightful because of Lotus 1-2-3.

Now Lotus introduces 1-2-3 Release 3.1.

And if you're currently using 1-2-3, you'll find it offers the features you've been wishing for. Like the ability to see, on screen, exactly what your printed output will look like. Our unique 3D approach to organizing and consolidating spreadsheet data. And the most profes-

sional and persuasive printed reports you've ever created on your computer.

Or if you're one of the holdouts not using 1-2-3, you'll find it offers an interactive, graphical environment. Plus it works with Windows 3.0. And supports both a keyboard and a mouse.

Lotus 1-2-3 3.1



We've prepared a free demo disk to show you what 1-2-3 can do for you.

**First time buyers should visit their local Lotus Reseller. Or to request a Release 3.1 Auto Demo, call 1-800-TRADEUP, ext. 1074**

And see why 7 out of 10 spreadsheet buyers chose 1-2-3. And the other 3 may not be far behind.

## Introducing Lotus 1-2-3 3.1



Contributing Editor Scott Spanbauer contemplates the meaning of long-lasting PCs.

**H**ow do you tell a good PC from a bad one? Scott Spanbauer, the author of this month's cover story, has been working under the hood long enough to know. In the mid-eighties, he was part of *PC World's* tech support MASH unit, transplanting disk drives, replacing power supplies, curing memory problems, swapping video boards. He learned that today's shiny new PC is tomorrow's doorstop, unless it's been designed with the rising demands of future applications in mind.

Scott's review spotlights nine 386 systems powerful enough to stay useful at least five years—the optimal PC life span. These machines run at 33 MHz, the 386's top speed, delivering enough zip to make a full suite of *Windows* applications sit up and beg. No matter how *Windows* changes and its applications evolve, 33-MHz 386s should be able to handle it.

A 33-MHz 386 sounds a little extravagant for the desktop, you say? Then you might consider one as a file server. Scott took out his calculator and discovered that the average 25-MHz 486—that dynamo most people think of as an ideal server—costs about one-quarter more than the average 33-MHz 386. But in the disk-heavy operations that file servers dine on, there's virtually no difference in the performance.

Scott says "it pays to dig" when shopping for one of these babies, and he offers an excellent place to start. "Once you identify a few good candidates," says Scott,

## Standing the Test of Time

"the first thing to do is compare the service and support agreements." Both of our Best Buys, the AST Premium 386/33TE and the Arche Legacy 386-33, come with on-site service as an option. Scott believes that on-site service is a real plus. "If I had anything that generated revenue for my company on my machine, I'd buy on-site service."

Service, as we like to say at *PC World*, is our middle name. This month we're introducing four unbeatable tools to help you manage PC product planning and purchasing.

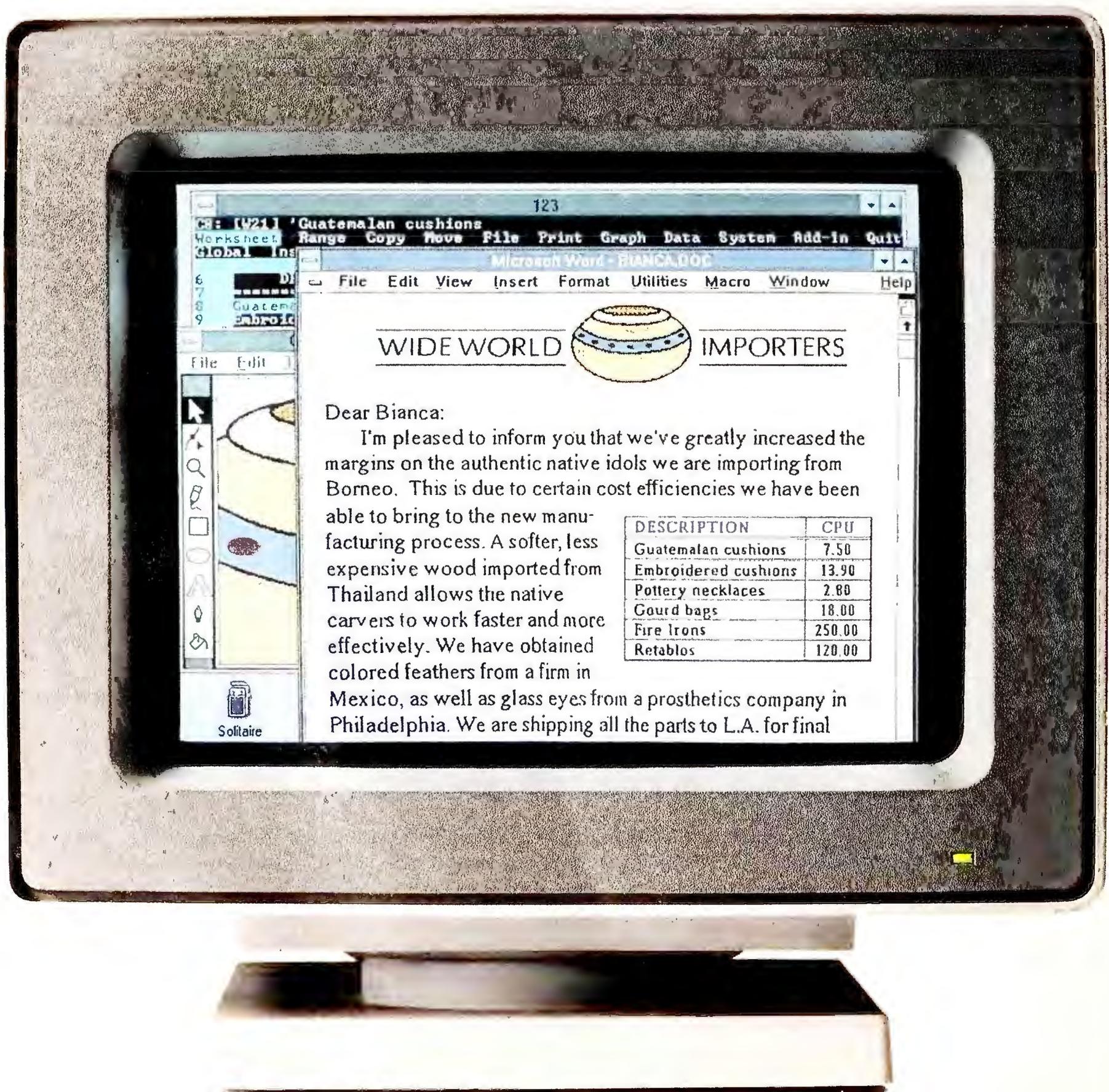
First and foremost, there's the *PC World Street Price List*. From this month forward we'll give you the average dealer prices for the top 30 PCs based on a nationwide sampling of hundreds of dealers, plus the average street prices for those same PCs in eight major metropolitan areas. Talk about a bargaining tool!

You'll find the three new additions to *Consumer Watch* just as valuable. *Manager's File* will take on the hot issues of the day for modern managers and provide ready solutions in checklist, clip-'n'-save form. In this month's *File*, we lay out the basics of the well-designed ergonomic workstation, with the health and safety of your PC work group in mind.

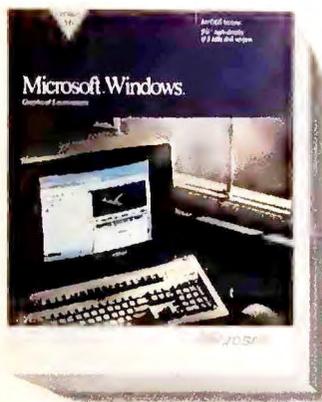
We're also introducing *Bug Watch*, an item that, beginning next month, will alert you to software bugs (and fixes) found by users and vendors alike. In addition, *Service Excellence* will clue you in to vendors who've provided outstanding service to customers. But don't worry—we won't change *Shop Talk*, the heart of *Consumer Watch*. Send your letters of complaint or praise, and Associate Editor Roberta Furger will continue to keep vendors, dealers, and distributors honest. ☸

*Eric Knorr*  
Eric Knorr  
Editor

# The perfect end the lazy and p



# Environment for power-hungry.



The Microsoft® Windows™ graphical environment version 3.0 makes it easy for you to do a lot more with your PC. That's

because the Windows environment has friendly icons, menus and dialog boxes that make its powerful features very accessible.

Windows lets you work with a variety of applications on-screen at the same time. Including your character-based programs.

But it's when you start using Windows applications that you get the most out of your PC. Windows applications are easy. In addition they all work essentially the same way. So once you learn how to use one, you generally know how to use them all.

And they're so intuitive that experimenting with them is fun.

Windows applications let you

cut and paste text and graphics. And let you combine them right on your screen. They also let you print out exactly what you see.

You can even establish links between Windows applications. Which means, if you change any numbers in Microsoft Excel for Windows, the chart you cut and pasted into your Microsoft Word for Windows document will be automatically updated.

So call us at (800) 541-1261, Department P32, to find out more about Windows, Windows applications or the big Windows World Convention and Exposition coming up May 20th and 23rd in Atlanta.

Because with Windows, you can start taking the work you do every day a little easier.

And have more to show for it.

**Microsoft®**  
Making it all make sense™



# LANtastic's™ tiny RAM now has more cards to play with.

If the presence of Micro Channel machines has ever stood between you and the joy of running the award-winning LANtastic PC Network, this is your lucky day. Artisoft has just added three new Micro Channel adapters to its compliment of AE-2 Ethernet, 2Mbps and Voice adapters.



LANtastic AE-2 MC Ethernet for Micro Channel, a 16-bit adapter that can be used in either a 16-bit or a 32-bit slot, is in 100% compliance with IEEE 802.3 and Ethernet standards, and comes with on-board 16K RAM that is user expandable to 64K. Since



AE-2 MC Ethernet is software compatible with Novell's NE/2000 hardware, you can run Novell "out of the box."

LANtastic 2Mbps MC adapters

are the perfect way to economically network small or midsize businesses with Micro Channel computers. Each card includes a 10Mhz coprocessor and 32K of on-board dual-ported RAM, along with software-selectable IRQ and RAMBASE address settings. Artisoft's version of the NetBIOS standard can be loaded into and executed within the adapter. This plunges the NetBIOS draw on a PC's base RAM down to just 2K and off loads the network processing onto the adapter. The cards are easy to install and use inexpensive dual-twisted pair cable.

LANtastic Voice MC adapters let you save sound and speech onto disk for playback later on Micro Channel machines. Use them with LANtastic NOS 3.0 or above, and



you can send voice messages across your LANtastic network. Just pick up the telephone handset provided with each Voice Adapter, bring up a handy on-screen menu, and talk. Use Voice Chat to carry on a real time conversation, or save the message for playback later in your own voice – either through the handset or through the Micro Channel machine's internal speaker.



Now it's easier than ever to run LANtastic's award-winning Network Operating System on Micro Channel machines. Call 602-293-6363 or fax 602-293-8065.

**ARTISOFT**  
Revolutionizing Connectivity

## IBM ENDORSES NETWARE

*Expands Corporate Net Options, Moves Away From Dependence on Microsoft LAN Manager*

**B**reaking free of its exclusive local area network alliance with Microsoft, IBM is bringing Novell's NetWare into its enterprise-wide network strategy. IBM now becomes a single source for



both its own OS/2-based *LAN Server* and the leading network system software.

Big Blue will market, service, and support NetWare and work with Novell to integrate it into the IBM corporate networking scheme. Next year Novell will offer versions of NetWare that run atop OS/2 and AIX (IBM's UNIX).

For four years IBM has heavily promoted its *LAN Server* derivative of Microsoft's *LAN Manager*; and it

has recently worked to converge the two. But given NetWare's overwhelming market share and IBM's recent falling-out with Microsoft over OS/2, Big Blue has changed strategy. "The vast majority of our customers will have both in their shops," says personal systems head Jim Cannavino. "We will not bias sales in either direction."

The two products offer different strengths, explains Lee Reiswig, assistant general

manager for programming. *LAN Server* fits smoothly within OS/2 development environments and is a linchpin of IBM corporate networks. NetWare is faster; connects non-IBM platforms, and offers high-end features such as fault tolerance.

Freed from its reliance on Microsoft, IBM gains more control over its network strategy, points out Craig Burton, CEO of the *Clarke-Burton Report*. Meanwhile, Microsoft loses important backing: *LAN Server* accounts for about a quarter of *LAN Manager*-based installations. *LAN Manager* has fared poorly in reviews (*PC World's* review in March 1991 judged it "close to unusable"). Still, "Microsoft will have a lot to say about where networking goes," notes David Marshak of Patricia Seybold's Office Computing Group. Among Microsoft pursuits is a plan to move many LAN services into future operating systems.

## COMPAQ IS ON THE LINE

*Nod to Users Implements Direct Telephone Support*



**A**fter years of insisting dealers are the best source for technical support, Compaq has decided to provide direct phone support to end users. Customers can now call Houston for answers to both run-of-the-mill and in-depth networking questions.

The plan "neutralizes any real or perceived advantages of other PC companies," says Doug Johns, vice president of corporate marketing. That's especially true at the high end, where the lack of a support line sometimes cost Compaq sales, concedes Johns.

Compaq offers free support via an 800 number to customers with complaints or problems related to stand-alone-PC usage. Those with high-end networking questions can get a contract covering ten "incidents" a year for \$3000 and receive Compaq's CD ROM data base of technical notes and documentation. Dealers sell the pay-for-support plan, which addresses direct support in a cost-effective manner, says Seymour Merrin, president of Merrin Information Services, who notes that customers with complex networks don't mind paying for high-end support.

Dealers should be mollified by the opportunity to sell support contracts, says Merrin, particularly if that increases network sales. It was Compaq's commitments to dealers that delayed direct support for so long and left the company open to attacks by competitors like Dell Computer.

Dealers should be mollified by the opportunity to sell support contracts, says Merrin, particularly if that increases network sales. It was Compaq's commitments to dealers that delayed direct support for so long and left the company open to attacks by competitors like Dell Computer.

## LOTUS DELIVERS cc:MAIL

*Jumps to the Lead in E-Mail, Writes New Notes*



**I**n a bid to become the premier vendor of network-based applications, Lotus Development Corporation is acquiring the lead electronic-mail supplier, updating its *Lotus Notes* group communications program, and broadening *Notes'* distribution.

Lotus will buy cc:Mail, Incorporated, for an undisclosed price. With an installed base of 850,000 users, *cc:Mail* has an estimated 35 percent of the fast-growing PC E-mail market. The software runs under DOS, *Windows*, OS/2, and the Macintosh and across all ma-

major PC networks and most mail gateways.

"Mail is the next big application," declares cc:Mail president Philippe Courtot, who predicts that this year E-mail will explode the way fax did. "It's very important to strike the right alliances so we can stay at the forefront of the marketplace."

The deal coincides with the release of *Lotus Notes 2.0*. The upgrade offers full support for laptops, *Windows 3.0*, and Banyan networks, tight links with other *Windows* and OS/2 applications, boosted security, and many other enhancements. More than 35,000 users

in 75 organizations already run *Notes*, and Lotus hopes to expand that base by slowly opening distribution to value-added resellers and adding Mac and UNIX versions.

"The market is starting to heat up, and the fit of *cc:Mail* and *Notes* is very good," observes Michael Millikin, vice president of Patricia Seybold's Office Computing Group.

Lotus will ensure that *cc:Mail* and *Notes* work together more closely on a network, uniting the two packages in a consistent environment that developers can exploit for network messaging—a large and growing field. Lotus archrival Microsoft reportedly plans a similar strategy based on the acquisition of Consumers Software.

## NETWARE 386 UPGRADED

*Mac, UNIX, Enterprise Connectivity Added*



Novell helped cement its new alliance with IBM and extended its technological lead over *LAN Manager* by introducing a new version of NetWare 386 with ties to large IBM nets as well as long-awaited connections to Macintosh and UNIX environments. But some users may find themselves paying higher prices or buying features they don't need.

Version 3.11 of NetWare 386 supports the TCP/IP internet

connectivity protocol and IBM's NetView management services as well as offering internet options for enterprise computing. Of more universal interest, the long-anticipated release of NetWare Loadable Modules (NLM) for Macintosh and UNIX workstations means that DOS, *Windows*, OS/2, Macintosh, and UNIX users can now transparently share information and resources such as print services between networks. Each type of workstation can maintain its own file-naming conven-

tions and rely upon NetWare to sort out the differences. A new backup/restore NLM supports multiple-server backup and more than 50 third-party devices.

"Mac and UNIX connectivity has been an undelivered strategic component of NetWare 386," observes Steve Guengerich, editor in chief of the *NetWare Advisor* newsletter. "This is the death knell of NetWare 286, though it's not clear when that will come."

Still, notes Jamie Lewis, vice president of the *Clarke-Burton Report*, "they've

raised prices and added functionality that smaller networks may not need." The minimum configuration for version 3.11 is a 20-user license for \$3495; most nets are considerably smaller. "Why can't they have a lower-priced version of 3.11 without the TCP/IP and NetView support for smaller LANs?"

But the new features and the IBM alliance lead Lewis to conclude that "Novell has significantly raised the ante on *LAN Manager*. It's maintained its momentum and extended its technological lead."

## TANDON CHALLENGES COMPAQ

*Notebook, Ad Campaign Head U.S. Initiative*



After years of being stymied by the U.S. PC market, Tandon Computer may have found the key: It promises March shipment of a notebook-sized portable that offers all the features of Compaq's top-of-the-line LTE 386s/20—and then some—but is about half the price.

As Tandon's ad blitz points out, the NB/386sx, at 6½ pounds, is a full pound lighter than the LTE; its 2MB of RAM can be expanded to 16MB, compared to Compaq's 10MB; and the 30MB version's \$3495 suggested list price is about \$3000 below the LTE's \$6499 list (street prices may differ drastically). Tandon's NB/386sx also offers a desktop expansion unit like the LTE's, but for \$299 rather than \$1499.

The notebook is only the latest, although the most effective, brickbat in a price-comparison campaign that Tandon has been waging against Compaq since hiring longtime PC

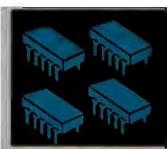
hand Graham Beachum as general manager last fall. Although based in Simi Valley, California, Tandon does nearly all its \$422 million in sales overseas, and its periodic attempts to broaden its U.S. distribution have been largely unsuccessful.

Since he joined the company, Beachum has pursued a strategy similar to one that has paid off for Dell Computer—his alma mater. He has set up toll-free sales-and-support lines for single-PC purchases while using his extensive contacts to expand Tandon's national account sales. He has also landed mass distribution contracts with the INMAC mail-order catalog and 59 Walden Software stores.

Tandon's strong overseas base—a 68 percent increase in profits on record sales for the fourth quarter of 1990—makes it an unusual U.S. "start-up." But the notebook could be the star vehicle Tandon needs to bring its success "over there" over here.

## AMD SHIPS 386s

*Second Source Could Augment Supply, Depress Prices, Put 32-Bit 386 on Laptops*



Advanced Micro Devices will help to reverse the shortfall in 386-class processors by shipping "millions of dollars' worth" of its Intel 386DX clone in March and "tens of millions of dollars' worth" by July. Although AMD says buyers will be among the "top 20 PC makers" in the industry, analysts predict that many of the AMD parts will find their way to small clone makers that have to scramble for chips on the gray market.

One such manufacturer is Joseph Chan, president of Spear Technology, which ships about 10,000 systems a year. Chan has to pay more than twice Intel's contract prices—more than \$400 for small quantities of 25-MHz 386DX chips and nearly \$200 for 386SXs on motherboards. Supply hasn't equaled demand forever," notes Dean McCarron, vice president at chip market researcher InStat.

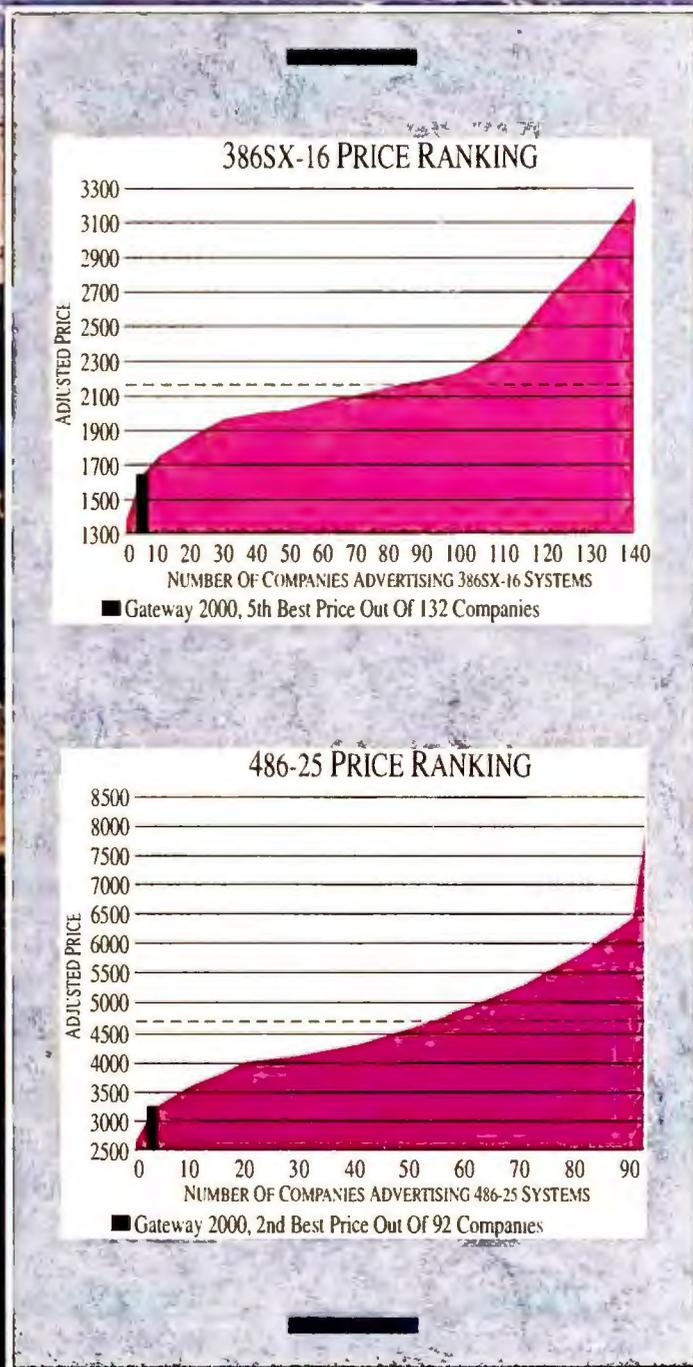
The "top 20 PC makers" won't comment on AMD's plans, but AMD counts most of them as customers for its

other motherboard components. They can get a 30 percent power saving simply by plugging AMD's 33-MHz Am386DX into their motherboards and up to 70 percent with a minor redesign, says AMD marketing manager Glen Burchers. Regardless of the outcome of litigation over trademarks and Intel microcode, AMD will offer a still more power-stingy 20- to 33-MHz Am386DXL by April. DXLs in smaller packages could bring a full 32-bit 386 compatible into laptops by summer.

Without committing itself, CompuAdd reports that the Am386DX tests 100 percent compatible with 24 popular software applications and seven operating systems when replacing the Intel 386.

As long as the shortage continues, Michael Slater, publisher of the *Microprocessor Report*, figures AMD prices will match Intel's. "In the long run, it could mean lower prices of 386 systems," he adds, "but in the best case, only \$100 lower because PC margins are already so thin." ☺

# You Find The Best Values In The Most Unusual Places...



# ...Like South Dakota, Where Saved \$10,747,179

"We asked an independent research firm to do a study for us," said Ted Watt, Gateway 2000 President. "I wanted to see an unbiased, direct comparison of features and prices from the manufacturers who advertise in the Computer Shopper. The results were astonishing," he exclaimed, "even to me. Ranked by best price, Gateway 2000 was the only major direct marketer at the top of the lists. The other 'big guys' in the direct market field were so far down in the rankings I couldn't even find some of them. Get a copy of the study and see for yourself."\*



Ted Watt, Gateway 2000 President

Computer buyers who purchased Gateway 2000 systems in January saved an average of \$697 per system. This figure comes from a comparison of 132 computer manufacturers' advertised prices in the January 1991 issue of Computer Shopper. That means Gateway customers shared a total savings of \$10,747,179 on 15,427 systems in one month alone.

No matter where you look, that's the best value you're going to find in this industry.

## Providing The Best Value Starts With Values

"Whenever I'm asked," continued Ted, "why Gateway 2000 is so successful, my answer is: value. When you buy a Gateway 2000 computer, you're getting the best price, best

quality and features, best service, all from a very strong, healthy company. That's value. Then I'm asked how we provide value," Ted remarked, "and the answer is almost the same. It's values. The values of the people at Gateway 2000 give our product its value," said Ted. "People who grow up in the Midwest value frugality, quality, resourcefulness, hard work, strength, and most of all, integrity and honesty in all dealings with other people. Providing value in our products starts with these values."

## We Value Quality

Only the highest quality components go into a Gateway 2000 computer. Midwestern pride in workmanship and quality is demonstrated by

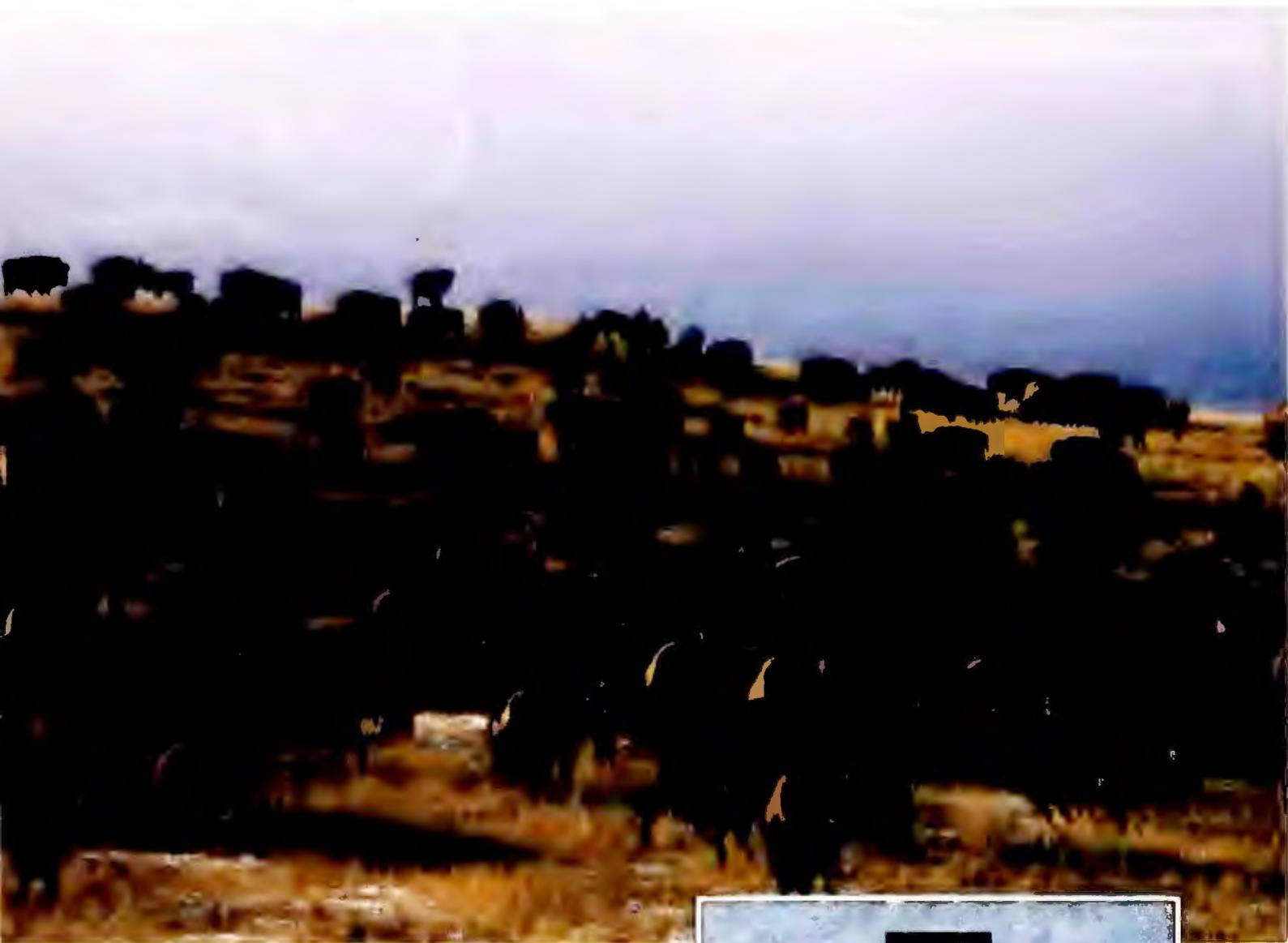
every one of nearly 100 skilled assembly technicians. These technicians build complete system one at a time.

## We Value Strength

A company's strength is measured on its balance sheet. As independent sources confirm, Gateway 2000 has an enviable balance sheet coupled with strong growth. Entrepreneur Magazine listed Gateway as the second fastest-growing private company in the country during 1990. Financial strength is a key to your success. What good are warranties, guarantees, and promises of lifetime technical support

\*Call our toll-free number for this information.

# Gateway 2000 Customers 9 In One Month.



ably  
your  
company that sold you the computer goes out  
of business?

## *We Value Integrity*

Integrity is the fundamental value without which any organization is doomed. At Gateway 2000, you'll find integrity throughout the company, most visibly in sales and customer support. Gateway salespeople honestly represent the company and its products. Each person you deal with in customer support, during and after the sale, has a personal commitment to make sure you're completely satisfied.

oll-free number for your free copy of  
ive study of computer industry prices.

## *We Value You*

Gateway customer Robert C. True, Jr., writes: "We on the East Coast have become so accustomed to surly, uninformed and disinterested...staff, that working with your group may have induced an element of 'Culture Shock.' Every person in your organization operates as if there is only one customer in the world - the one they are talking to at the moment."

"You've got a friend in the business" is more than a slogan. It's our way of life here at Gateway.

# Gateway 2000 Systems

## 12MHz 286VGA

- 80286-12 Processor
  - 1 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" Gateway Crystal Scan 1024 Color VGA Monitor
  - 1 Parallel/2 Serial Ports
  - 101 Key Keyboard
  - MS DOS 3.3 or 4.01
- \$1495.00**



## GATEWAY 386SX

- 4 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" Gateway Crystal Scan 1024 Color VGA Monitor
  - 1 Parallel/2 Serial Ports
  - 101 Key Keyboard
  - MS DOS 3.3 or 4.01
  - MS WINDOWS 3.0
- \$1895.00**



## 25MHz 386<sup>™</sup> VGA

- 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" Gateway Crystal Scan 1024NI Color VGA Monitor
  - 1 Parallel/2 Serial Ports
  - 101 Key Keyboard
  - MS DOS 3.3 or 4.01
  - MS WINDOWS 3.0
- \$2395.00**

## 25MHz 386CACHE

- 64K 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 1 MB
  - 14" Gateway Crystal Scan 1024NI Color VGA Monitor
  - 1 Parallel/2 Serial Ports
  - 101 Key Keyboard
  - MS DOS 3.3 or 4.01
  - MS WINDOWS 3.0
- \$2695.00**



## 33MHz 386VGA

- 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" Gateway Crystal Scan 1024NI Color VGA Monitor
  - 1 Parallel/2 Serial Ports
  - 101 Key Keyboard
  - MS DOS 3.3 or 4.01
  - MS WINDOWS 3.0
- \$3195.00**



## 25MHz 486<sup>™</sup> VGA

- 64K Cache RAM
  - 8 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" Gateway Crystal Scan 1024NI Color VGA Monitor
  - 1 Parallel/2 Serial Ports
  - 101 Key Keyboard
  - MS DOS 3.3 or 4.01
  - MS WINDOWS 3.0
- \$3995.00**

## 33MHz 486VGA

- Same configuration as the 25 MHz 486.
- \$4395.00**

## BEST BUY

- Same features as our 33 MHz 386 VGA system except this machine has an 80 MB 17ms IDE Drive instead of the 200 MB 15ms IDE Drive.
- \$2795.00**

## STANDARD FEATURES & SERVICES

- Microsoft® WINDOWS™ and Mouse with all 386 and 486 systems
- 30-day money-back guarantee
- One-year warranty on parts and labor
- Leasing options now available
- Toll-free technical support for the life of the machine
- Free on-site service to most locations in the nation
- Replacement parts sent via overnight shipping free of charge
- Free bulletin board technical support
- New sales hours: 7am-10pm CST M-F 9am-4pm CST Saturdays

## NEW CRYSTAL SCAN 1024NI

- Our new 14" Gateway Crystal Scan 1024NI color VGA monitor comes standard with all 386 DX and 486 systems. This monitor is non-interlaced for a flawless, flicker-free display. 1024 x 768 @ 60 Hz. 800 x 600 @ 72 Hz. 28 D.P.

*We custom-build each Gateway 2000 computer to customer specifications. We'll gladly provide you with a quote on your configuration. 386 and 486 are trademarks of Intel Corporation. Due to the volatility of the DRAM market, all prices are subject to change. Prices do not include shipping.*



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## Where's Big Blue's Big Mo?

**Has IBM lost the ability to set the pace of PC development? Here are four steps it can take to regain its leadership position—before it's too late.**

The slide displayed two logos: Intel's on the left, Microsoft's on the right. Below them it contained a picture of an unmarked PC that looked vaguely like a PS/2.

It was a small detail at the January meeting where Microsoft unveiled its new *Windows* strategy to an audience of reporters and analysts, but it spoke volumes. (See *Industry Outlook* in this issue.) Microsoft officials didn't flash the slide; it came courtesy of Intel president Dave House, who used it to emphasize the chip maker's close working relationship with Microsoft. The effect was later said to be purely unintentional. Yet IBM itself never took the stage at the meeting, except in that slide.

Why does Big Blue appear to have lost its place as a unifying force in the PC industry and become instead a mere customer of the industry's new leaders—its chip and operating system suppliers? The most astute analysts believe the answer lies within IBM itself.

"IBM's fundamental problem is that it doesn't buy into personal computing," says *P.C. Letter* editor Stewart Alsop. "It doesn't buy into the notion that, in and of itself, having a stand-alone personal computer is a good thing. Instead, it keeps trying to modify the notion of personal computing to fit its worldview."

That problem was clearly in evidence after Microsoft's press meeting. While observers considered the event a major setback for IBM's campaign to popularize OS/2, IBM officials declared it would not affect its most important clients—the small number of large corporations that Big Blue is hoping will continue to purchase OS/2 for industrial-strength applications.

But even in big companies, PC lead-

**It's tough for a company that doesn't buy into personal computing to regain its leadership position.**

ership isn't measured by the number of OS/2 servers installed. It's measured in the only way that really counts—by the kinds of hardware and software that businesspeople demand and personally use. To win the contest by this yardstick, Alsop says, "IBM is eventually going to have to accept the fact that buyers have spoken and they like personal computing."

How can Big Blue show that it got the message? Here are four simple steps IBM can take to convince everyone it understands and is serious about personal computing.

### 1. Think Small

When IBM reps use terms like "increased customer function" to promote OS/2 above *Windows*, it makes you wonder whether they're sharing the same planet with the rest of us who want PCs and software that are simple to set up and use.

Simple, elegant design isn't something nice to have but easy to forgo. It enables big companies to put PC power on every desktop without worrying about a crushing burden of support costs. In small companies, it makes the difference between having an officeful of PCs or none at all.

IBM has always geared its PC strategy toward connectivity with its big systems. That's why OS/2 is so big and complicated to use. Why not turn the tables on that proposition? Make the PS/2—not the mainframe—the cornerstone of the IBM computing strategy, and Big Blue's engineers will find a million ways to make its hardware and software simpler and easier to use.

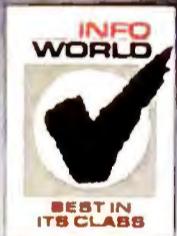
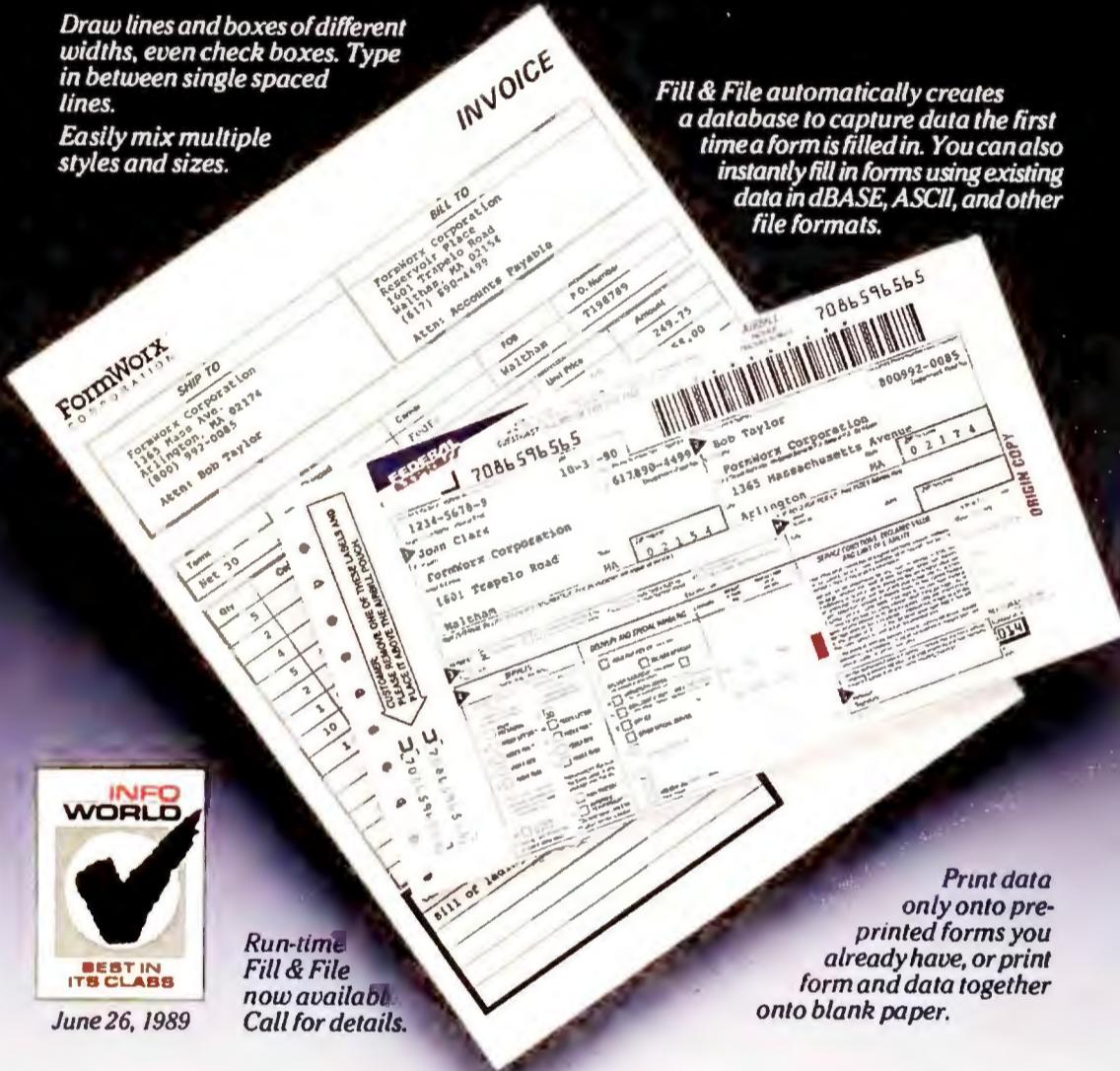
### 2. Put OS/2 in ROM

Industry pundits are fond of saying that DOS with *Windows* is easier to configure than OS/2. But have you done any disk counting lately? To set up DOS and *Windows*, you will run through 11 3½-inch disks; to set up OS/2 Extended Edition, you will go through about 15. Can anyone honestly say that *either* one of these environments is simpler to con-  
(continues)

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figure than the other?

The solution to this problem is pretty obvious. Put OS/2 in the PS/2's ROM, and users will boot up instantly every time into the most advanced PC operating system around. Then license that capability to every other system maker, and just watch how they will rush to support it.

### 3. Make Network-Ready Multimedia PCs

IBM puts neither networking nor sound capabilities into its PCs, on the premise that users should be able to choose whether they want to pay for these features. But when you consider the economies of scale that Big Blue would achieve by making them standard equipment, those excuses sound rather hollow. If every software developer could bet on the presence of these basic capabilities in every PS/2, then the PS/2 would become the most exciting PC platform for which to develop new software.

### 4. Pick an Interface, Any Interface

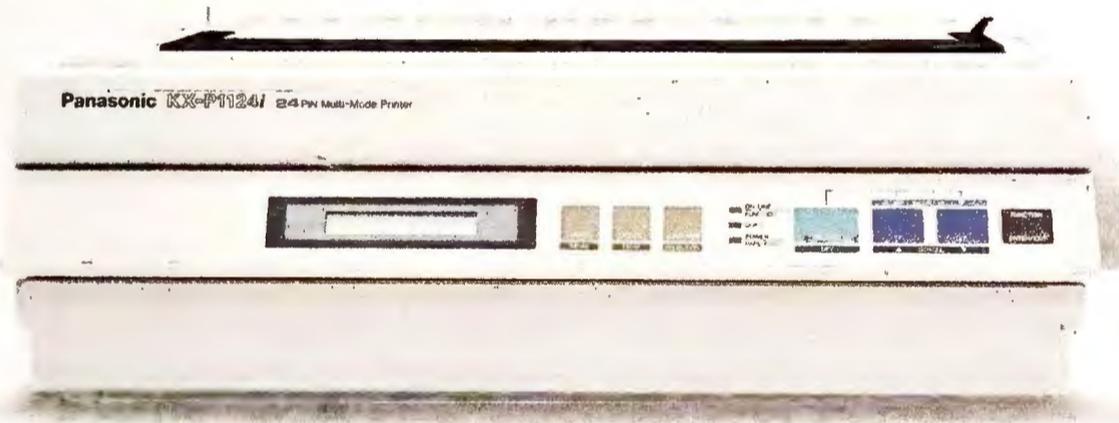
By last count, IBM supports about six graphical user interfaces: Presentation Manager, OSF Motif, NeXTstep, Go's PenPoint, Patriot Partners' unannounced software, and the PS/1's graphical shell. Enough already! Certainly there are plenty of good ideas to be found in all these environments to make Windows look anemic by comparison. Now's the time for action, not more acquisition.

Note that Big Blue doesn't have to go out and buy or invent anything new to instantly distinguish itself from the pack of PC vendors and once again grab the attention of the software community and users. All it takes is a little daring—and the willingness to think like a PC company, at long last.

As always, I'm interested in your opinions on this or any other subject. Write to me at PC World, 501 Second St. #600, San Francisco, CA 94107; fax 415/442-1891; MCI Mail Richard Landry/301-3685. ☉

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\* Based on US dollar market share of competitive models for the 12 months ending December, 1990, as reported by InfoCorp (1/91)

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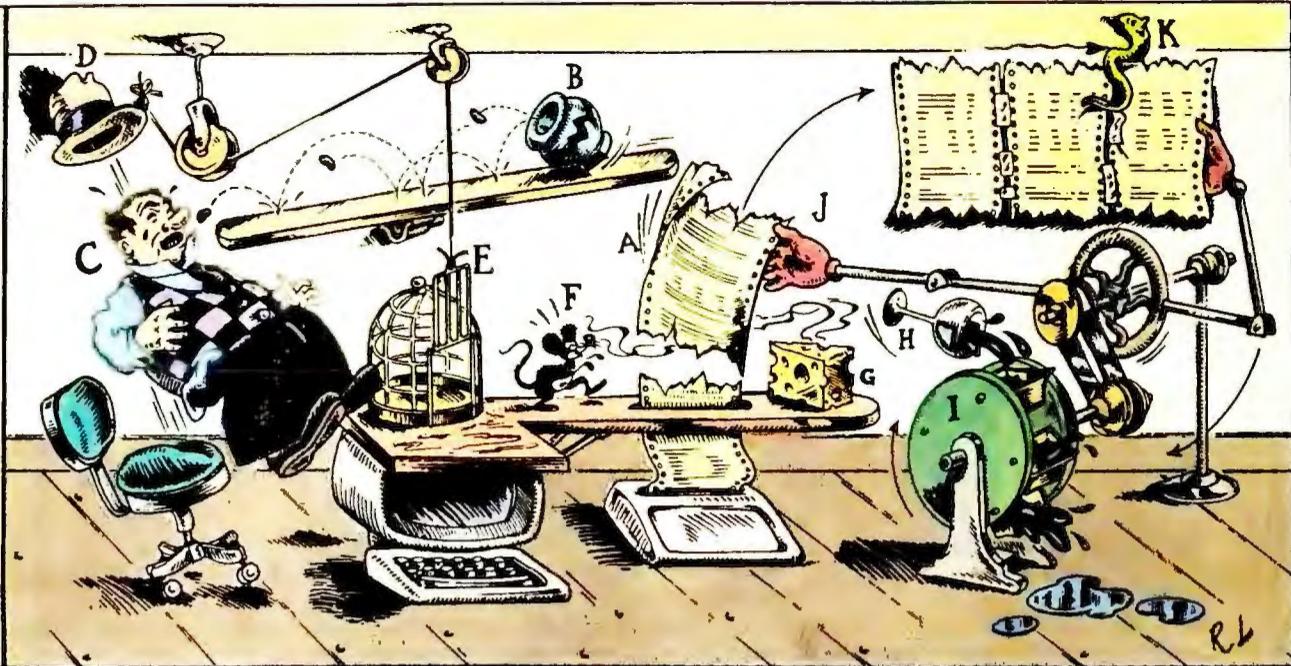
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**R**ISING SPREADSHEET (A) KNOCKS MEXICAN JUMPING BEANS (B) INTO MOUTH OF NEUROTIC MAN (C) WHO IS SO DISCOMBODULATED THAT HIS HAIR STANDS ON END, DISLODGING HAT (D) WHICH OPENS CAGE (E) AND RELEASES EPICUREAN MOUSE (F).

MOUSE, INSPIRED BY SCENT OF PERFECTLY AGED CAMEMBERT CHEESE, GNAWS THROUGH SPREADSHEET, ONLY TO DISCOVER HE HAS BEEN FOOLED BY AROMA OF OVER-RIPE GORGONZOLA (G).

IN A FIT OF 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).



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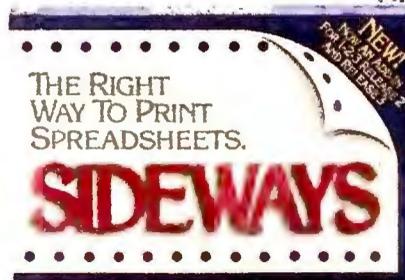
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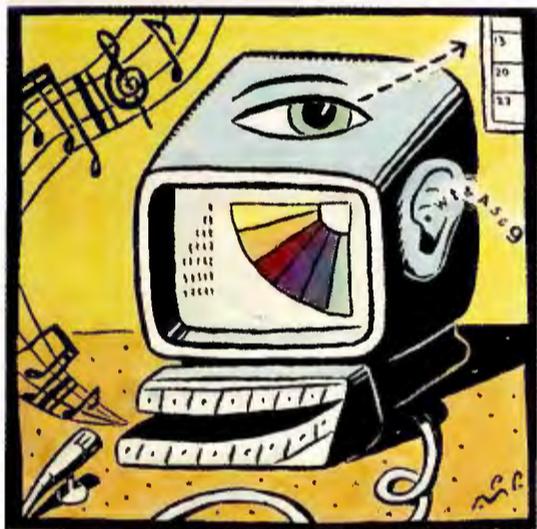


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# LETTERS

## Reactions and responses from the PC World community



### Viewing Multimedia

I was impressed with Richard Landry's January column about multimedia. When I purchased my computer, the salesperson made it sound as if it would do everything. But within a year it was outdated. Landry's plain-English explanation of what's out there was a breath of fresh air. Keep the good articles coming.

*Betty Bauer*

*Oxnard, California*

Mr. Landry is correct that the PC isn't yet ready for multimedia. My Amiga 2000 came multimedia-ready for around \$2000. It captures and plays back digitized sound and attaches easily to CD ROM drives, video recorders, scanners, and musical keyboards. Don't

get me wrong; I work with DOS computers daily, and they're good machines. But give the Amiga credit where it's due. Trust me—when you see an Amiga running incredible graphics and sound with Mac and DOS applications running in background windows, you have to agree that the Amiga is to be taken seriously.

*Jerry Foster*

*Oxford, Michigan*

### Tips Worth a Subscription

Over the past several years, I have noticed that computer magazines in general have started to run out of ideas for articles. Your recent issues show that you have realized the problem and done something about it. The information in January's "101 Secret Tips" was marvelous. In fact, I found the *Windows 3.0* tips alone worth the price of a subscription—so I've given one to my father. I hope you continue your hands-on ideas for getting the most out of an increasingly complex array of software.

*John E. Johnson, Jr.*

*Redwood City, California*

### Encouraging Piracy?

As a consultant and programmer, I was appalled to read November's *Network Q&A*. A reader requested advice on how to allow multiple users to share single-user applications on a network. He stated, "While network versions are available, upgrade charges are prohibitive." Your mild notice advising users not to violate the software license came after a description of how to violate it. This is an obvious example of a publication encouraging its readers to violate license agreements.

*Michael Sullivan*

*Virginia Beach, Virginia*

The reader's statement that he wished to recover local disk space used to store multiple copies of programs indicated that he had a copy for each user. In many cases, consumers have spent far more on multiple copies of an application than they would have on a network version. There's no reason why users should be forced to purchase network versions just to use legally registered products on their networks. We not only advised against violating license agreements, we also gave information on preventing illegal use when the number of workstations exceeds that of licenses. —Ed.

### BBS File Resources

What happened to the *PC Resource* BBS files? Are they still available?

*Theodore C. Trostle*

*State College, Pennsylvania*

To obtain programs and utilities formerly available on the *PC Resource* BBS, contact Bonnie Welsh-Carroll, IDG Communications/Peterborough, 80 Elm St., Peterborough, NH 03458; 603/924-9471, 603/924-9384 (fax). Call or write Debby Bourgault at the same address to inquire about back issues and a small inventory of special products from the *Tips, Tools, & Techniques* and *Essential DOS* issues. Make sure to include your phone number with all communications to facilitate the discussion of fees. —Ed.

### Making Windows Work Better

We'd like to refute the implication in November's "Thanks for the Memory" that there's no benefit in using *Super PC-Kwik* with *Windows 3.0*. Version 3.56 and later versions are all *Windows* (continues)

compatible. We recommend disabling Windows' SmartDrive and using *Super PC-Kwik* for a substantial performance improvement. *Super PC-Kwik 3.35* was a Best Buy in February 1990. Today's *Super PC-Kwik 4.0* lends memory to Windows and DOS applications and lets Windows switch between cache buffering and program functions as needed.

*John P. Davis*  
Vice President, Marketing  
Multisoft Corporation  
Beaverton, Oregon

I was surprised to see "Thanks for the Memory" imply that Quarterdeck's *QEMM-386* memory manager is a "dangerous utility" and a "troublemaker" when used with *Windows 3.0*. *QEMM-386 5.11* works well with *Windows 3.0* in all modes and provides much more usable memory for non-Windows applications running under *Windows*.

*Mark D. Freeman*  
Columbus, Ohio

*Mr. Davis and Mr. Freeman are correct: There's no reason to forgo the use of good third-party utilities with Windows 3.0. We regret the implication. While many users find everything they need with Windows 3.0, advanced users may prefer compatible third-party utilities. —Ed.*

#### Making Procomm Windows-Friendly

Your tips are *very* helpful, but Judy Heim's January hint "Making Procomm Windows-Friendly," on page 173, left me confused. I found the mentioned PIF file with my copy of *Procomm Plus 1.1* and installed it. But I couldn't get *Procomm* to work with *Windows 3.0*.

*Daniel Knowles*  
Falmouth, Maine

*A misprint added to the confusion. Procomm Plus 1.0-1.1b comes with PIF files for Windows 2.x, not version 3.0. (continues)*

#### POWER TIP NO. 170

#### No-Sweat WordPerfect Line-Height Adjustments

In *WordPerfect 5.0* and later versions, if line height is set to Auto, you can advance up or down a quarter or half a line without manually measuring line height and calculating the fractional amount. Press <Shift>-<F8>aa. Type u for up or d for down, and enter .25u for a quarter line or .5u for half a line. Regardless of the point size, these unit amounts are converted automatically to the units of measurement you have selected under Setup.

*Jeff Steimach*  
San Francisco, California

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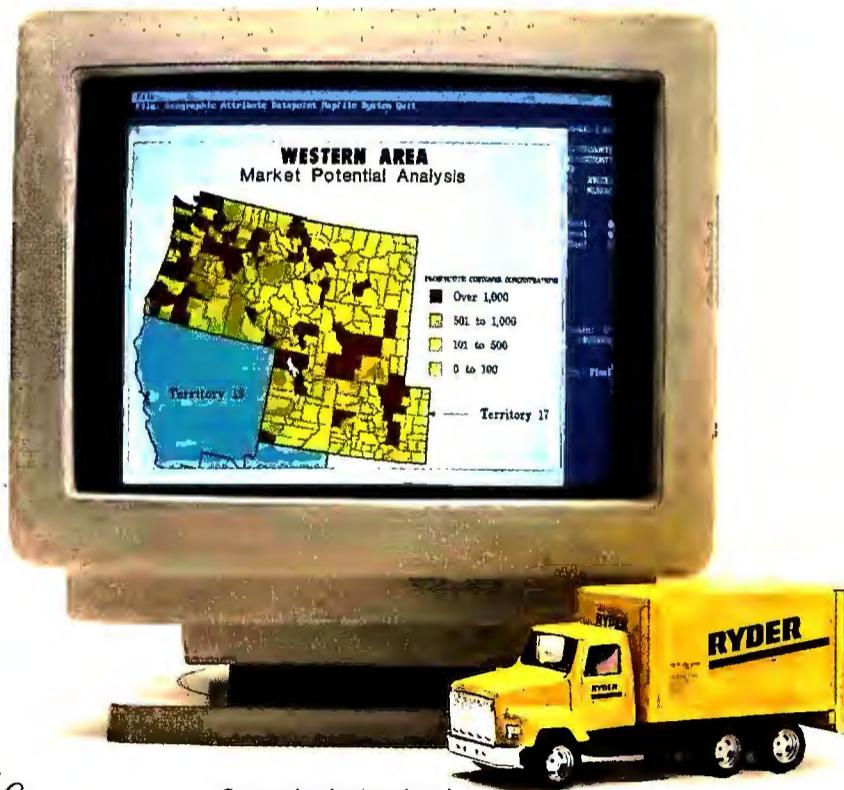
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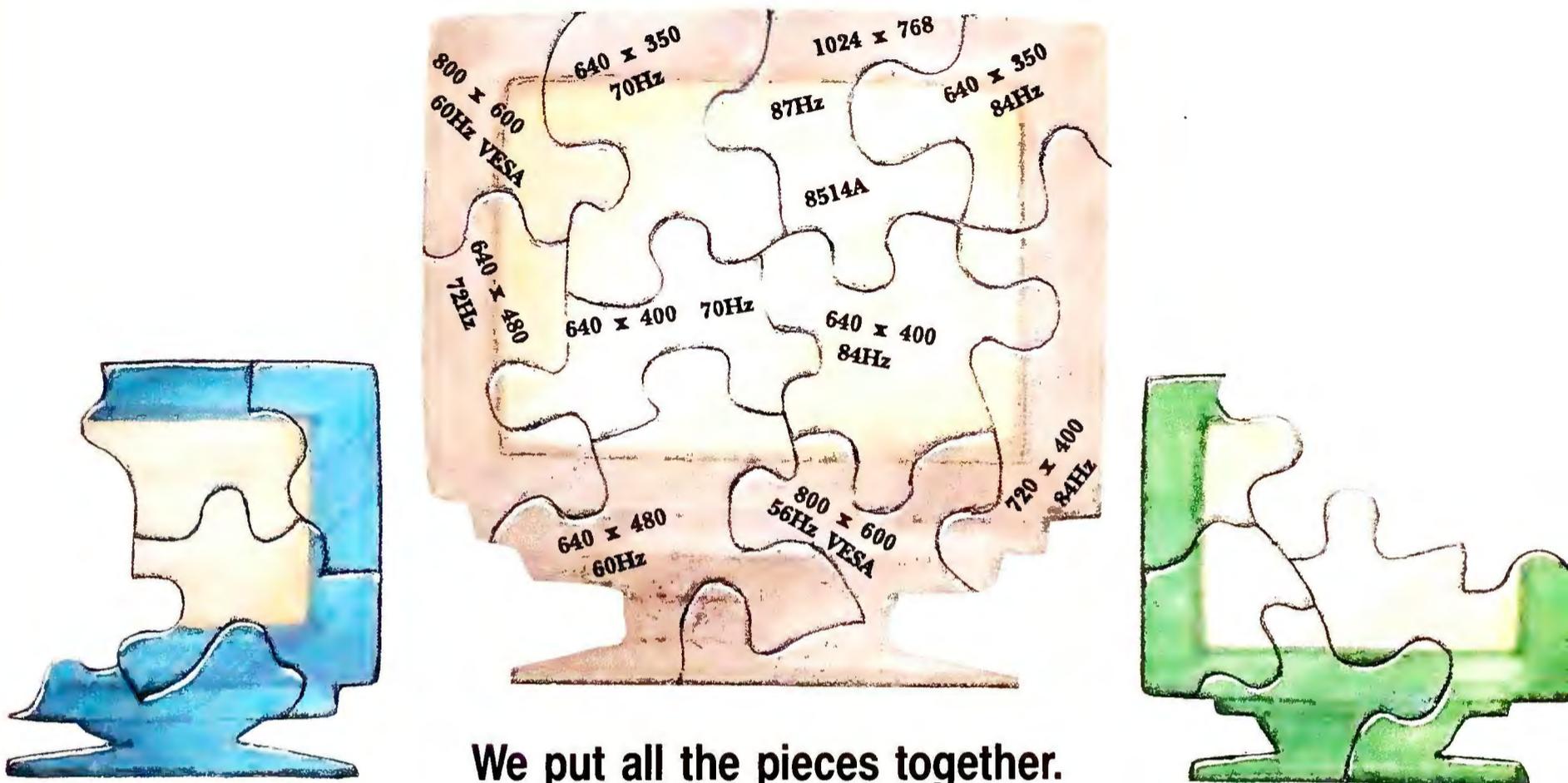
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# PC WORLD

## PC WORLD TEST REPORT

### Oops! NEC's 386 Earns Rematch

Anomalous benchmark results led to a Fair performance rating for the NEC PowerMate 386/25S in our December roundup. A retest left the machine only a couple of points behind the top-rated Deskpro 386/25e.

#### WordPerfect 5.1

Compaq	68
NEC	70

seconds 0 20 40 60 80

#### AutoCAD 10

Compaq	262
NEC	275

seconds 0 70 140 210 280

#### dBASE III Plus

Compaq	1277
NEC	1296

seconds 0 325 650 975 1300

#### Windows 3.0

Compaq	116
NEC	126

seconds 0 35 70 105 140

#### 1-2-3 2.2

Compaq	454
NEC	456

seconds 0 115 230 345 460

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

you install Windows 3.0, it will recognize Procomm and write a PIF file for you. If you already have Windows 3.0 installed, use Windows' setup menu to create a PIF. —Judy Heim

#### Second Look: NEC PowerMate 386/25S

Our December 1990 review of the NEC PowerMate 386/25S ("25-MHz 386s: Great Performance in a Small Box") did not accurately reflect the performance of the system. We inadvertently chose a dBASE III Plus test that misrepresented the speed of the NEC's hard disk. A recent retest with a more representative suite of benchmarks shows the PowerMate 386/25S running only a few percentage points behind the top-rated Compaq 386/25e. This raises its performance rating to Excellent. The overall value rating, however, remains the same: Good. PC World re-

grets the misleading performance rating.

NEC recently released an IDE drive for the PowerMate 386/25S, although not in time for testing. The drive uses a built-in controller, which frees up a slot. PC World will offer a look at this new NEC PowerMate 386/25S in a future roundup.

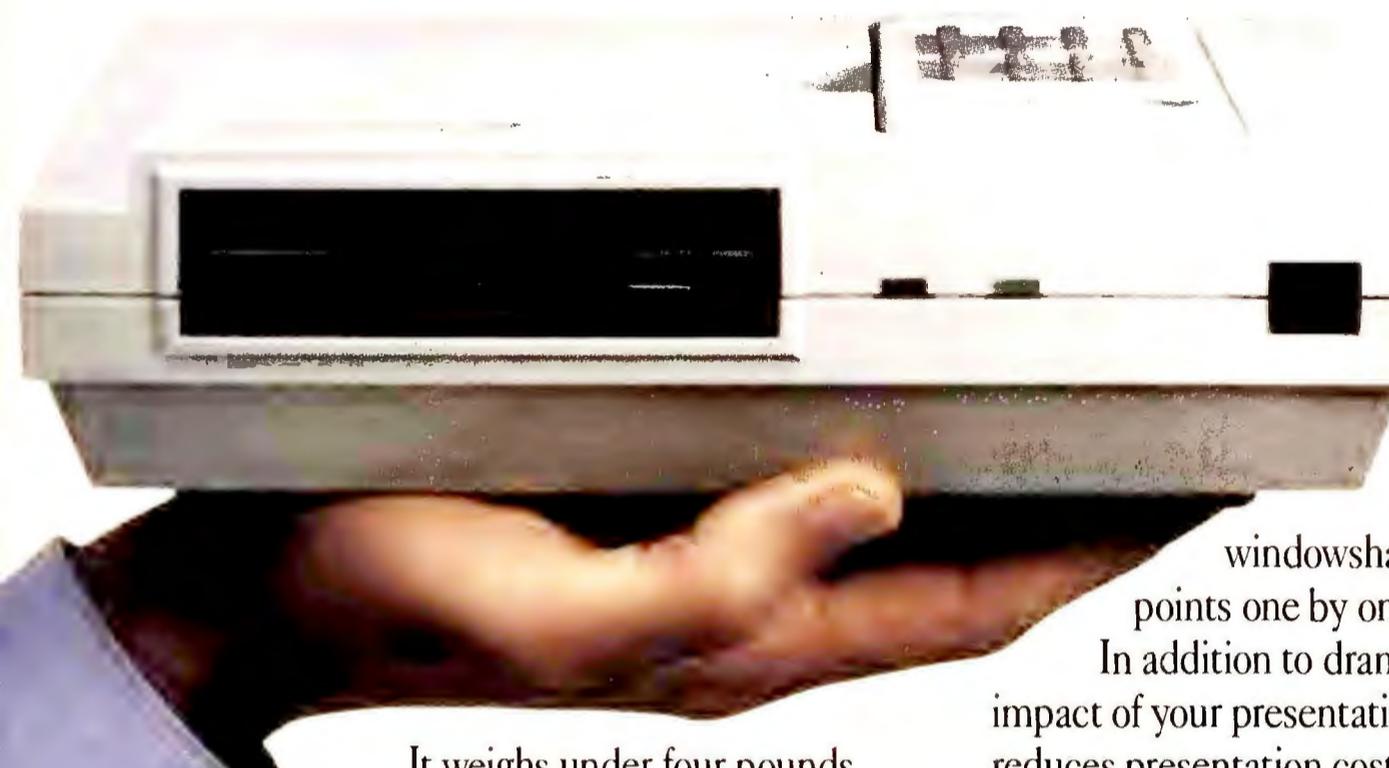
#### Corrections and Clarifications

Our December buyers' guide "Displays That Outshine VGA" listed an incorrect fax number for Headland Technology. The correct fax number is 415/657-4604.

The January *Letters* column misprinted the phone number for the Manatee PC Users Group, 411 67th St. NW, Bradenton, FL 34209. The correct number is 813/792-3437.

A font sample chart on page 131 in (continues)

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## LETTERS

January's "Easy Fonts for Great-Looking Documents" contains two inaccuracies. Zenographics' *SuperPrint 1.0* doesn't support dot matrix printers; the wrong type sample was shown. Agfa's *Type Director 2.0* produced 12-point instead of 24-point type on the Hewlett-Packard DeskJet 500 due to conflicts with *Word for Windows'* font installer. To print large fonts on the DeskJet using *Type Director* and *Windows 3.0*, you must download the fonts before printing or obtain HP's DeskJet *Windows* driver.

The Features Evaluation in our January fonts review also contains two errors. Z-Soft's *SoftType 1.01* accepts third-party font outlines and does support the LaserJet III and IIID printers. *PC World* regrets the errors.

*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, the name of your city and state, and your phone number. We reserve the right to edit letters. ☺*

### POWER TIP NO. 171

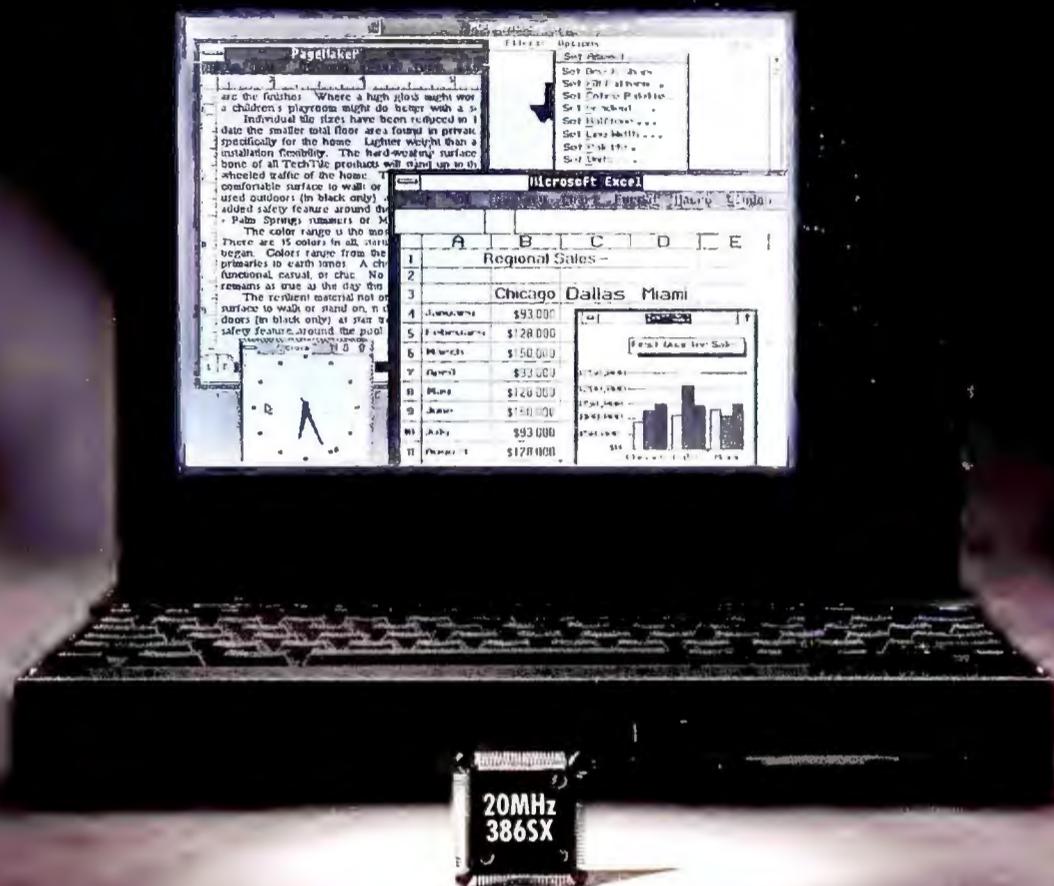
#### Getting Past the Windows 3.0 Logo

You can get into *Windows* quickly and bypass the opening screen. Just type win followed by a space and the executable file name of any program you want *Windows* to run that isn't listed in your WIN.INI. If you have nothing for *Windows* to run, type win followed by a space and a colon.

Greg Smela  
Pittsford, Vermont



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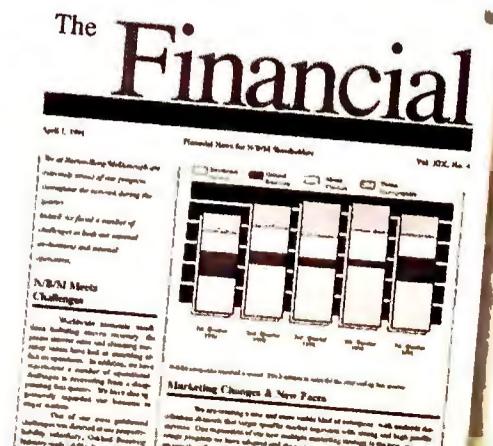
With the LaserJet IIISi, you're up to speed the moment you give the "print" command. HP's RISC-based formatter and the PCL5 printer language, with vector graphics and on-the-fly typeface scaling, yield fast

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The LaserJet IIISi is specifically designed for shared-use environments. Its high-volume paper handling features include two 500-sheet input trays and a monthly duty cycle of 50,000 pages. HP offers software-selectable language switching

between PCL5 and optional Adobe® PostScript®. For added versatility, your options include

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Beyond speed and efficiency, the LaserJet III Si delivers the sharpest 300 dpi print quality yet. In fact, HP's revolutionary combination of Resolution Enhancement technology and new microfine toner challenges the print quality of many 600 dpi printers.

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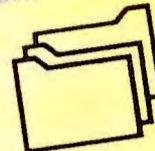
as the work load it handles. If you're ready to pick up the pace, call **1-800-752-0900, Ext. 2067** for more information on the fastest LaserJet printer and the name of your nearest authorized HP dealer.



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## THE HELP SCREEN

### PC World offers answers and advice at every level

Super-VGA monitors can handle XGA, memory on the cheap, upgrading an XT, PostScript and the HP LaserJet, modifying the keyboard for users with disabilities, and making peace between NetWare's system and user log-in scripts.

*Karl Koessel and Robert Lauriston*

### XGA and Super-VGA Monitors

**Q.** *Is the new XGA standard compatible with existing 1024 by 768 monitors like the NEC MultiSync 4d? Although prices on these large-screen, enhanced-resolution monitors are finally getting down to a reasonable level, we don't want to invest in yesterday's technology at premium prices.*

*Michael E. Rountree  
Mendham, New Jersey*

**A.** Any 1024 by 768-capable super-VGA monitor can handle XGA's interlaced 1024 by 768 mode, which, as far as the monitor is concerned, is identical to the 8514/A board's. ("Interlaced" means

the electron beam sweeps across the first of the screen's 768 horizontal scan lines, then the third, then the fifth, and so on down the screen, and returns to the top to sweep the second scan line, then the fourth, refreshing the even scan lines as the odd lines fade and vice versa.) In addition, any super-VGA or standard VGA monitor can handle XGA's 640 by 480 16-bit color mode.

Some other super-VGA boards, like the Video 7 VRAM, have a noninterlaced 1024 by 768 mode (scan lines are refreshed one after another from top to bottom), which some high-resolution monitors can't handle. Most third-party XGA-compatible boards are likely to run noninterlaced (at least optionally) to reduce flicker.

Another consideration is that many new video boards have boosted their refresh rate from 60 Hz to 72 Hz to reduce eyestrain and meet European standards. To keep future options open, look for a monitor that can handle noninterlaced, 72-Hz refresh, 1024 by 768 video. (Check the multiscan monitors Buyers' Guide [December 1990, page 212] to see which monitors can handle which modes.)

### Can I Use SIMMs?

**Q.** *Can I use regular SIMMs in place of the proprietary memory expansion modules from ALR, Compaq, and other companies?*

*Kenny Eng  
New York, New York*

**A.** Unfortunately, you can't substitute inexpensive SIMMs for proprietary memory modules. However, there are compatible third-party memory modules that cost quite a bit less than the system manufacturers' products. There

are also less expensive clones of proprietary memory boards for many popular systems, and some of these will take SIMMs. If your dealer doesn't carry such products, check out the mail-order suppliers that advertise in the back of this magazine.

You could also buy a SIMM-based memory board that slips into an expansion slot, but it's usually a bad idea. In a 386 or an 8-MHz or faster 286, memory installed on the expansion bus won't run as fast as the proprietary modules, which use a special "fast slot" that runs at the same speed as the CPU.

Luckily, this upgrade headache will soon be a thing of the past. Most companies, including ALR and Compaq, are using SIMMs in their new system models.

### Upgrading an XT

**Q.** *As I get more involved in desktop publishing, I find I've outgrown my old Epson XT compatible and its 20MB hard drive. Manufacturers are making programs that come only on high-density disks and require more than 640K of memory. Several people have told me I can upgrade the system by installing a BIOS upgrade, a 1.2MB floppy drive, a memory expansion board, and a math coprocessor. Others say I need to replace the motherboard. Epson sent me an ad for an Intel Inboard. Which way should I go?*

*Terry Austin  
Fresno, California*

**A.** Don't sink more money into your old system. True, a new BIOS, controller, and floppy drive would enable your old system to read high-density disks. And if you also added an expanded memory (*continues*)

board, you'd be able to use *Ventura* or *PageMaker* to produce fairly large documents. But the XT would run such packages so slowly that you wouldn't

want to use them. You need at least a 286-based system, but we suggest you upgrade to a 386 instead. *Windows* runs better on a 386, and if you buy a 286 you may find you've outgrown your system again all too soon.

Intel's Inboard 386/PC will upgrade your system to a 386—sort of. The board replaces the XT's 4.77-MHz 8088 CPU with a 16-MHz 386 processor, but it uses the same slow, 8-bit XT bus. That means you couldn't use faster 16-bit boards, and your hard disk wouldn't run as fast as in a real AT compatible. The Inboard is also limited to a maximum 5MB of fast RAM. Worst of all, it's not fully AT compatible—for instance, it needs a special version of *Windows*. Consequently, we don't recommend the Inboard upgrade path.

A computer shop may be willing to convert your XT to a 386 via a motherboard swap. You'd also need new floppy and hard drives (40MB is cramped for *Windows*), and (unless the new mother-

board has one built in) a new disk controller, too. We're not enthusiastic about this approach, but if the shop gives you a one-year guarantee on the whole upgrade it's worth considering.

We think you'd do best to buy a whole new system. It wouldn't cost that much more than a motherboard swap, and you could recoup part of the cost by selling your old XT. We recommend a 20-MHz 386SX with an 80MB or larger hard disk and 4MB of memory, plus enough empty SIMM sockets on the motherboard to let you upgrade later to 16MB. And while you probably don't need a math coprocessor (used for floating-point calculations, like redrawing CAD screens or recalculating large spreadsheets), you may want one later if you start using scalable fonts regularly.

#### PostScript and the HP LaserJet

**Q.** Can you tell me the benefits, if any, of buying a PostScript cartridge for my HP LaserJet IIP? I understand I

#### POWER TIP NO. 172

##### Fast WordPerfect Dot Leaders

Want margin-to-margin leaders (.....) to, say, make flush-right text stand out? In *WordPerfect 5.1*, just press <Alt>-<F6> twice. *WordPerfect* will move the cursor flush right, automatically add the dots, and await your text input.

James Hopkins  
WordPerfect Technical  
Support  
Orem, Utah



## Announcing A Better, Smarter, Faster

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checker inside the latest versions of your favorite DOS and Windows word processors like MS Word, *WordPerfect*, *WordStar*, and *Ami Pro*, just to name a few. Simply click your mouse or tap a hot key inside a DOS word processor. Or in Windows, click on "Grammatik" in the same pull down menu as your spelling checker. In seconds, *Grammatik* proofreads every sentence in your document. It checks for thousands of errors in grammar, style, syntax, improper sentence construction, subject/verb agreement, passive voice, spelling and more. (It even checks personal words and abbreviations you've added to your word processor's

could proof jobs that will eventually be output on a Linotronic. Would graphics or scans be improved? As of yet I don't have any programs that rotate or curve type, but Corel Draw is in future plans.

Bob Ulius  
Oakland, California

**A.** The greatest benefit of a PostScript printer is that you can proof pages at 300 dpi, then send the file to a laser parlor for 1270-dpi Linotronic output, knowing it will be an almost perfect match. That confidence and the broad selection of PostScript fonts are the main reasons that layout artists and professional desktop publishers use PostScript.

Scanned graphics are bit maps and won't be improved by switching to PostScript. Bézier curves, produced by draw programs like *Corel Draw* and *Adobe Illustrator*, will print better—sometimes much better—with PostScript.

EPS (Encapsulated PostScript) graphics, exported by some graphics programs, won't print at all on a non-PostScript printer.

PostScript lets you scale fonts to virtually any point size, but now you can get scalable fonts from various non-PostScript font utilities as well. Some, like *Adobe Type Manager*, can even scale PostScript fonts on a non-PostScript printer.

On the downside, switching to PostScript will slow down your LaserJet. Considering the performance hit, the cost of the cartridge, and the extra printer memory required, your best course is to hold off upgrading to PostScript until it solves a specific need, such as the ability to proof pages for later Linotronic output.

#### Different Keystrokes for Different Folks

**Q.** I train the physically challenged in (continues)

#### POWER TIP NO. 173

##### Watch Those WordStar Wild-Card Deletes!

*WordStar Professional 4.0* and later versions allow you to make wild-card deletes in the DELETE dialog box (Y at the Opening Menu or <Ctrl>-KJ from within a file). But the delete function uses DOS-level commands, and if you enter \*.\* , you will delete every file in the subdirectory, not just the subset that shows on screen by default. So if you have EXE and other application files in the logged directory, be cautious with your wild-card deletes.

Rex Farrance  
Assistant Editor

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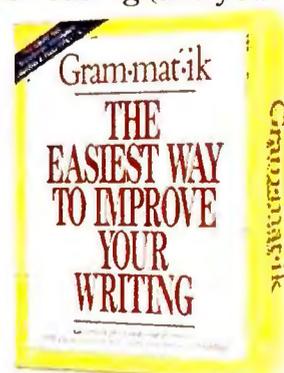
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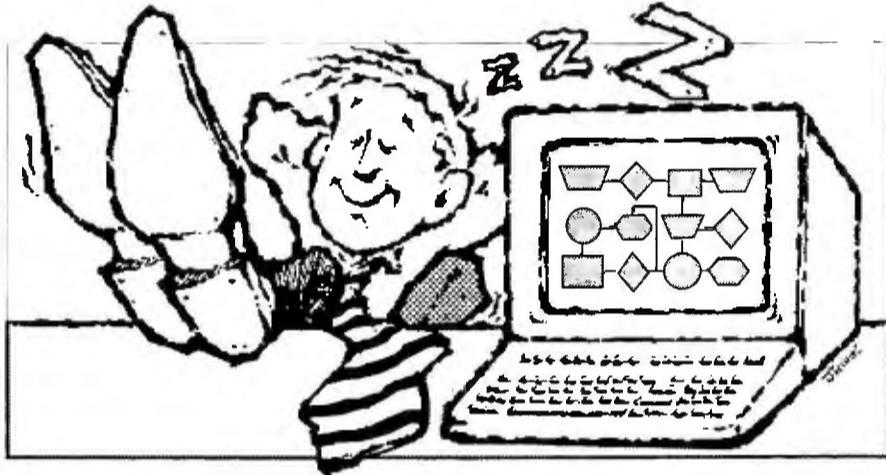
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# Shh!



## Don't tell your boss about EasyFlow!

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Don't breathe a word about the automatic line routing, automatic text centering, the slick cut & paste or how you created charts and then cleanly moved them into a desktop publishing program. Tell your boss you had to sweat bullets to come up with these amazing results.

Don't point out that **EasyFlow** works with most matrix printers, laser printers and plotters.

Keep the 200 page manual out of sight. Don't get caught with one of the 350 context sensitive help messages on your screen.

Don't let the boss know that **EasyFlow** only costs \$149.95 and that RUSH delivery is available.

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computer literacy. Many of my clients can use only one hand—some only a single finger—which makes it difficult or impossible to use <Alt>- and <Ctrl>-key combinations. Is there software that will make these keys work like <Caps Lock>, staying on until pressed a second time to shut them off?

Arvin Chaikin

Bellingham, Washington

(continues)

## POWER TIP NO. 174

### Speeding Modem Dialing Through Office PBXs

If you have a nonstandard dial tone on your office phone system, you may have to tweak your modem's attention (AT) command strings. Go to your communications software setup menu, and under modem setup find the strings that begin with AT. To the modem's initialization string (the longest string), add S6= and then type a number that's larger than 2 and approximately equal to the number of seconds the modem will have to wait for an outside line. Setting the S6 register forces the modem to stop listening for a dial tone after the specified number of seconds and dial without it. You can further speed dialing after the modem gets an outside line by adding W to the tail end of the command string that begins ATDT: This sets the modem to dial the phone number immediately once it hears a normal dial tone rather than wait the entire duration set by register S6.

Judy Heim

Contributing Editor

Before you run out and spend five or six thousand dollars for a 386SX notebook PC, we seriously suggest you take a close look at Samsung.

We've just introduced the NoteMaster™ 386S/16. It has the features of a Compaq notebook PC for about half the price.

NoteMaster has a better screen, a more responsive keyboard and can be upgraded with a coprocessor, modem or more memory without even opening up the case. It's also slimmer and lighter than Compaq. And it comes with our toll-free customer service hotline so you get answers directly from our product experts. As one of the world's largest manufacturers, we make most of our own components, so you realize considerable savings with superior quality control.

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	<b>Samsung</b> <b>NoteMaster 386S/16</b>	<b>Compaq LTE</b> <b>386/20</b>
<b>Processor</b>	16MHz 386SX	20MHz 386SX
<b>Dimensions</b>	8.5" x 11" x 2.1" 7 lbs.	8.5" x 11" x 2.2" 7.5 lbs.
<b>Display</b>	VGA Sidelit CCFT Paper White VGA LCD 256KB Video RAM 64 grey shades support	VGA Edgelit LCD 16 grey shades support
<b>Keyboard</b>	Standard AT-compatible 3mm key travel depth	Enhanced keyboard 2.5mm key travel depth
<b>Memory</b>	1MB expandable to 5MB	2MB expandable to 10MB
<b>Software Incl.</b>	Laplink III MS-DOS Windows 3.0	Not available
<b>Support</b>	Toll-free 800 number On-line modem support	Not available
<b>Price</b>	20MB - \$3999 40MB - \$4499	30MB - \$6499 60MB - \$6999

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**A.** One memory-resident program, *HandiShift* from Microsystems, does exactly what you describe, no more, no less. General-purpose macro programs like *SmartKey* and *ProKey* also enable you to make the <Alt>, <Ctrl>, and <Shift> keys "sticky." In addition, custom keyboards and keyboard extensions can handle this task without special software. There are also input devices for those without the dexterity required to use a standard keyboard. For information on other such products, contact the following companies or check out CompuServe's special forum for the disabled (GO HANDICAP).

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508/875-8009 (BBS)  
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*Karl Koessel is the technical editor and Robert Lauriston a contributing editor for PC World.*

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*MCI Mail PC World Editorial; or 415/442-1891 (fax). Questions with the broadest appeal will be published. ☺*

**POWER TIP NO. 175**

**Shape Up Those Windows Group Icons**

Can't straighten up the group icons in the Program Manager window with the Window Arrange Icons command? Select one of the Program Manager's group icons (not a program icon like those in the Main window), and then issue the Arrange command. The pesky devils will line up instantly.

*Robert Luhn*  
Contributing Editor

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# "DynaComm is an example of what a great Windows program is all about."

—PC Week — Product Review

The word is out. On January 28, 1991, three asynchronous communications programs written specifically for Microsoft Windows 3.0

were reviewed by PC Week Labs.

The analysts' choice was unanimous. For number of terminal emulations, ease of data transfers, quality of documentation, effective use of Windows interface, price relative

to performance, and ease of installation and configuration, FutureSoft's™ DynaComm® was the hands-down winner.

"Beginning users will appreciate how easy DynaComm is to use, and the slick, ready-to-use interfaces it has for many on-line services. Experts and communications consultants should value its DDE capabilities and the ability to hide any trace of DynaComm from the user."



DynaComm 3.0  
January 28, 1991

DynaComm's powerful script language allows you to do everything from automating frequent tasks for remote services to creating custom front-end applications for main-frame day-to-day activities which take full advantage of the Windows interface.

DynaComm can also access other Windows applications through its script language using Dynamic Data Exchange (DDE) or Dynamic Link Library access (DLL).

DynaComm also supports Window's Multiple Document Interface (MDI), and the built-in text editor supports up to eight open documents at

one time. Along with the standard mouse and keyboard support, DynaComm allows up to 32 user-definable function keys for each settings configuration, and offers file transfers in X, Y, and ZModem, Kermit, Yterm and CompuServe B+ protocols. Supported emulations include DEC VT-220, AT&T 605/705, Hewlett Packard 700/94, Data General 470C, DEC VT 52 and

VT 100, IBM 3101, TeleVideo 925/950, CompuServe and ADDS Viewpoint/60. LAN support includes NetBios, Ungermann-Bass, DEC LAT and support for modem pools.

To anyone considering asynchronous communications software, the PC Week Analyst's Choice said it best. For ease of use, powerful scripting language and more, only one package warrants serious consideration—DynaComm.

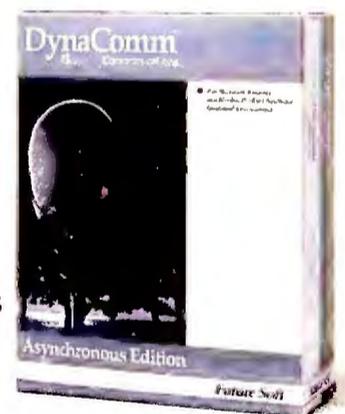
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# NETWORK Q & A

## Make Peace Between NetWare's System and User Log-In Scripts

**Keith Nickerson**

**Q.** *I am having problems getting my NetWare system log-in script to consistently do what it is supposed to do. For some people the log-in script executes exactly as expected, while for others it doesn't.*

*For example, I have two lines in my system log-in script: WRITE "GOOD %GREETING\_TIME, %FULL\_NAME" and WRITE "TODAY IS %DAY\_OF\_WEEK, %MONTH\_NAME %DAY".*

*For most users, these commands work fine, producing a result like this: GOOD MORNING, JIM CARROLL TODAY IS MONDAY, MARCH 27*

*Others using the same system log-in script see the following output: GOOD MORNING, JIM CARROLL TODAY IS MONDAY, MARCH 27 GOOD MORNING, JCARROLL*

*I understand that NetWare provides a default log-in script that would write a message like the third additional line if no system log-in script were present. But there is a system log-in script. What's going on here?*

*Jim Carroll*

*New York, New York*

**A.** You're on the right track when you mention the default log-in script, but you're not exactly right about when it kicks in. NetWare runs the default log-in script (shown in **LISTING 1**) when there is neither a system log-in script nor a user log-in script, or when there is a system log-in script but no user log-in script.

It sounds like your setup fits the second case. If you check to see which users are experiencing the problem, I bet you'll find they don't have individual user log-in scripts.

What's happening is that NetWare first looks for, finds, and executes your

system log-in script. NetWare then looks for the user's log-in script, fails to find one, and, finally, executes the default log-in script instead. As a result, the default script is being appended to your system log-in script just as a user script would be.

The default script can cause problems more severe than a scrambled greeting, however. For example, if your system log-in script MAPped the first search drive to something other than SYS:PUBLIC, that mapping would be overridden by the default log-in script.

So what can you do to prevent the default from executing when a user doesn't have an individual log-in script? The most elegant solution is to create a group of users called something like HAVE\_LOGIN\_SCRIPT, which, logically enough, includes all those who have log-in scripts. Then add the line IF NOT MEMBER OF HAVE\_LOGIN\_SCRIPT THEN EXIT to the end of your system script.

Thereafter, when users log in, NetWare will check to see who belongs to the HAVE\_LOGIN\_SCRIPT group and who doesn't. The EXIT command will prevent execution of the default log-in script for those who don't belong to the group, while the IF statement will skip over the EXIT command for those who do, allowing their personal scripts to run as usual.

Alternatively, you could create a "dummy" personal log-in script for each user. The advantage of this approach is that users can create their own log-in scripts when needed, without having to contact the supervisor to be added to the HAVE\_LOGIN\_SCRIPT group. This dummy script can be as brief as a single space character (that is, one blank), but it's smarter to use a short WRITE command, like WRITE "USER LOGIN SCRIPT EXECUTED." That way, you can see for certain that the user log-in script was executed, which makes any later troubleshooting much easier.

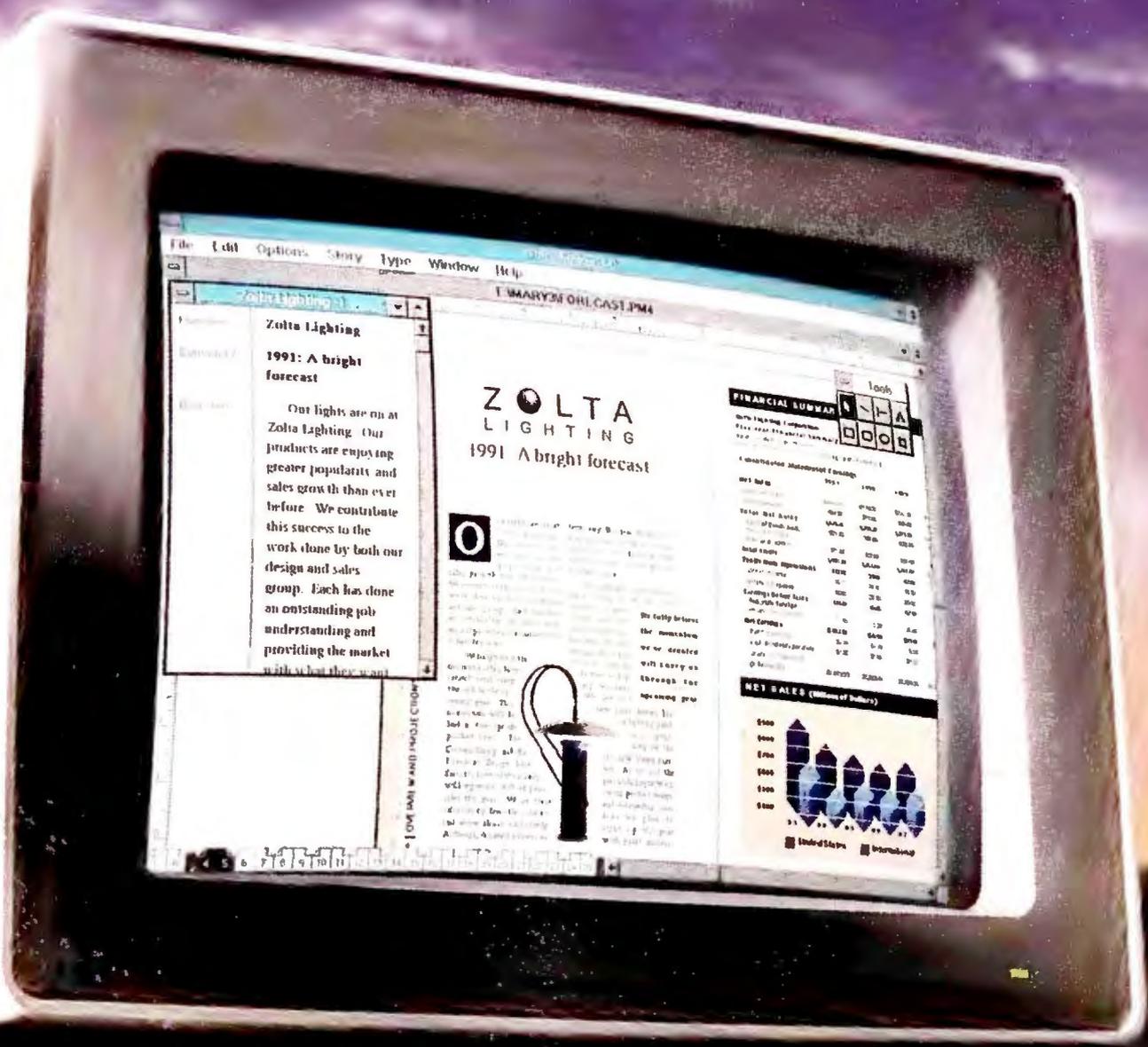
A more radical solution is to place an EXIT command at the end of the system log-in script. This will prevent execution not only of the default but also of individual user log-in scripts. You should use this method only if you want to prevent all users from creating their own log-in scripts.

If you know the sequence of NetWare log-in script execution and follow these tips, you should be able to prevent the default from mangling the effects of your system log-in script. ☺

*Keith Nickerson is the editor of NetWare Advisor and a member of the publishing team at Business Systems Group, a Houston-based systems integration firm.*

```
WRITE "Good %GREETING_TIME, %LOGIN_NAME."
MAP DISPLAY OFF
MAP ERRORS OFF
Remark: Set first drive to the most appropriate directory.
MAP *1:=SYS:;*1:=SYS:%LOGIN_NAME
IF "%1"="SUPERVISOR" THEN MAP *1:=SYS:SYSTEM
Remark: Set search drives (S2 machine-OS dependent).
MAP S1:=SYS:PUBLIC;S2:=S1%MACHINE/%OS/%OS_VERSION
Remark: Now display all the current drive settings.
MAP DISPLAY ON MAP
```

**LISTING 1:** If you don't have a user log-in script, NetWare runs this default log-in script.



File Edit Options Story Type Window Help

Zolta Lighting 1991: A bright forecast

Our lights are on at Zolta Lighting. Our products are enjoying greater popularity and sales growth than ever before. We contribute this success to the work done by both our design and sales group. Each has done an outstanding job understanding and providing the market with what they want.

## ZOLTA LIGHTING

### 1991: A bright forecast

**O**ur lights are on at Zolta Lighting. Our products are enjoying greater popularity and sales growth than ever before. We contribute this success to the work done by both our design and sales group. Each has done an outstanding job understanding and providing the market with what they want.

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1990	1991	1992	
Total Net Sales	4,500	5,000	5,500
Operating Profit	1,200	1,500	1,800
Net Income	800	1,000	1,200
Operating Assets	1,000	1,200	1,500
Operating Expenses	3,300	3,500	3,700
Operating Profit Margin	26.7%	30.0%	32.7%
Net Income Margin	17.8%	20.0%	21.8%
Operating Assets Turnover	4.5	4.2	3.7
Operating Assets Turnover	3.0	3.5	4.0
Operating Assets Turnover	1.5	1.8	2.1
Operating Assets Turnover	0.8	0.9	1.0
Operating Assets Turnover	0.4	0.5	0.6
Operating Assets Turnover	0.2	0.3	0.4
Operating Assets Turnover	0.1	0.2	0.3
Operating Assets Turnover	0.05	0.06	0.07

**NET SALES (Millions of Dollars)**

Legend: Standard Sales, Start-up

# PageMaker 4.0 for Windows.

## Today is the first day of the

### rest of your PC's life.

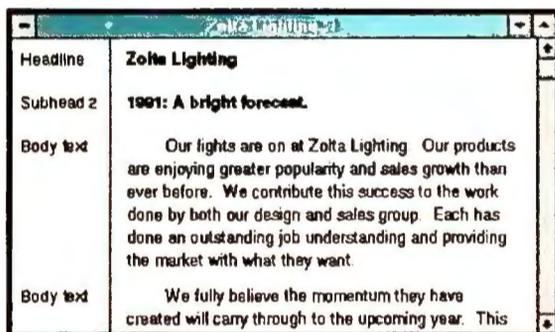


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The new Table Editor is dynamically linked to PageMaker, and makes tables easy. Plus, any graphic can be tied to specific text so the two stay together in your document.

or you can kern type between pairs or over a range of text to 0.01 of an em space.

Best of all, with Windows 3.0 and PageMaker's natural pasteboard metaphor, the program is ingeniously simple to use—shortening learning time and increasing productivity. What's more, files are compatible across Mac, DOS, and OS/2 platforms. In fact, when you purchase PageMaker, you'll be a part of the largest installed base of desktop publishing software in the world.

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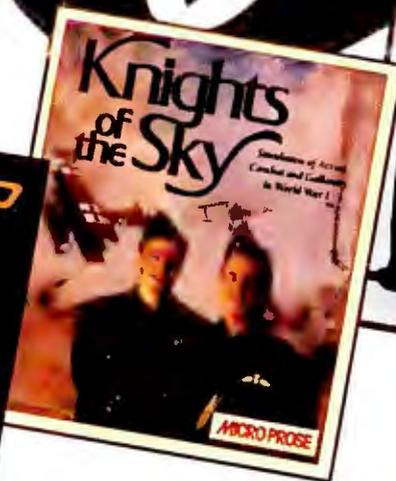
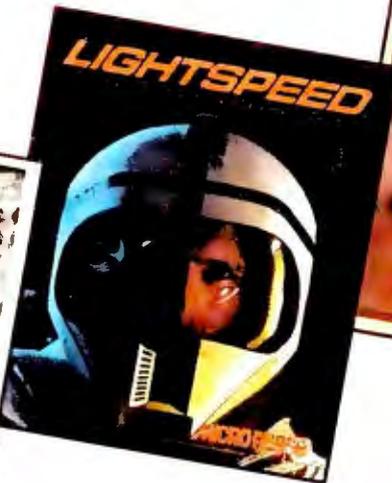
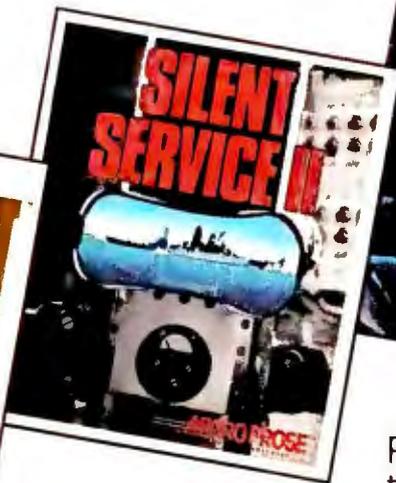
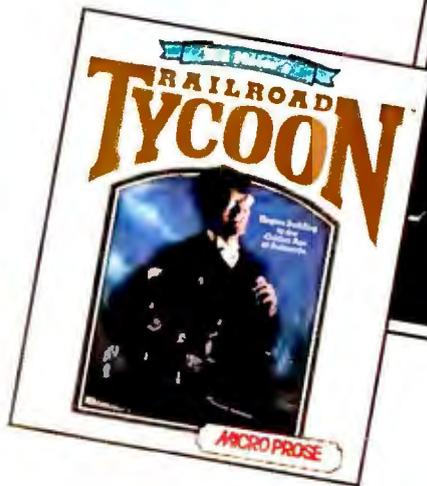
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## CONSUMER WATCH

### Advice and information for the computer consumer

When personal information becomes public property, consumers can and do fight back.

*Roberta Furger*

### Are PCs Invading Your Privacy?

The widespread availability of on-line and CD ROM data on prospective customers is great news for businesses looking to enter new territories or to introduce products or services. But for many consumers, that same free flow of information—*personal* information about themselves and their families—represents an invasion of privacy.

Consumer anger and concern about this issue reached fever pitch last year when Lotus Development and Equifax announced plans to release *Marketplace: Households*, a set of CD ROMs that would provide businesses with names, addresses, and demographic information for 120 million consumers throughout the United States. Individual consumers and privacy groups alike were horrified at the notion that for a

fee, businesses would be able to bombard them with direct-mail solicitations—in most cases using information that consumers had provided for credit purposes.

The concept behind *Marketplace* was not new. For years credit bureaus such as Equifax, TRW, and Trans Union, along with at least 200 smaller bureaus, have been making selective pieces of credit-generated information available to direct marketers. Clients simply specify the type of consumer they want to target—men between the ages of 35 and 40 who have \$10,000 of available credit on their credit cards, say—and for a fee they receive a list of names and addresses that match that profile.

But Lotus was the first PC software company to try to bring that level of information within easy reach of small businesses via their desktop computer. (Although a variety of on-line data bases provide demographic information, few supply users with household-level information.) And it was this innovative—and controversial—plan to broaden the base of potential direct marketers that brought down the wrath of consumers on Lotus and Equifax.

Over 30,000 consumers, in fact.

That's how many calls and letters Lotus received from individuals demanding that their names be removed from the disks. An unknown additional number sent similar letters to the Direct Marketing Association (DMA), which also processed name-removal requests.

In fact, the outcry from individuals and consumer groups was so deafening that Lotus and Equifax jointly decided to cancel the product in January. "Unfortunately, *Marketplace: Households* is at the apex of an emotional fire storm of public concern about consumer priva-

cy," said Lotus president and CEO Jim Manzi. "While we believe the actual data content and controls built into the product preserved consumer privacy, we couldn't ignore the high level of concern."

PC products such as *Marketplace* didn't create the controversy that pits personal privacy against free enterprise. But as on-line and CD ROM demographic data bases proliferate and become accessible to tens of thousands of PC-equipped businesses (see "Know Your Market!" in this issue), consumer anxiety and anger will undoubtedly escalate.

Some observers have called for an updating of privacy legislation, together  
*(continues)*



### BUG WATCH

*Coming next month*

Have you ever spent hours trying to figure out the cause of a software or hardware problem, only to find that someone else has already devised a fix? If so, then we've got something for you. Beginning next month, *Consumer Watch* will feature a list of identified software bugs and hardware incompatibilities, along with information on obtaining fixes or work-arounds. We've asked the major vendors to help us identify problems and provide solutions, and we'd like your input, too. If you uncover a problem with your software or hardware and want to protect fellow users from a similar fate, call us with the details at 415/978-3253.

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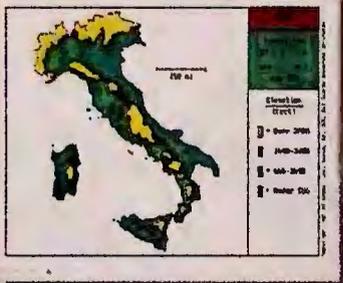
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instant point-to-point distances and bearings as well as display by political alignment such as NATO, OPEC, etc. All data and maps are updated annually. Programs are available in a range of languages.



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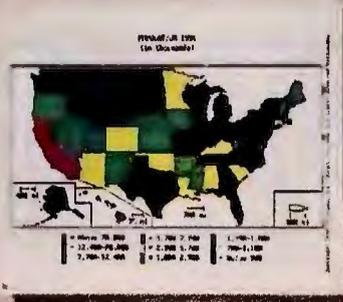
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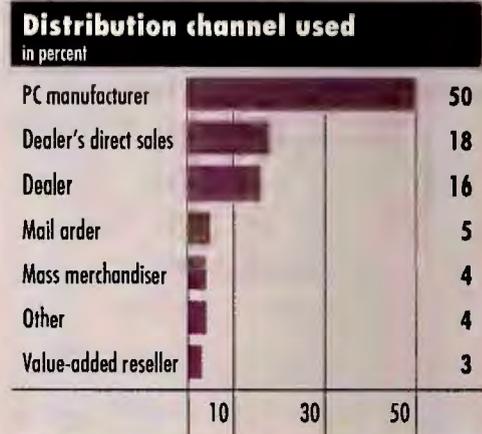
**SOFTWARE FOR EVERYWHERE!**

with the creation of a national organization to monitor individual privacy rights. Although credit bureaus have traditionally fought such watchdog committees, Equifax's John Baker says that given the high level of anxiety, "the time might be right for some sort of national policy review board."

Lotus's Manzi adds that as PC hardware and software open up new opportunities, questions inevitably arise regarding the use and misuse of technology (continues)

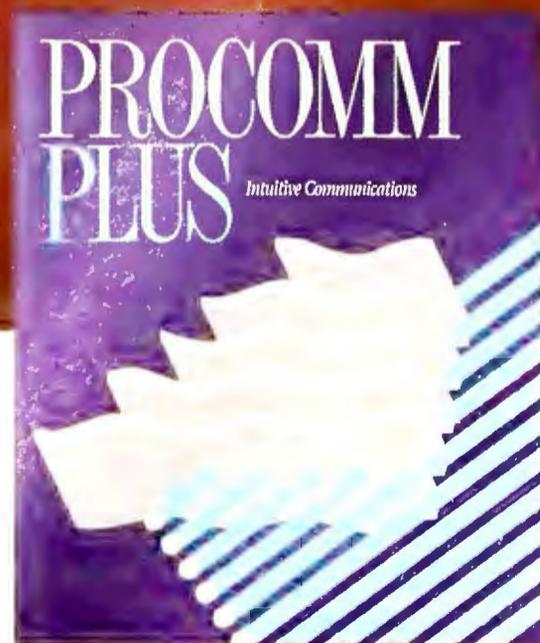
**RATE YOUR  
SATISFACTION:  
Hardware  
Distribution  
Channels**

One-half of all PCs purchased are bought directly from the system manufacturer, according to this survey. But responses indicate that PC buyers are generally satisfied with whatever distribution channel they select. The highest satisfaction rating goes to the growing number of mass merchandisers of PC products, although this group accounts for only 4 percent of the PCs sold.



Source: International Data Corporation. From a survey of 175 large organizations, each with at least 50 PCs.

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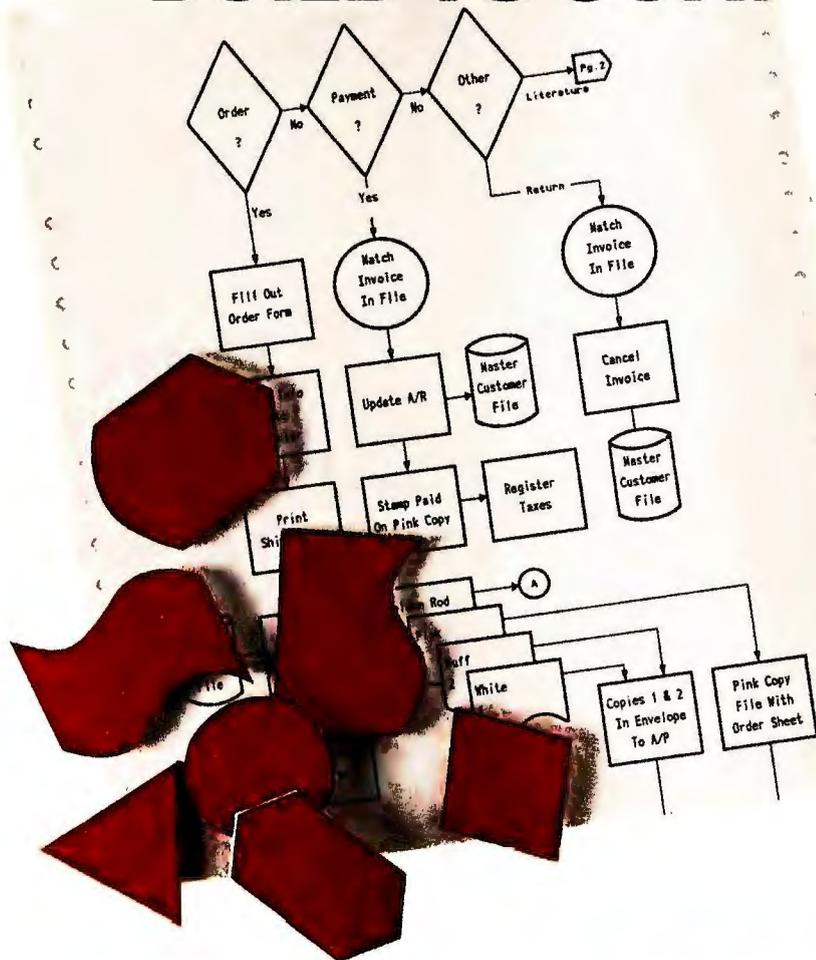
gy. "Balancing the advantages of easier access to information with our individual right to privacy is only the first of many new issues our industry will grapple with over the coming years."

In the meantime, there are some actions consumers can take to minimize the intrusion. The Direct Marketing Association offers a service for anyone

who wants his or her name removed from the huge data base of names that are sold to direct marketers, including large mail-order firms, nonprofit organizations, and financial institutions. Requests should be sent to Mail Preference Service, Direct Marketing Assoc., 6 E. 43rd St., P.O. Box 3861, New York, NY 10163.

Lorna Christie, vice president of ethics and consumer affairs for the DMA, also suggests that you inform your credit card companies, mail-order firms with which you regularly do business, and magazines or newsletters to which you subscribe that you do not want your name on subscriber or customer lists that are released to other businesses.

# BUILD TO SUIT.

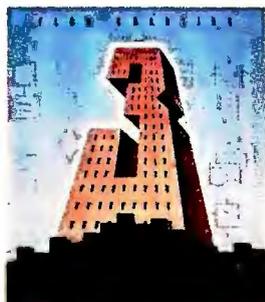


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## SHOP TALK

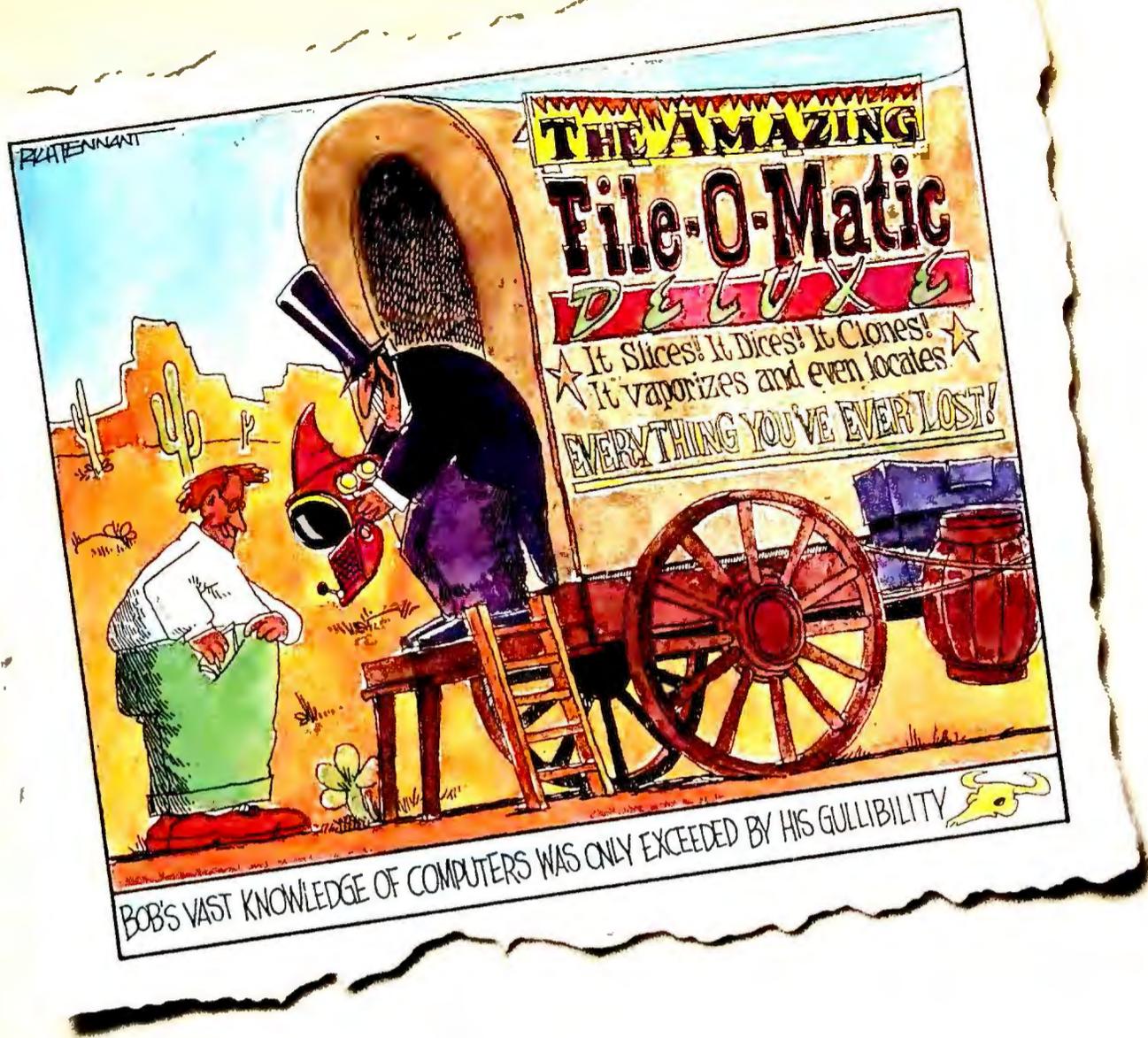
### ISC Operators Declare Bankruptcy; Orders Unfilled

Through an ad in your magazine, I ordered an HP LaserJet IIP from ISC in Hermosa Beach, California. I was told I would receive the merchandise in seven to ten days. ISC immediately charged \$953.12 to my credit card.

When two weeks went by without my receiving the merchandise, I attempted to contact ISC, but its toll-free number was constantly busy. When I called the other number I was told I needed to speak with Rick Andrews, who could be reached only at the toll-free number. I left several messages, but my calls were never returned. After at least two dozen attempts I finally spoke to Mr. Andrews, who said he would trace the package through UPS and then call me with the results. He never called. I managed to reach him the next day (after 45 minutes on hold), and he told me there had been an "invoice problem," that the printer was "in the Midwest somewhere," and that I would receive it "within 48 hours."

Several days later and still without a printer, I again tried to contact Mr. Andrews. No luck. No one else could help. I even resorted to sending him fax messages, all of which were ignored. When I finally reached him after several more days, Mr. Andrews told me ISC would ship a "second" printer that would arrive "within a week." He requested that if I received two printers to refuse shipment on the second.

When nothing happened, the cycle of busy signals, ignored phone messages, (continues)



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Circle 319 on reader service card

and faxes began again. More than one week later I spoke with another employee, who promised I would receive a call back from the owner. I didn't. The following day, though, I received a call from ISC and was told my account would be credited immediately for \$953.12. Ten days later I called to see if the credit had been issued. Needless to

say, it hadn't. That day, a full seven weeks after I placed the order, I drove to a local computer store and bought a new printer.

*William Rainaldi  
Springfield, New Jersey*

*Editor's note: Mr. Rainaldi's letter was one of nearly two dozen complaints*

*we've received about ISC Power Systems, which advertised in PC World and other major PC publications during the late fall and winter of 1990. Complainants relate a common story: Products were ordered and paid for but never received. Customers were frequently told that the products were shipped, with ISC offering to initiate a trace on the "lost" goods.*

*Consumer Watch has been unsuccessful in reaching anyone at ISC by phone, but we've forwarded all written complaints to the company. Like many ISC customers, however, we've received no response to our inquiries. We have therefore forwarded the complaints to both the Chief Postal Inspector's Office and the State Attorney General's Office for review for possible action.*

*According to Detective Lance Jaakola of the Hermosa Beach Police Department, his office has received over 30 phone calls from disgruntled ISC customers. The case has been turned over to the district attorney's office for review.*

*Did you have any dealings with ISC Systems? If so, we'd like to hear from you. Customers with unfulfilled orders should also send letters of complaint to the Regional Chief Inspector, Western Region, U.S. Postal Service, San Bruno, CA 94098-0100; or to the Public Inquiry Unit, California Attorney General's Office, P.O. Box 944255, Sacramento, CA 94244-2550.*

**Growing Pains?**

I have twice attempted to use Packard Bell's 24-hour technical support line. The first time was when I set up the system and the hard drive didn't work. After I'd called the 24-hour line for 10 days and left messages on an answering machine, my call was returned, but I was away from the phone and missed it. I called every day for another week with no response. Finally I paid for a call to the customer service line and reached a technician in 5 minutes. Packard Bell sent a local service agent, and he re-

*(continues)*

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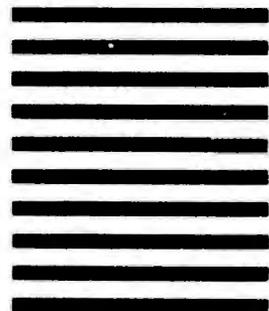
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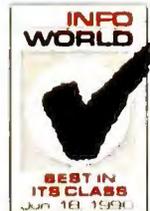
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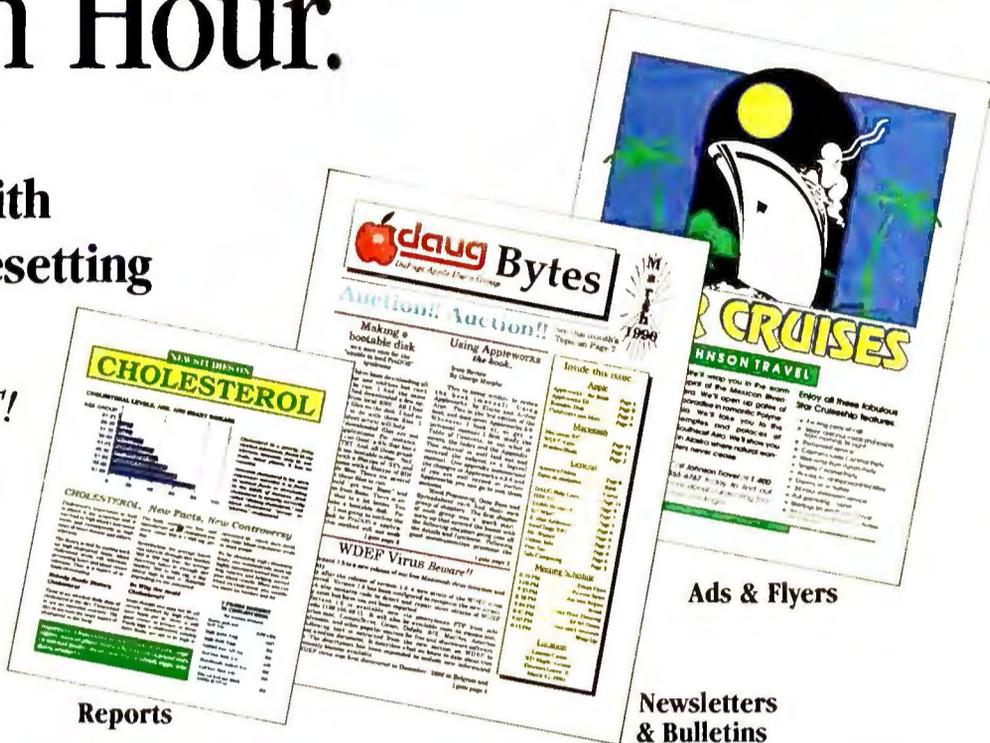
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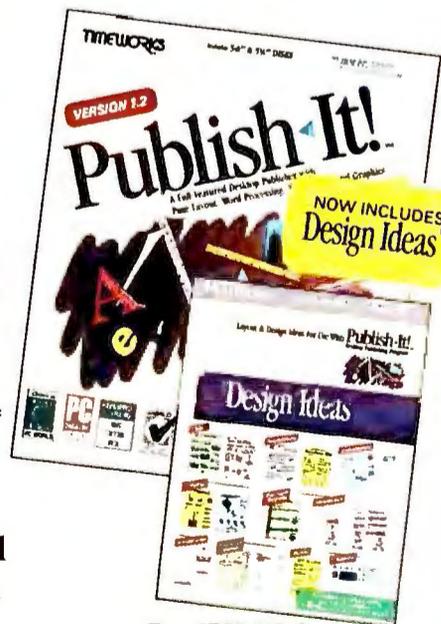
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Circle 260 on reader service card

placed the hard drive. It took 28 days from the time I first called to when I got my computer operating again.

I tried to use the 24-hour line again when I purchased SIMM chips to upgrade the memory in my computer. The system will not operate with the new chips installed. It's been 10 days since I started calling Packard Bell's technical

support line, and I still haven't received a return call.

Doug George  
Seattle, Washington

*Editor's note: Mr. George's was one of several letters we received about unresponsive technical support at Packard Bell. In its response to customer and*

Consumer Watch inquiries, Packard Bell indicated that delays in returning customer service calls were "due to tremendous growth we've experienced in the past year and the inability to forecast demand." The company has since added 85 employees to its technical support staff.

Although the additional staff members are a step in the right direction, it's too soon to tell if Packard Bell has turned its problems around. Consumer (continues)

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Circle 36 on reader service card

### SERVICE EXCELLENCE

These days, when most calls to computer companies result in frustration from having to talk to automated answering systems and then being left on permanent hold, I have found a refreshing exception in WLT Systems, maker of the PC Express line.

Recently we ordered two systems—a 286-based and a 386-based computer—from WLT Systems. All equipment included a three-year parts and labor guarantee.

When the equipment arrived, everything (including all accessories) worked perfectly, but we did have some questions. When I called WLT Systems, I encountered a live human being right from the start. We've made several subsequent calls, and each time we obtained an answer in a matter of minutes. I once had to wait when the proper person was briefly delayed, but he returned my call in less than an hour.

This type of response and service has certainly given us confidence in WLT Systems and its PC Express products.

David Fusco

VP Operations, Music  
Unlimited  
Arlington, Texas



Watch will continue to monitor the quality of service provided to Packard Bell customers in the coming months.

**Buying Mail Order for Overseas Military Personnel? Use the Postal Service**

Last year I sent an order to Software Publishing Corporation to upgrade my copy of *PFS:First Publisher*. The charge for the upgrade (\$51.50) showed up a short time later on my Visa bill. When I had not received the product a few weeks later, I sent a letter to SPC's customer service department asking that they check on the status of the order and requesting a demo disk of the new version of *Professional Write*. I received neither an answer to my letter nor the demo disk. I sent another letter to the president of SPC and have not received a reply to it either.

*Patrick J. Freel*  
Chief Warrant Officer  
U.S. Army

*Editor's note: According to SPC, Officer Freel was sent his update, but the carrier had difficulty delivering the package to his APO (Army Post Office) address. Upon discovering the problem, SPC reshipped the package via first-class U.S. mail. According to a spokesman for the Joint Military-Postal Authority in San Francisco, any mail-order purchases for overseas military personnel should be sent this route. Packages ordinarily should arrive in four to seven days. During peak holiday periods or times of war, the shipping time is considerably longer. Whenever possible, also list a domestic address and phone number that the mail-order firm can contact should any problems arise with the order.*

**A Quick Response**

In January *Consumer Watch* ran a letter from an Artisoft customer who was having difficulty resolving an ongoing problem with his *LANtastic* network.

The item should have indicated that the problem had been resolved.

Says Mike Gaudreau in a follow-up letter, "I am pleased to inform you that Artisoft rectified the problem shortly after receiving your letter. Since the dealer installed the network using his own cable and the Artisoft representative who worked on the problem is no longer there, we will never know the cause of my problem. Artisoft supplied all new cable, new boards, and one year of technical support at no charge. I am very pleased with *LANtastic* thus far and would recommend the product."

*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. Letters with the broadest possible interest will be published. ☉*

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# MANAGER'S FILE #1

## Taking the Pain Out of PC Use

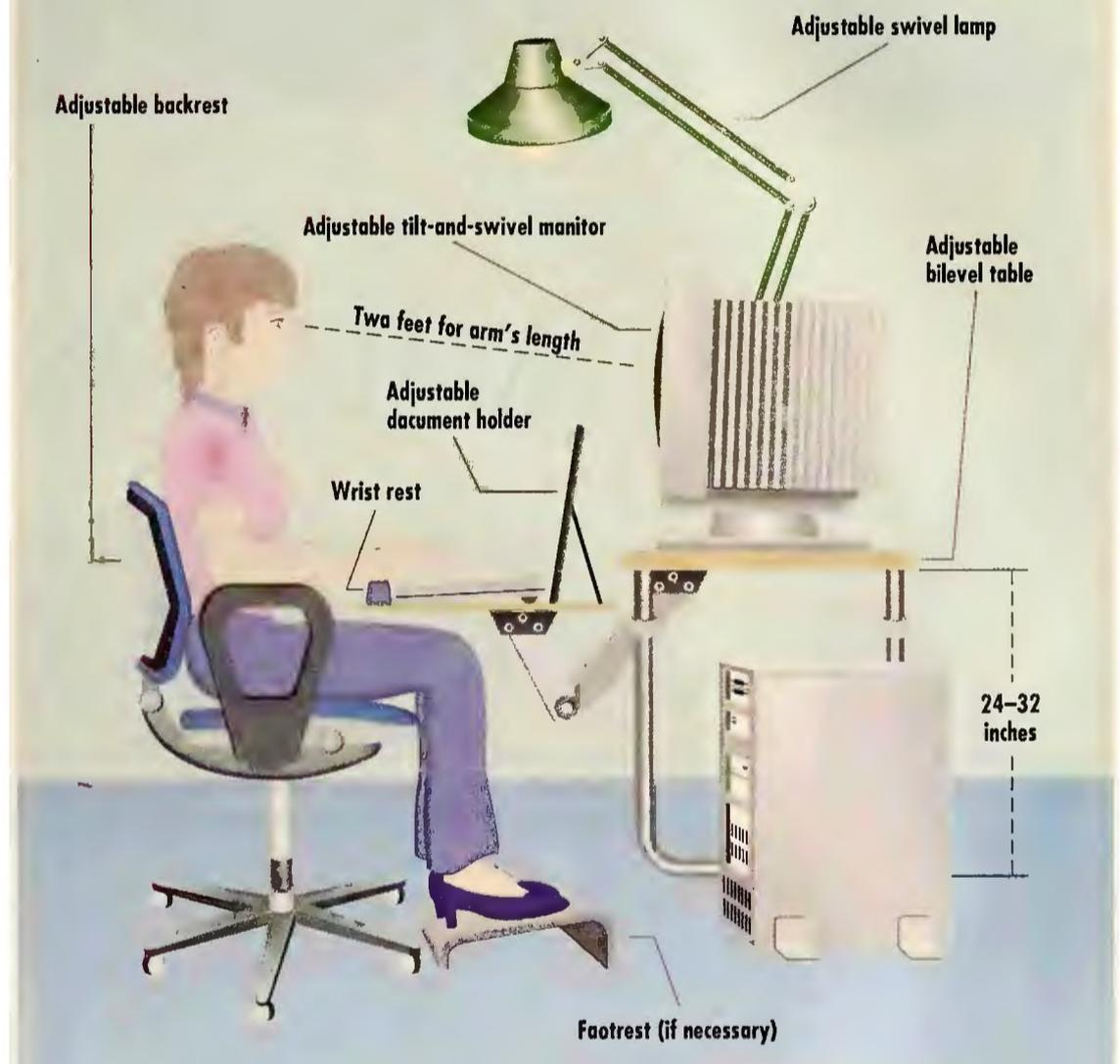
In December of last year, the San Francisco Board of Supervisors passed landmark VDT regulations requiring employers with 15 or more employees to upgrade or replace workstations and equipment to address the special needs of computer users. Desks, chairs, computer screens and keyboards, even office-wide lighting may ultimately need to be replaced as a result of the ordinance.

Although the first of its kind in the nation, the new law indicates a growing awareness on the part of computer users, employers, and government officials of the myriad health problems associated with the rush to automate the office. Eyestrain, headaches, and strain and inflammation of muscles, joints, and tendons in the wrists, hands, neck, back, arms, and legs have all been associated with extended VDT use in improper settings. Horror stories abound about computer users who have been disabled by excruciating pain in the arms, wrists, and hands from carpal tunnel syndrome, and thousands more PC users complain of persistent aches and pains due to extended hours spent tapping at the keyboard.

Given the widespread use of PCs in organizations of all sizes, one point is abundantly clear: This isn't just an employee issue or a management issue. Concerns about health problems resulting from poorly designed PC workstations cut across job descriptions. Workers' compensation and disability claims for computer-related health problems continue to rise, and while data-entry-intensive positions are the most likely candidates for such injuries, writers, editors, artists—anyone whose job involves heavy PC use—can suffer injuries that keep them off work for days, weeks, or months.

Many of the musculoskeletal and vision problems associated with heavy VDT use can, however, be prevented

### Essentials for Safe Computing



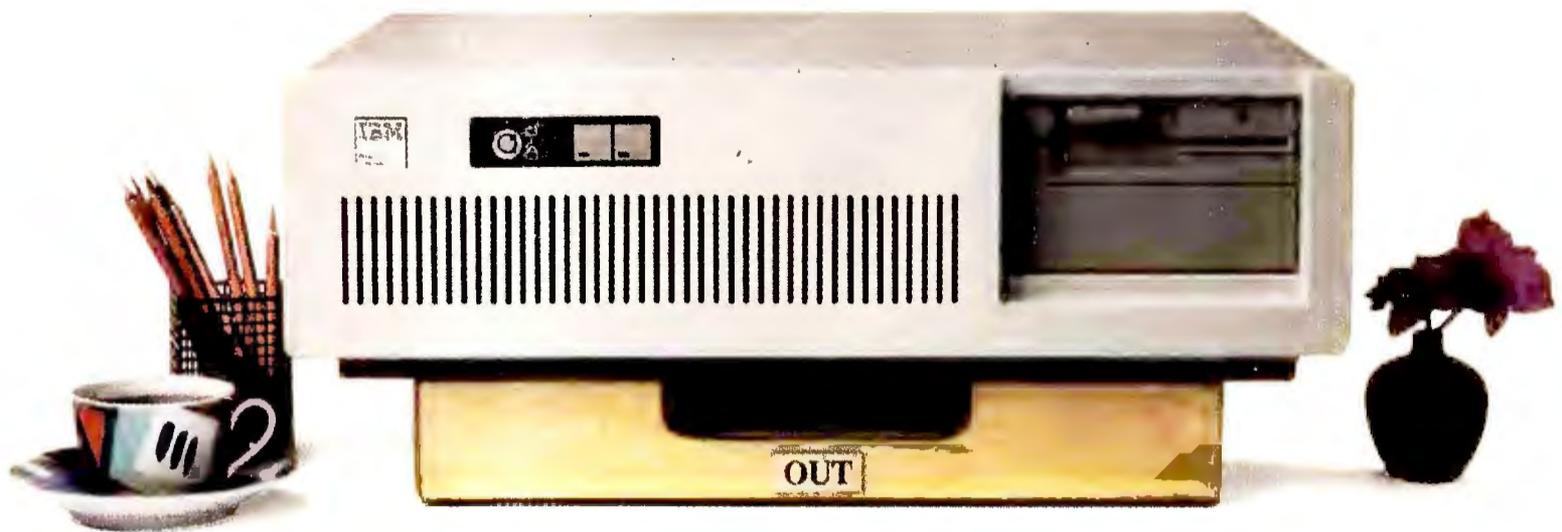
#### KEY ELEMENTS OF A WELL-DESIGNED WORKSTATION

- ✓ Adjustable chair with good mid- and upper-back support
- ✓ Adjustable bilevel terminal table
- ✓ Padded and detachable wrist rest
- ✓ Copy holder
- ✓ Good lighting, including task lighting when needed
- ✓ Antiglare shields (or properly shielded windows to prevent glare on monitors)
- ✓ Thin, detachable keyboard
- ✓ Adequate knee clearance
- ✓ Adequate work space
- ✓ Footrest
- ✓ Printer noise shields (if printers are adjacent to work areas)

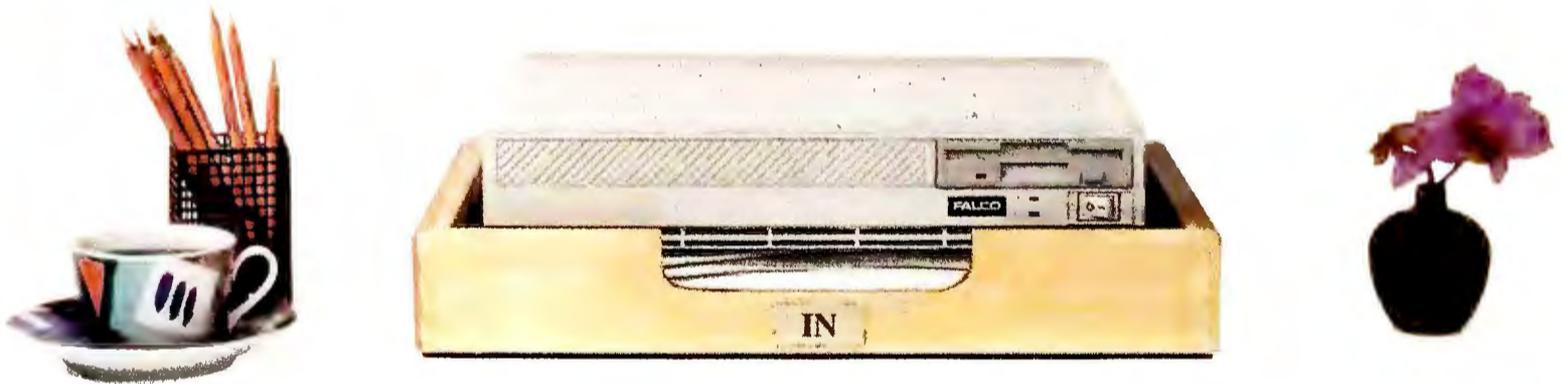
with a little common sense, adjustment of work habits, and the installation of office equipment built for the computing-intensive jobs of the 1990s. A word of caution, however: Before buying any

products—whether antiglare screens for PC monitors or new chairs and workstations—read all the literature carefully and then try out the equipment in your office. ☺

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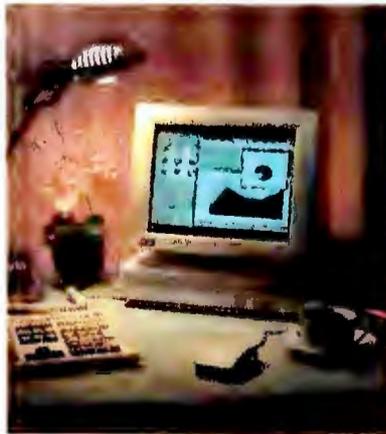


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Edited by ERIC BENDER

## OS/2 Relegated to "High End"

# Microsoft Sets Stage for Windows Reign

### *Rift With IBM Over System Software Steadily Deepens*

**O**S/2 is Dead. Long Live OS/2."

Like actors in a royal drama, Microsoft officials in January formally buried OS/2, the operating system that they had hailed as the imminent heir to DOS until last year. In its stead, they unveiled an ambitious and controversial plan to enhance the *Windows* operating environment with many of OS/2's most significant features and to build an entirely new version of OS/2 with more resemblance to high-performance network operating systems like UNIX than to the current desktop OS/2.

"We want to make *Windows* the best it can be" for the vast majority of business users, says Steve Ballmer, Microsoft's senior vice president for systems software. Acknowledging that OS/2 sales have

come nowhere near predictions made when the operating system was first released in 1987, Ballmer also notes that *Windows 3.0* sales have exceeded the company's wildest expectations—2,250,000 copies in the last seven months of 1990, compared with 300,000 copies of OS/2 from 1987 through 1990.

Most of those copies of OS/2 went to support network-oriented programs (such as Microsoft's own *LAN Manager*), and in-house development efforts in Fortune 500 firms. Meanwhile, *Windows 3.0* sales have sparked a boom in off-the-shelf *Windows* application packages like word processors, spreadsheets, and business graphics. *Windows* software sales should easily over-

take Macintosh software sales this year.

Microsoft, which made about 50 percent of its \$1.5 billion in revenues in applications last year, now will push its ambitious *Windows* plans one step further—despite the prospect of angering IBM, its long-time development partner. "Microsoft has stopped changing its strategy to mollify other companies," says *PC Letter* editor Stewart Alsop.

### Windows on Every Desktop

Microsoft officials outline a three-pronged plan of attack in which DOS and *Windows* will assume the role of mainstream desktop operating system. OS/2, meanwhile, will be relegated to high-end uses—for example, network server applications and workstation-

level desktop programs.

Sometime around midyear, Microsoft will release *Windows 3.1*, which will feature some performance and cosmetic improvements, including built-in scalable fonts. More important, DOS 5.0 will appear on the scene around the same time, providing memory-management features that will improve the way that *Windows* runs on today's 286 and 386 machines.

In the second half of 1991, Microsoft will start shipping

## Windows Soars Ahead of OS/2

Worldwide system software shipments in thousands



	Windows	OS/2	DOS
1989	840	150	14,100
1990	2000	300	16,100
1991	3000	1100	17,300
1992	5300	3000	17,300

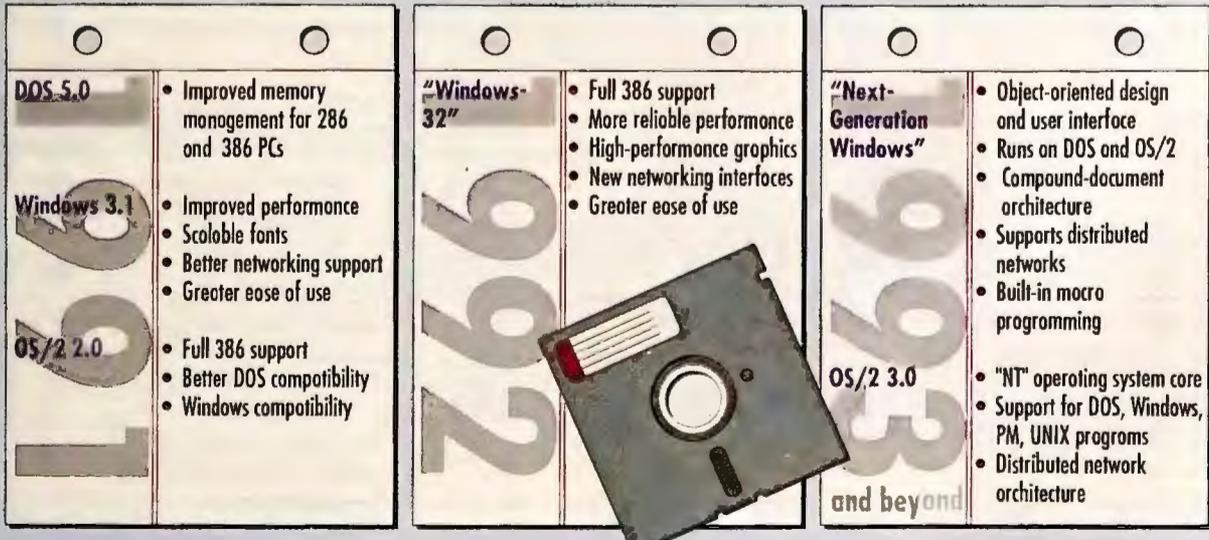
KEITH BAUMANN

While DOS easily remains the dominant PC operating system software, *Windows* is becoming far more popular than OS/2 among users seeking graphic environments, according to Dataquest estimates.

to developers an early 32-bit version of *Windows* that will fully exploit the 386 chip and offer more reliable performance, improved networking capabilities, an easier user interface, and enhanced graphics features found now only in OS/2's Presentation Manager.

When that version of *Windows* becomes available to users, probably in 1992, software developers will face a dilemma (see *Microsoft*, p. 60)

## Microsoft's Windows-First Strategy



Operating System	Key Features
DOS 5.0	<ul style="list-style-type: none"> <li>Improved memory management for 286 and 386 PCs</li> </ul>
Windows 3.1	<ul style="list-style-type: none"> <li>Improved performance</li> <li>Scalable fonts</li> <li>Better networking support</li> <li>Greater ease of use</li> </ul>
OS/2 2.0	<ul style="list-style-type: none"> <li>Full 386 support</li> <li>Better DOS compatibility</li> <li>Windows compatibility</li> </ul>
"Windows-32"	<ul style="list-style-type: none"> <li>Full 386 support</li> <li>More reliable performance</li> <li>High-performance graphics</li> <li>New networking interfaces</li> <li>Greater ease of use</li> </ul>
"Next-Generation Windows"	<ul style="list-style-type: none"> <li>Object-oriented design and user interface</li> <li>Runs on DOS and OS/2</li> <li>Compound-document architecture</li> <li>Supports distributed networks</li> <li>Built-in macro programming</li> </ul>
OS/2 3.0 and beyond	<ul style="list-style-type: none"> <li>"NT" operating system core</li> <li>Support for DOS, Windows, PM, UNIX programs</li> <li>Distributed network architecture</li> </ul>

Although the plan will take several years to unfold, Microsoft has mapped out a comprehensive strategy to radically improve *Windows* and make it the centerpiece of the next-generation OS/2 3.0. Time frames are approximate; Microsoft has not committed to specific release dates.

## Microsoft

(continued from p. 59)

lemma: whether to ignore the environment's new 386-specific features in order to maintain compatibility with 286 PCs, or to take advantage of them in their programs and thus begin to part ways with the past. "A lot of companies would prefer to shift into 386 mode," says Russ Werner, Microsoft's general manager of systems marketing. "We'll have to see what the market profile will be."

### Windows on OS/2

IBM will continue developing the current 286 version of OS/2 as well as OS/2 2.0, a full 32-bit version due out this year. But sometime in 1993 or beyond, Microsoft will concentrate on supporting the 386 chip in *Windows* and release OS/2 3.0. This version will include a new operating system core (called NT, for "new technology") that will run on 386 as well as next-generation RISC processors. OS/2 3.0 will process data on more than one chip at a time, feature built-in networking, and offer users easy access to all the information on a network, regardless of where it resides.

*Windows* remains integral to this vision (which Microsoft chairman Bill Gates calls "information at your fingertips"). A next generation of *Windows* that includes many of the object-oriented concepts found in Hewlett-Packard's *New-Wave*, NeXT's NeXTstep, and Go's PenPoint environments not only will run on a future version of DOS but will serve as the core interface for OS/2 3.0 as well.

Microsoft plans to let Presentation Manager and UNIX programs run on top of OS/2 3.0 as well. But it may also release a stripped-down version of OS/2 3.0, tentatively dubbed "Advanced *Windows*," that

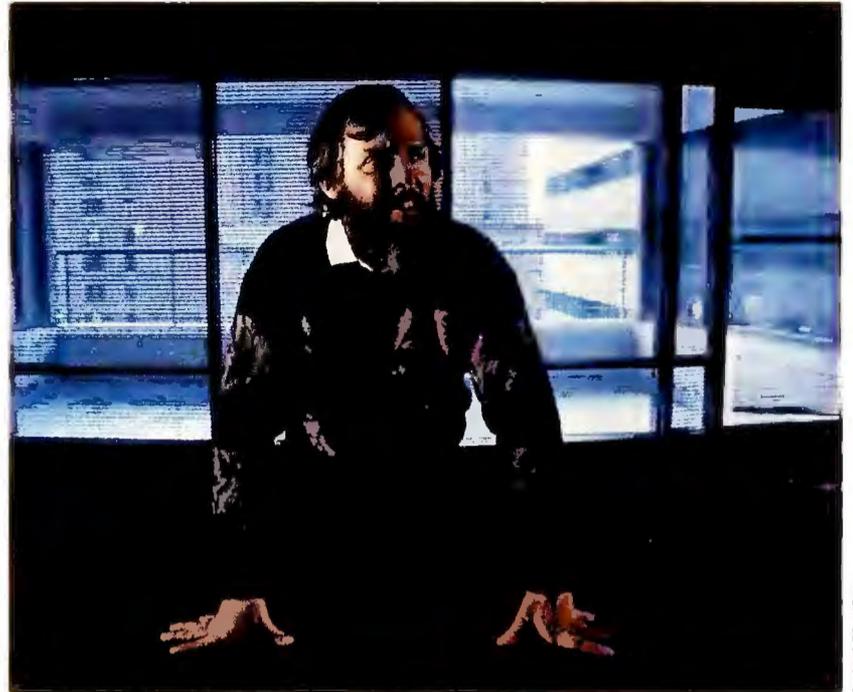
will include only the NT operating system core and the *Windows* interface. Some observers see "Advanced *Windows*" as Microsoft's trump card in its contest with IBM for control of operating system standards.

### IBM Begg to Differ

Although Microsoft reports that most developers are enthusiastic about its new operating system strategy, the plan also has its dissenters.

First among these is IBM, which points out that the very features Microsoft is trumpeting for *Windows* in 1992 will appear in OS/2 2.0, shipping this year.

Moreover, IBM fundamentally disagrees with an approach that encourages developers to bet all their dollars on the DOS-bound *Windows* interface. "IBM would like to see higher-level programming interfaces that are not so sensitive to the operating system," says Lee Reiswig, assistant general manager for programming at IBM's personal systems group. To that end, Big Blue has invested approximately \$100 million in Patriot



SETH RESNICK

Held down by its DOS roots, *Windows* soon "will face new technology that will promote far greater ease of use," says Lotus chief scientist David Reed.

Partners, a joint venture with Metaphor Computer Systems formed to build a next-generation computing environment that will permit developers to create programs that run on both OS/2 and UNIX.

Nor is IBM pleased with the prospect of a Microsoft-authored local area network strategy, even if it purports to ease networking headaches for both users and developers. "If Microsoft tries to force LAN

*Manager* as a standard on the industry, there will be a very negative reaction," challenges Reiswig.

### Will Windows Run Out of Steam?

Other developers think that *Windows* will start showing its age in comparison to innovative work being done by Go, NeXT, and Patriot Partners.

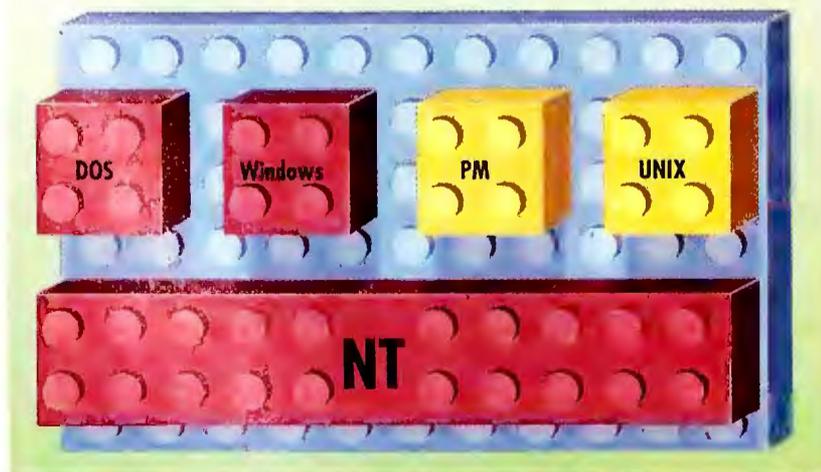
"*Windows* with DOS will be a victim of its own success," says David Reed, Lotus's chief scientist. "It's an old technology that has to face the issue of compatibility with the past. But within a year or so, *Windows* will face new technology that will promote far greater ease of use. It will be hard for *Windows* to change fast enough to support these new ideas. Ultimately, it will lose its lead."

Still, Microsoft is sanguine about a strategy that pulls today's *Windows* applications into tomorrow's computing environments. Says Russ Werner: "*Windows* is truly a phenomenon. If we can move that applications base so that it spans all the way from DOS to high-end systems, then that will be a very powerful story."

—Richard Landry

## OS/2 3.0—Windows by Another Name

The next generation of OS/2 will be built especially to run DOS and Windows.



OS/2 3.0 will include a new UNIX-like operating system core called NT (for "new technology"), with "snap-in" support for DOS, Windows, Presentation Manager, and UNIX graphical interfaces. Microsoft may also release "Advanced *Windows*," a stripped-down version of OS/2 3.0 that includes only the NT operating system core, the *Windows* environment, and DOS support.

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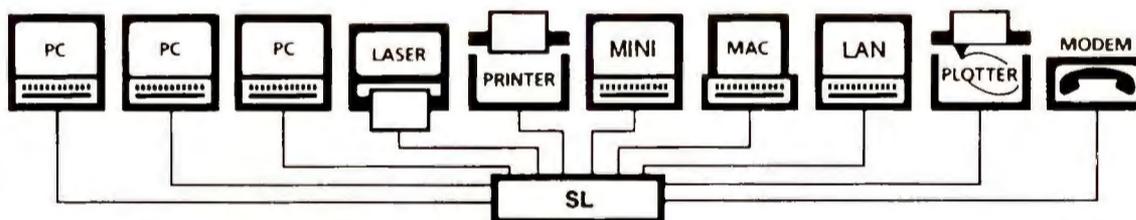
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Both include 15 ft. serial null-modem cable

**User Upgradable Memory:**  
From 256KB to 4MB buffer

**Any Combination of Printers or PCs:**  
All ten SL or SLP ports can be software configured as either input or output.

**Automatically Routes and Buffers Data:**  
Automatic switching and queuing of jobs; automatically converts data from parallel-to-serial or serial-to-parallel

**115,200 bps PC-to-PC File Transfers:**  
Transfer files serially between PCs up to 115,200 bps; buffer serial data to the SL several times faster than normal 9,600 bps

**Pop-up Menu via Hotkeys or Mouse:**  
Keyboard selection of printers and many other control functions; pop-up is for convenience, but is not required

**Simple Installation:**  
Plug in your cables; if desired, run the installation software for the pop-up menu

# Electronic Mail Grows More Flexible

*Microsoft, Lotus, WordPerfect Enter Exploding Market*

If you think your office can't live without electronic mail, wait until you see what's around the corner.

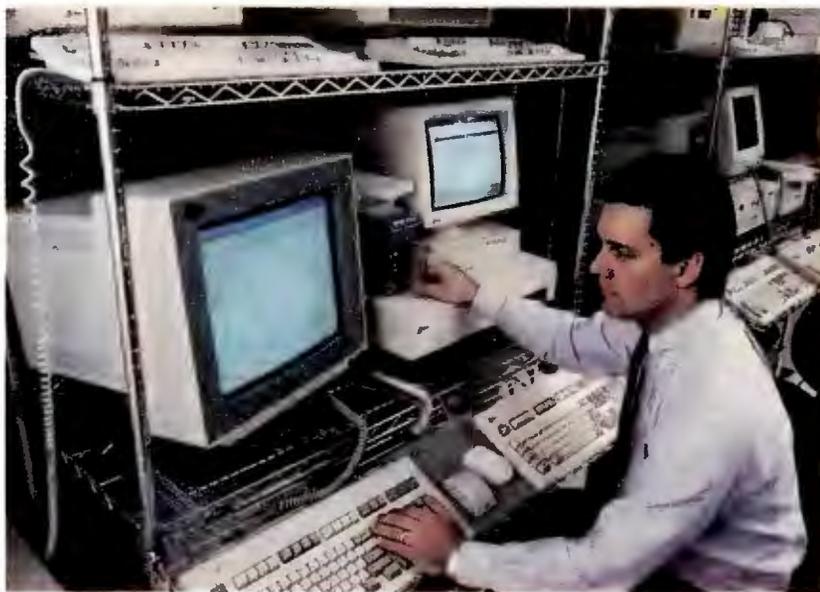
Meeting scheduling, automatic filing of expense reports, voice mail, group editing, deletion of junk messages, prioritizing of messages, automatic replies to routine inquiries, forms management—you name it, and it's on the way.

Vendors increasingly are crafting modular open-architecture packages that allow E-mail to be integrated closely with other applications and are painstakingly pulling together far-flung nets. Their progress increases the importance of an application that many organizations already describe as lifeblood.

E-mail is as "important to the way we work as the telephone," says Stuart Bard, former vice president for office automation at Balcor, a Chicago real estate firm. When Balcor installed *The Coordinator* from Action Technologies, Bard designed applications with messaging capabilities at their very core, in effect redesigning the way his company did business. "We were able to reduce our corporate staff from 700 to 450 and still maintain the size of our asset base," he says.

## A Microsoft-Sized Market

Offering tremendous savings over electronic mail on larger systems plus greatly improved user interfaces and functionality, PC-based electronic mail should grow rapidly. Eric Arnum, editor of the *Electronic Mail and Micro Systems (EMMS)* newsletter in Forest Hills, New York, expects the number of E-mail servers in use—currently 160,000 nationwide—to triple over the



American Airlines needs "every imaginable gateway to every imaginable system," says Eric Savoldi.

next two years.

To date, only relatively small vendors have seriously pursued this potentially huge market. Novell doesn't sell its own E-mail with NetWare (although it's working hard on E-mail underpinnings). Net leaders 3Com and Banyan lost dominant positions as third parties came up with more feature-laden and flexible products. Among the contenders are *cc:Mail* from cc:Mail in Mountain View, California; *The Coordinator* from Action Technologies in Alameda, California; *Da Vinci eMail* from Da Vinci Systems in Raleigh, North Carolina; *Higgins* from Enable Software's Higgins Group in Alameda, California; *Network Courier* from Consumers Software in Vancouver, British Columbia; and *TOPS* from Sitka in Alameda, California.

However, this fast-growing market now gets serious attention from Microsoft, Lotus, WordPerfect, and other major players.

Microsoft, which has offered *Microsoft Mail* for the Macintosh for several years, should fill the gap in its PC

product line soon. The giant firm is "putting together a very impressive desktop strategy" and could well become an E-mail market leader, says David Marshak of Patricia Seybold's Office Computing Group in Boston. It also will

help establish crucial software standards.

Lotus Development already offers an E-mail variant, although *Lotus Notes* is marketed instead as a group communications package. Corporations employ *Notes* to build in-house applications that knit together communications with other packages. Eric Sall, director of applications marketing at Lotus, claims a "tremendously successful" first year for *Notes* and says that Lotus is putting many more resources behind it. "This is a very strategic product for us," says Sall.

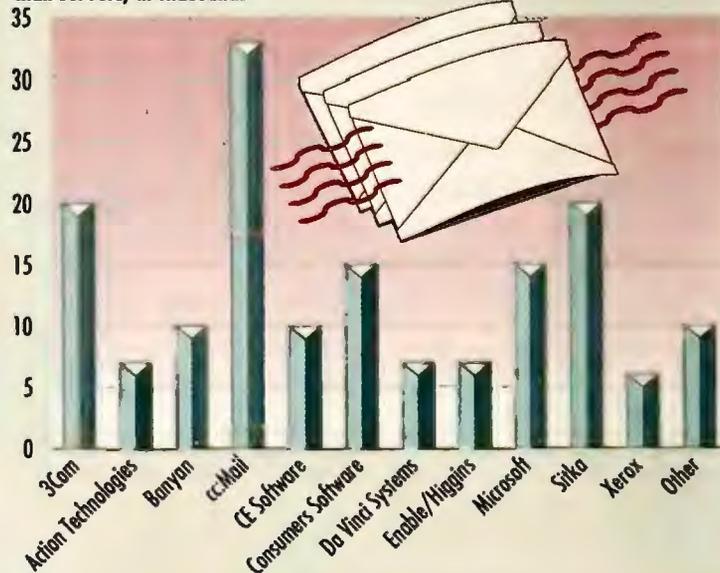
And *WordPerfect Office*, a desktop organizer/E-mail package, quietly sold more than 375,000 copies in the second half of 1990 (see "The WordPerfect Office," February 1991).

## The Corporate Mail Call

In small businesses or corporations where departments are fairly autonomous, support (see *Electronic*, p. 64)

## No One Owns the PC E-Mail Market

The 1990 year end installed base of personal computer-based electronic mail servers, in thousands



About 160,000 personal computer network electronic-mail servers have been installed to date, according to the *Electronic Mail and Micro Systems* newsletter. No vendor dominates sales, although some observers expect Microsoft's share to soar once it adds a PC product to its current Macintosh-only line. EMMS estimates that the number of user mailboxes has risen to 3 million.

# The Drudgery Of Image Processing Just Went Out The Window

*Automatic Filters* remove spots, sharpen resolution, adjust brightness and contrast, blend, and equalize scanned images.



*Zoom In and Zoom Out* in multiple levels while accessing all tools, retouching features, and special effects.

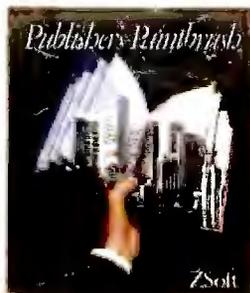
*Special Effects* let you tint, smudge, add patterns and gradient fills, create 3-D effects, style text, give images a mosaic look, simulate "motion blur," and more.



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Circle 320 on reader service card

## Electronic

(continued from p. 62)

for E-mail is not a major problem. But many large corporate users hope for a Microsoft, a Lotus, or a WordPerfect to handle their more complex requirements. Eric Savoldi, a systems engineer with American Airlines in Dallas, notes that "we need every imaginable gateway to every imaginable system."

"The majority of E-mail packages are sold by small companies that don't have anywhere near the support staff corporations need to feel comfortable," says Mike Drips, a PC strategic technical analyst for U.S. Sprint in Kansas City, Missouri. "Many companies want national [or] international support, and that is where Microsoft's offering is going to look very attractive."

John Deere & Company in Moline, Illinois, has over 15,000 employees on an E-mail system that occupies an entire IBM 3090 mainframe. A year ago, the firm tested the top PC E-mail packages. It found "very significant cost savings," says Tom Waldman, project manager, who is expanding the pilot throughout the rest of the company. The E-mail vendors lacked the expertise to tie together John Deere's diverse lineup of computers, however, so Waldman turned to an outside specialist to implement *cc:Mail*.

### Moving to Modular Software

PC-based E-mail systems come in three layers: the front-end application, the mail-transport engine (which gets a message from one user mailbox to another), and the connectivity layer (which contains gateways that link up to other E-mail systems).

When you go shopping for an E-mail package, you typically get all three layers from the same vendor. But some-

times one of the layers doesn't answer your needs. (This is likely to be the connectivity layer, which may lack a gateway you require.)

In theory, future PC users will be able to mix and match all these components to come up with the perfect E-mail package for them. That's easier said than done, however. One problem is the lack of a single standard mail-transport device. Novell and many others back the Message Handling System (MHS) that comes with NetWare, but most E-mail suppliers built proprietary mail transports before MHS became a factor. These suppliers say MHS is not robust enough, although they have added gateways to MHS systems.

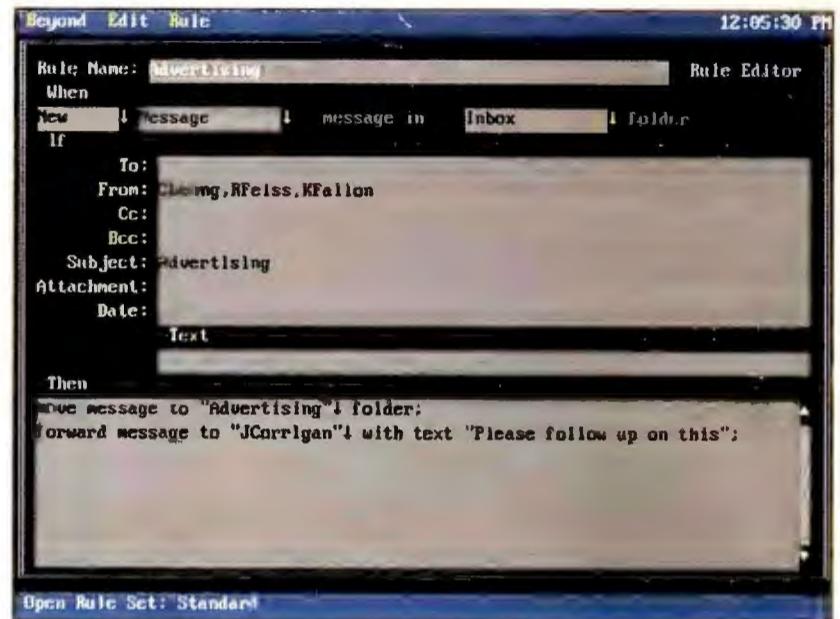
Other alternatives come through X.400, an evolving set of specifications for writing mail transports, which is being forged by the CCITT international standards body.



Small E-mail vendors lack the support that corporations require, says U.S. Sprint's Mike Drips.

Most firms believe that X.400 is the long-term answer and that support for MHS eventually will be merged into it.

In the meantime, several E-mail vendors recently published application programming interfaces for their packages. Corporate customers are exploiting these interfaces to incorporate E-mail into their



BeyondMail offers a glimpse of E-mail's future: individually customized help for handling your mail.

internal office-automation applications. While most non-E-mail application vendors don't want to be bothered with adding E-mail links, that's changing, as shown by Software Publishing's new *Professional Write for Windows* (see "The E-Mail Word Processor" in this issue).

user on the network, no matter what application you're in.

While groupware packages offer these abilities today, "you will eventually see messaging penetrating the entire desktop," says John Morey, Microsoft's group product manager for work-group applications.

### Mail From Beyond

For a glimpse of what a modular E-mail system will look like, nearly everyone points to *BeyondMail* from Beyond of Cambridge, Massachusetts. A front end to existing E-mail packages, *BeyondMail* gives you striking capabilities for handling your mail.

The package helps you manage your E-mail through rules you set up yourself. You can automatically forward mail to other employees, prioritize messages into different files, or even fire off replies (when you're traveling, the package can answer messages marked "urgent" with a note that details your schedule and where you can be reached while you're on the road). And *BeyondMail* does all this on top of existing MHS-based systems. —Alice LaPlante

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

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Pacioli 2000 is the hottest new accounting package on the market. Designed by J. M. Hurtado, who started the accounting software revolution in 1985 with DacEasy® Accounting, Paciolli 2000 is the FIRST full-featured, network-ready accounting software for only \$49.95. It gives you everything you need while saving you hundreds, even thousands of dollars over other software. But you don't have to take our word for it. Listen to the experts.

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*New York Times, July 1, 1990*

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*Computer Reseller News, April 23, 1990*

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*PC Week, August 27, 1990*

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18111 Preston Rd., Suite 500  
Dallas, Texas 75252**

Minimum Hardware Requirements: IBM or compatible computer with 640Kb, hard disk, monochrome or color monitor, mouse optional, MS-DOS 2.1 or later for single users (3.1 or later for networks), 132 column dot matrix printer in compressed mode

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Circle 7 on reader service card

# PC WORLD STREET PRICE LIST

What to pay at retail for PCs, based on IDC's PC Pricing Report survey.

PC WORLD	National				Metropolitan								
	List	Average	Low	High	Boston	Chicago	Dallas/ Ft. Worth	Los Angeles	Miami/ Ft. Lauderdale	New York	San Francisco/ Bay Area	Washington D.C.	
<b>80286-based desktop PCs</b>													
AST Brava/286	\$1695	\$1256	\$850	\$1526	\$1405	\$1217	\$1121	\$1119	\$1269	\$1286	\$1384	\$1244	
Cmpaq Deskpro 286n	\$2399	\$1808	\$1349	\$2159	\$1780	\$1776	\$1780	\$1760	\$1822	\$1872	\$1791	\$1766	
Dell 210	\$1500	\$1500	n/a	n/a	\$1500	\$1500	\$1500	\$1500	\$1500	\$1500	\$1500	\$1500	
IBM PS/2 50Z-031	\$2745	\$2011	\$1595	\$2900	\$2164	\$1963	\$1963	\$1865	\$2224	\$2042	\$1836	\$2014	
Tandy 2500 XL	\$2098	\$2098	n/a	n/a	\$2098	\$2098	\$2098	\$2098	\$2098	\$2098	\$2098	\$2098	
<b>80386SX-based desktop PCs</b>													
AST Brava/386SX	\$2845	\$2102	\$1450	\$2799	\$2245	\$2229	\$2311	\$1737	\$2367	\$2059	\$2175	\$2026	
Cmpaq Deskpro 386s	\$3199	\$2370	\$1855	\$2879	\$2332	\$2523	\$2524	\$2248	\$2548	\$2445	\$2289	\$2304	
Dell System 316 SX	\$1700	\$1700	n/a	n/a	\$1700	\$1700	\$1700	\$1700	\$1700	\$1700	\$1700	\$1700	
Epsan Equity 386SX Plus	\$2999	\$1912	\$1450	\$2350	\$1864	\$2032	\$1811	\$1625	\$2137	\$1848	\$1874	\$1996	
IBM PS/2 55-061	\$3895	\$2731	\$1948	\$3110	\$2804	\$2647	\$2889	\$2783	\$2653	\$2595	\$2807	\$2675	
NEC PowerMate SX+x	\$2999	\$1841	\$1299	\$2500	\$1906	n/a	\$1677	\$1672	\$1929	\$1732	\$1886	\$1746	
<b>80386DX-based desktop PCs</b>													
AST Premium 386/25	\$5595	\$3815	\$2740	\$5036	\$4665	\$3625	\$3745	\$3342	\$4350	\$4420	\$4153	\$3879	
Cmpaq Deskpro 386/33L	\$9999	\$6863	\$4825	\$8000	\$7398	\$6966	\$7796	\$7230	\$7508	\$6540	\$6137	\$8214	
Epson Equity 386/25	\$5199	\$3426	\$2600	\$3999	\$3437	\$3458	\$3299	\$2860	\$3954	\$3869	\$3425	\$3607	
IBM PS/2 70-061	\$4745	\$3322	\$2476	\$3999	\$3358	\$3365	\$3258	\$3236	\$3341	\$3234	\$3282	\$3438	
IBM PS/2 70-A61	\$6245	\$4456	\$2995	\$5270	\$4664	\$4627	\$4385	\$4573	\$4182	\$4203	\$4368	\$4454	
Tandan 386/33	\$3879	\$3879	n/a	n/a	\$3879	\$3879	\$3879	\$3879	\$3879	\$3879	\$3879	\$3879	
Tandy 4033 LX	\$5898	\$5898	n/a	n/a	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	\$5898	
<b>80486-based desktop PCs</b>													
AST Premium 486/25E	\$8595	\$6198	\$4500	\$7736	\$7432	\$5760	\$5560	\$5461	\$6159	\$6693	\$7341	\$6195	
Cmpaq Deskpro 486/33L	\$13,999	\$10,479	\$8119	\$12,599	\$7398	\$10,622	\$10,375	\$9856	\$10,826	\$10,799	\$10,325	\$10,491	
Dell 425E	\$6000	\$6000	n/a	n/a	\$6000	\$6000	\$6000	\$6000	\$6000	\$6000	\$6000	\$6000	
IBM PS/2 95 XP	\$17,745	\$13,299	\$10,292	\$17,745	\$14,492	\$12,973	\$13,150	\$14,122	\$13,889	\$12,994	\$11,796	\$13,010	
NEC PowerMate 486/25E	\$12,499	\$8178	\$6489	\$10,570	\$7490	\$11,233	\$8200	\$6618	\$10,341	\$9225	\$7341	\$8016	
<b>Portables/laptops</b>													
Cmpaq LTE	\$2699	\$1930	\$1295	\$2429	\$1888	\$2099	\$1963	\$1934	\$2049	\$1873	\$1900	\$1846	
Cmpaq LTE/286	\$3499	\$2535	\$2000	\$3149	\$2535	\$2605	\$1963	\$2466	\$2591	\$2553	\$2466	\$2482	
Dell 320LT	\$3899	\$3899	n/a	n/a	\$3899	\$3899	\$3899	\$3899	\$3899	\$3899	\$3899	\$3899	
Epsan Equity LT-386SX	\$5598	\$3788	\$3175	\$4990	\$3603	\$4267	\$3727	\$3383	\$4176	\$3970	\$3383	\$3735	
IBM P70 386	\$7695	\$5601	\$4463	\$6639	\$5580	\$5,758	\$5333	\$5401	\$5623	\$5603	\$5581	\$5900	
Tashiba T1000SE	\$1499	\$1057	\$837	\$1349	\$1192	\$1190	\$1260	\$1032	\$1229	\$1015	\$1032	\$995	
Tashiba T3100e	\$4299	\$2997	\$2295	\$3869	\$2951	\$3373	\$3499	\$2872	\$3364	\$2733	\$2872	\$3076	

From an IDC survey of more than 180 computer dealers in eight cities. Figures are based on at least four price quotes for each machine; prices are based on manufacturer's standard configuration including keyboard but no monitor.

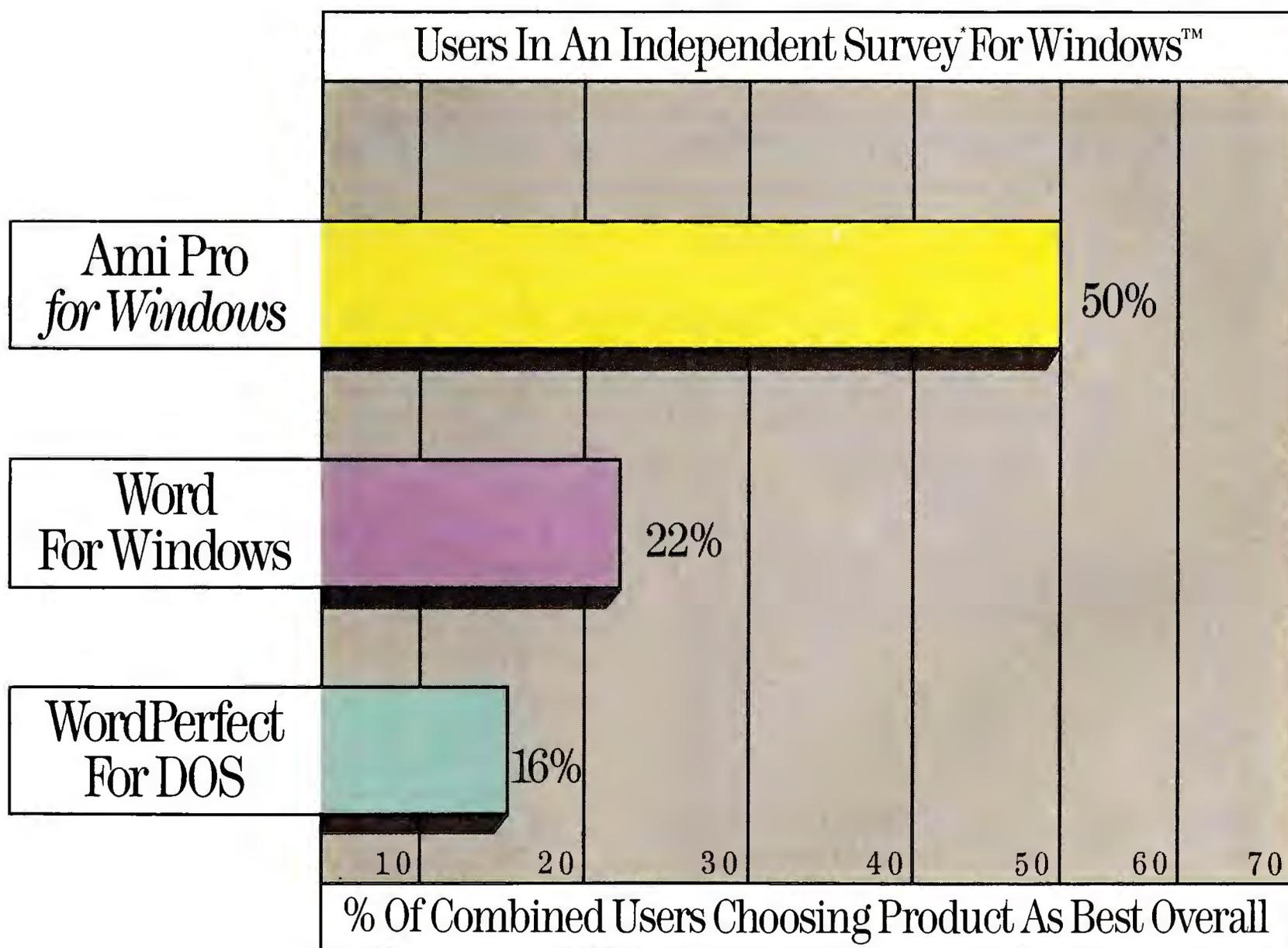
## L.A. and Dallas Come Out Ahead for Desktop Bargains

Retail pricing for SX-based desktops in eight metropolitan areas



Comparing average street prices for SX-based desktops in eight metropolitan regions, International Data Corporation's December survey found substantial differences.

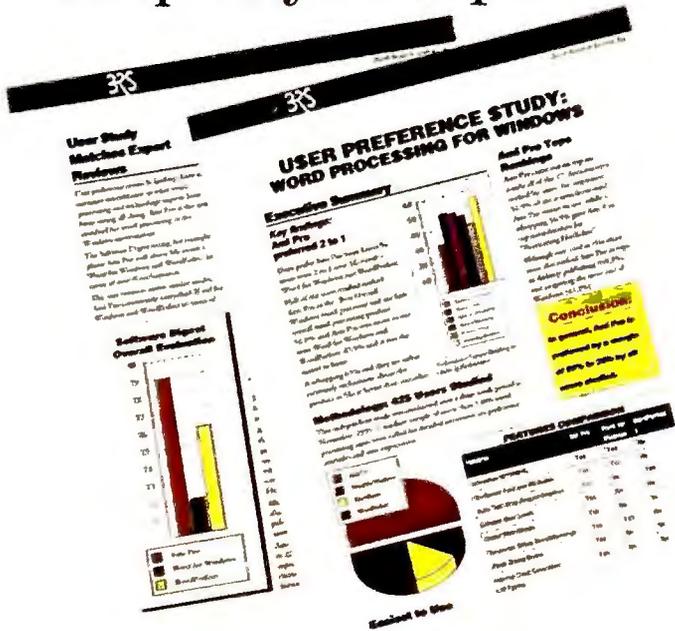
# There's only one word processor for Windows that's winning it all.



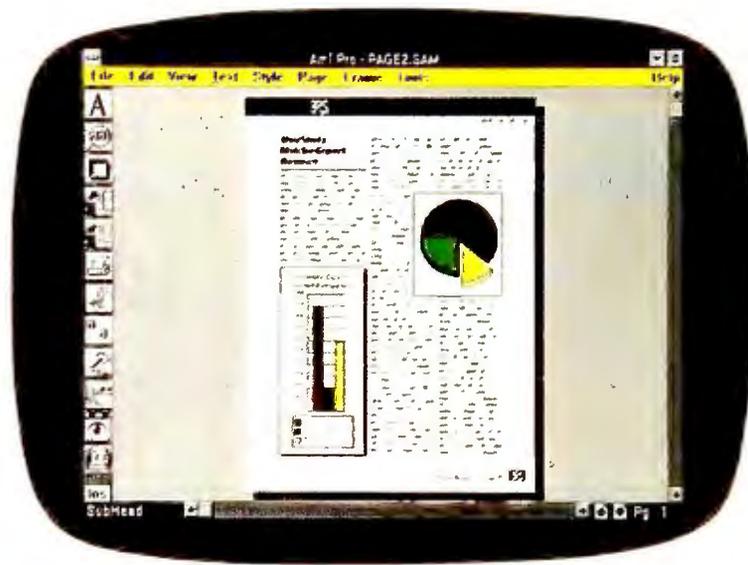
\*Independently conducted Windows word processing Usage & Attitude Study, November, 1990. Figures cited are among Word for Windows users that are also users or triers of Ami Pro.

# Ami Pro is winning

Preferred nearly 2:1  
for quality of output.



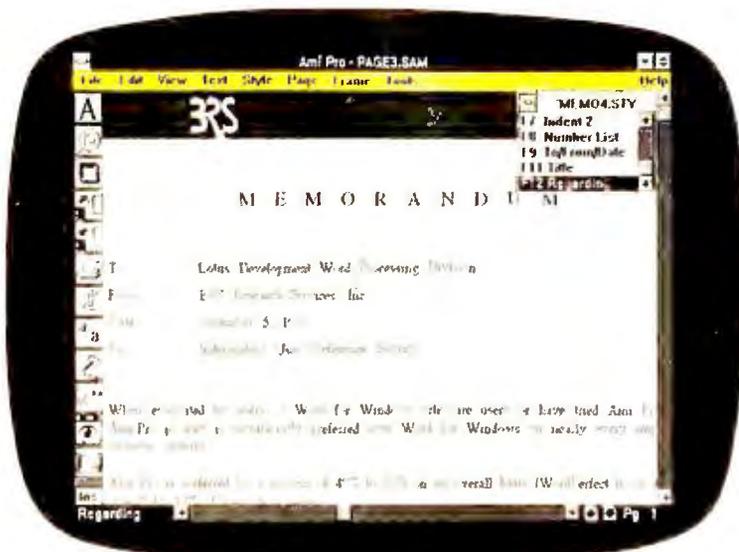
Preferred more than  
2:1 for ease of use.



Only Ami Pro makes word processing this easy, with features like truly interactive WYSIWYG that lets you edit in any of four page views, including full page view.

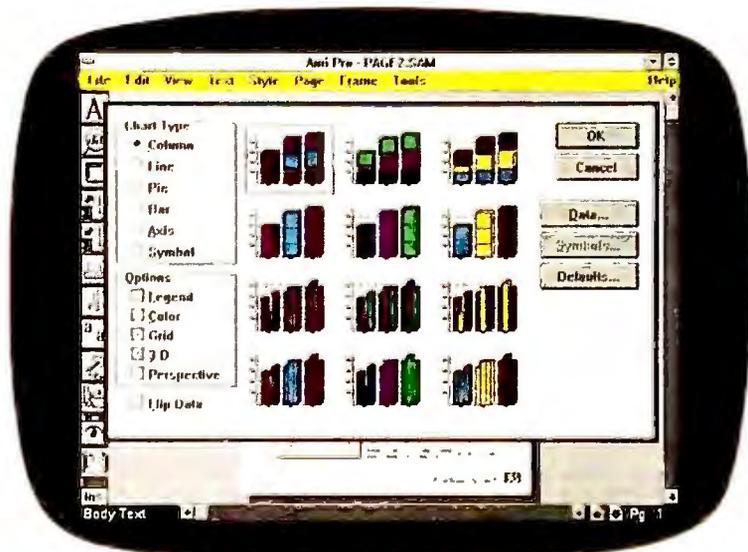
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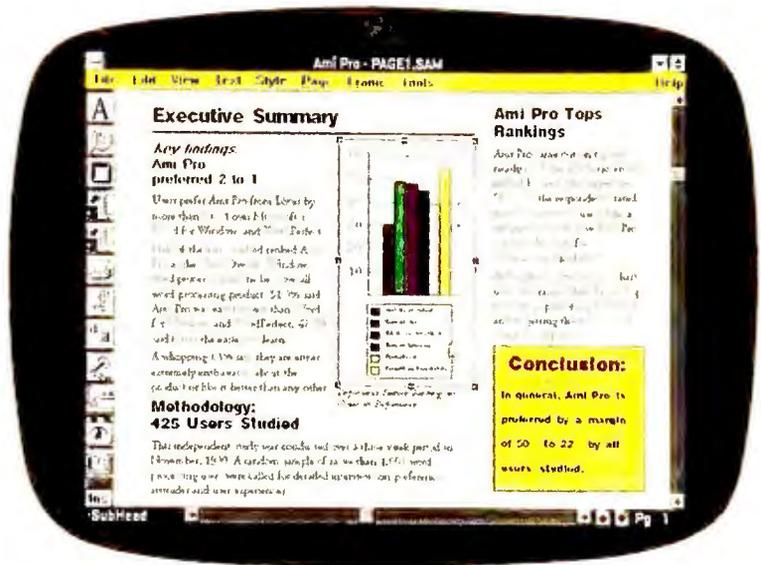
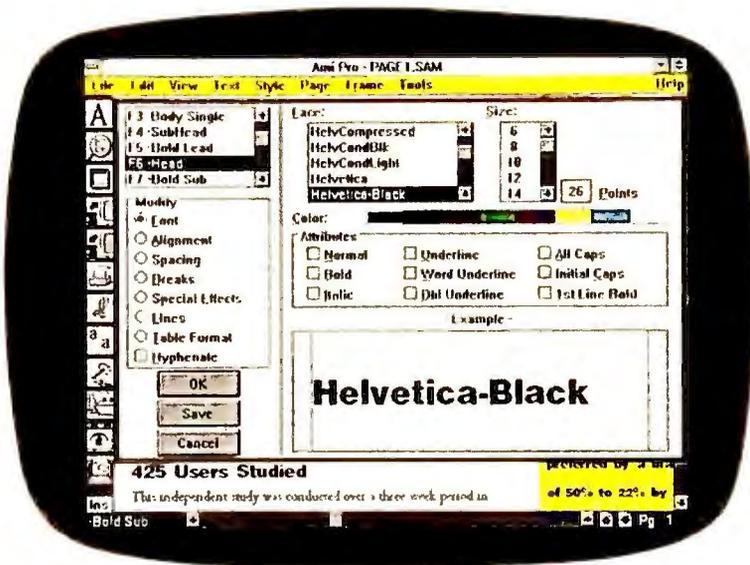


With its built-in graphics Ami Pro can instantly generate 168 varieties of presentation-quality charts and graphs. Just type in data, or import it from programs like Lotus® 1-2-3.\*

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for format flexibility.



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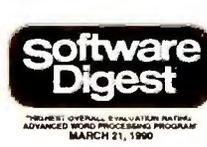
Our exclusive “frames” feature lets you quickly place headings or graphic elements anywhere on the page—then wrap text around them with one click of the mouse.

# And praise from experts.

With user preference this high, it's no surprise that Ami Pro has received top ratings from virtually all the industry experts, racking up such coveted awards as PC World's Best Buy, The Buyer's Assurance Seal from InfoWorld, PC Magazine's Editor's Choice and Software Digest's #1 overall rating for advanced word processors, including character based products.

Designed to take full advantage of the Windows environment, Ami Pro combines power word processing with the power to create professional documents. And with its icons and interactive features, it's incredibly easy to learn and use.

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- Legends • Multiple Styles Per Type • 7 Chart Types

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- Paragraph • Sentence • Top/Bottom of Screen • Word

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- Choose From Over 45 Functions • Quick Access to Features

## Customizable View Level

- 10-400% • Fully Editable

## Cut and Paste

## Date Insertion

- Today's Date • Date Printed • Date Last Edited • Definable Style

## DDE (Dynamic Data Exchange)

- Two-way • Paste Link • Text and Graphics
- Via Macro Language

## Defaults

- Backup Options • Date Styles • Dictionary Paths • Display Options • Document Path
- Draft Mode Colors • Footnote Options
- Hyphenation Hot Zone • Pair Kerning • Printer
- Icon Bar Icons • Undo Levels • View Level

## Delete

## Dialog Boxes

## Document Annotation

- Notes • Show/Hide • Go To Notes • Date/Time Stamp • Stacked Notes

## Document Descriptions

- Author Name • Operator Name • Revision Number • Creation Date • Revision Date
- Renameable Fields • User Defined Fields
- Display with Directory • Print with Document

## Drawing

- Cut/Paste Objects • Circles • Arcs • Squares
- Rectangles • Rounded Boxes • Diagonals
- Polygons • Polylines • Group Objects
- Snap-To Grid • Fill Patterns • Line Widths
- Text Rotation • Type Text

## File Import/Export

- AdvanceWrite • ASCII • DBase • DCA Final Form • DCA Revisable Form • DIF • E-Mail
- Enable • Lotus WKS, WK1, WK3 • Microsoft

- Word • Microsoft Word for Windows • Multimate • Navy DIF • Peachtext • Rich Text Format • Samna Word • Windows Write
- WordPerfect • WordStar • Wordstar 2000

## File Management Functions

- Copy • Rename • Delete • Move • Sorted File Listing

## Font Control

- Unlimited Number of Fonts • WYSIWYG
- Limited Only by Printer

## Footnotes

- Auto Numbering • Bottom of Page • Endnotes • Number Style Option • Reset Number Option • Separator Line

## Forms Capability

- Format Complicated Forms • Fill-In On-Screen
- Print on Preprinted Form • Protect Areas

## Frames

- Anchor to Text • Auto Text Wrap Around
- Background Shade • Contain Text or Graphics • Fixed Position On Page • Lines Around • No Text Wrap Around • No Text Wrap Beside • Overlay Frames • Repeat on Multiple Pages • Resize Frames

## Glossary

- Large Record Size • Speed Key Access

## Go To

- Any Page Number • Fast Next Item Access
- Go To Frame, Footnote, Note, Various Marks in Document

## Graphics Control

- Edit PIC Files • Drop Anywhere on Page
- Float Graphic w/Text • Place in Box • Proportional Scaling • Fit in Frame • Rotate in Single Degree Steps • X-Y Scaling • Gutter/Binding Margins

## Graphics Import

- CGM • EPS • HPGL • Lotus PIC • PCX
- TIFF • WMF

## Hard Space

## Headers/Footers

- Alternating • Floating

## Help

- CBT Tutorial Available • Context-Sensitive
- Indexed • Point & Shoot • Hypertext Linked
- Full Macro Documentation On-Line

## Hyphenation

- As-You-Type • Soft Hyphen • Consecutive Hyphen Control • On Paragraph Basis • Hot Zone

## Image Processing

- Control Brightness, Contrast of Scanned, Gray Scale TIFF Pictures • Sharpen Edges

- Smoothing • Invert Image

## Index Generation

- Generate from List • Mark in Text • Multiple Level Indexing • Hyper Links from Index Back into Document

## Insert/Typeover

## Kerning

## Line Numbering

## Line Spacing Control

## Macros/Programming Language

- On-Line Macro Documentation • Record/Play • Assign to Function Key • Assign to Menus • Create Menus • Variables • If • Go To Statements • Case Statements • For/Next
- Prompt for Input • Subroutines

## Math Calculations

## Measurements

- Centimeters • Inches • Picas • Points

## Merge

- From ASCII Files • From Comma Delimited Files • From DIF Files • From WK\* Files • From dBase Files • From Ami Pro File • Label Print Function • Preview Before Print • Three-Level Boolean Conditional Record Inclusion

## Open Multiple Documents

## Page Breaks

- Manually Inserted • With Paragraph Style

## Page Formatting Control

- Margins • Page Size • Snaking Columns
- Line Around Page • Line Between Columns
- Portrait/Landscape

## Page Numbers

- Any Location on Page • Reset Page Number
- Five Formats for Number

## Paragraph Styles

- Quick Access with Styles Box • With Function Key • Controls: Font, Alignment, Spacing, Page Breaks, Ruling Lines, Bullets, Numeric Format in Table, Hyphenation

## Printing Color

## Print Options

- Over 130 Printers Supported • Number of Copies • Page Range • Reverse Order
- Collate • Print Document Description • Crop Marks • On Preprinted Form • Printer Bin Control for First/Rest Pages • Portrait or Landscape

## Real-Time Pagination

## Revert to Saved Version

## Search and Replace

- Case Insensitive • Forward or Backward
- Header/Footer/Footnote • Skip • Replace

- Replace All • Search for Style • Search by Attribute • Wildcards

## Section Outline Numbering

- 6 Levels • Number Paragraphs • Numbered Lists • User-Defined Reset

## Snaking Columns

- Up to 8 Columns • Column Balancing • On Screen • Variable Width • Variable Spaced

## Sort

- Alphabetic • Numeric • Ascending • Descending • By Paragraph • By Word • By Number of Lines • 3 Levels—3 Words Within each Level

## Spelling Check

- 130,000 Word Dictionary • Add to Dictionary
- Correct Multiple Occurrences • Entire Document • Selected Text • International Dictionaries • Rest of Document • Skip All Occurrences • Statistics Report • Unlimited User Dictionary Size

## Style Line

- Column Number • Document Name • Insert/Typeover • Line Number • Page Number

## Style Sheets

- 27 Professionally Designed • Control All Formatting in Document • Document-Only Styles • Global Styles

## Tables

- Up to 256 Columns • Column Width Control
- Row Height Control • Auto Row Height
- Lines around Cells • Shaded Cells • Connected Cells • Formulas: Four-Function Math, Sum Function, Absolute/Relative Cell Address
- Insert Rows and Columns • Numeric Alignment and Formatting

## Table of Contents

- 3 Levels • Separator Choice

## Tabs

- Center • Leader Dot • Left • Numeric • Right

## Text Enhancements

- Bold • Double Underline • Initial Caps • Italic
- Lowercase • Overstrike • Small Caps • Subscript • Superscript • Underline • Uppercase
- Word Underline

## Thesaurus

- 1.4 Million Alternatives • Definitions • Gives Inflections • Synonyms

## Undo

- Four-Level • Customizable

## Unlimited Document Size

## Vertical Centering

## Widow/Orphan Control

## Word Count

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Ami Pro *for Windows*  
from  
Lotus®

# TWO-FISTED MANAGEMENT

## TWO-FISTED MANAGEMENT



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MARK, 34

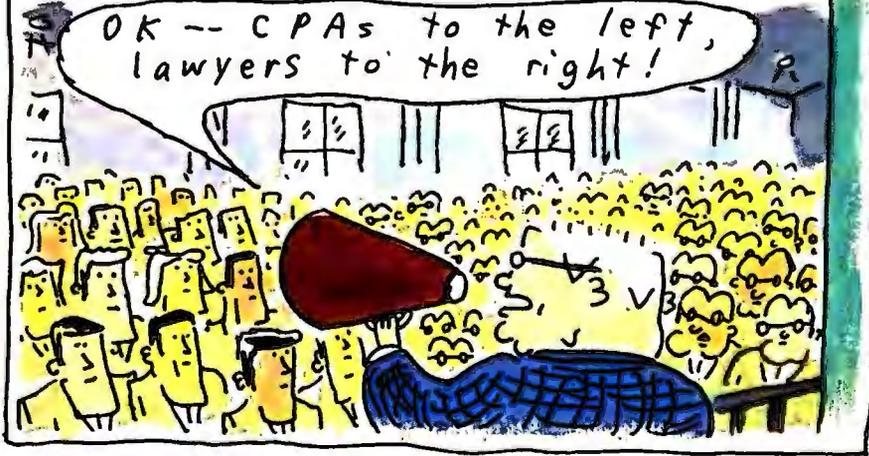
YOU WORK HARD. YOU GET PAID. YOU FILE WITH THE IRS. YOU GET AUDITED. WHAT DID YOU DO TO DESERVE THIS? THAT'S WHAT WE'LL BE TRYING TO HIDE WITH MY

## HELPFUL HINTS FOR TAX AUDITS

FIRST OF ALL, IT'S A GOOD IDEA TO KEEP ALL RECEIPTS.



ALWAYS ATTEND AN AUDIT WITH ADEQUATE PROFESSIONAL COUNSEL.



APPEAR CONFIDENT YET RELAXED. LIKE WILD DOGS, AUDITORS CAN SENSE FEAR.



ACT COMPLETELY SURPRISED WHEN THEY DISCOVER A DISCREPANCY.



GIVE AN IMPRESSION OF ACCOUNTABILITY.

(I accept full responsibility for my accountant's error. I'll see to it his left hand is broken.)



OFFER TO PAY A PORTION OF WHAT YOU OWE... AHEM... "DIRECTLY."



THIS DOES HAVE ITS DRAWBACKS, HOWEVER.



MARK MAREK

# dFacts Are In.

<b>DATABASE COMPARISON TABLE</b>	<b>dBASE IV version 1.1</b>	<b>Paradox version 3.5</b>	<b>FoxPro version 1.02</b>
<b>EASE OF USE</b>			
Control Center organizes data, queries, forms, reports, labels, applications on <u>one</u> screen	<b>Yes</b>	<b>No</b>	<b>No</b>
Create applications <i>without programming</i>	<b>Yes</b>	<b>Yes</b>	<b>No</b>
Modern pulldown menus for all Design Tools	<b>Yes</b>	<b>No</b>	<b>Limited</b>
Query by Example (QBE) for easy access to information	<b>Yes</b>	<b>Yes</b>	<b>No</b>
Context specific help by menu item	<b>Yes</b>	<b>No</b>	<b>No</b>
<b>PRODUCTIVITY</b>			
Quick Layout for automatic forms, reports and labels	<b>Yes</b>	<b>No</b>	<b>Yes</b>
Application Generator for quick application development	<b>Yes</b>	<b>Yes</b>	<b>No</b>
Automatic code generation for all Design Tools	<b>Yes</b>	<b>No</b>	<b>No</b>
Automatic maintenance of <u>multiple</u> indexes for ordering data	<b>Yes</b>	<b>No</b>	<b>No</b>
Memo fields for notes, letters, descriptions	<b>Yes</b>	<b>No</b>	<b>Yes</b>
<b>POWER &amp; FLEXIBILITY</b>			
Bold, underline, italic, subscript, superscript text for high impact reports and labels	<b>Yes</b>	<b>No</b>	<b>No</b>
User Defined Functions for extending programming language	<b>Yes</b>	<b>No</b>	<b>Yes</b>
Data input validity checking in forms	<b>Yes</b>	<b>Yes</b>	<b>Yes</b>
Multi-user transaction processing ensures data integrity	<b>Yes</b>	<b>No</b>	<b>No</b>
Number of file formats imported/exported	<b>7</b>	<b>6</b>	<b>3</b>
<b>INDUSTRY STANDARDS</b>			
#1 Selling, #1 Rated multiuser database; over 3 million users (1)(2)	<b>Yes</b>	<b>No</b>	<b>No</b>
Compatible with dBASE III PLUS data and applications	<b>Yes</b>	<b>No</b>	<b>Yes</b>
Compatible versions for DOS, VAX VMS, Macintosh, SunOS and other UNIX platforms (3)	<b>Yes</b>	<b>No</b>	<b>Limited</b>
Structured Query Language (SQL) integrated with programming language	<b>Yes</b>	<b>No</b>	<b>No</b>

(1) dBASE III PLUS and dBASE IV comprise approximately 55% of PC database systems sold (3 times nearest competitor) according to the most recent report by the market research firm Audits & Surveys (Oct. 1990) (2) Software Digest rated dBASE IV #1 among multiuser databases, October 1990 (3) Versions of dBASE IV are shipping for DOS, VAX, and SunOS. Macintosh and other UNIX Platforms are announced.

Based on what our customers tell us, we made a list of some of the most important features to look for in data management software.

Then we compared the new dBASE IV® version 1.1 with two other database products.

As you can see, dBASE IV offers exclusive advantages in

many categories.

For instance, only dBASE IV lets you access all its functions from a single screen. Called the Control Center, this screen lets you manage existing data, and create new tables, queries, reports, forms and labels totally without programming.

When all the facts are on the table, it's easy to see which database software is best.

Of course we aren't the only ones who have come to this particular conclusion.

Software Digest rates dBASE IV version 1.1 the #1 Multiuser Database (Vol. 7, No. 13, Oct. '90).

# dTruth Comes Out.

Perhaps the most independent publication in the industry, *Software Digest* accepts no advertising whatsoever. Corporations pay hundreds of dollars a year to receive their monthly reviews—which are considered highly unbiased and objective. Their exhaustive, 75-page report concludes:

“Among the top ranking programs, dBASE IV (version 1.1) is the most well-rounded, with solid performance, versatility, and usability.” Commenting on speed, *Software Digest* points out that “dBASE IV produces all three test reports as fast as or faster than FoxPro/LAN.” As for Ease of Use and Ease of Learning, dBASE IV scored in the Excellent Range as many times as any other multiuser database product tested.

For a free evaluation kit, including competitive details and a free demo disk, call toll-free:

1-800-437-4329 ext. 1407.  
Better yet, call 1-800-2ASHTON to upgrade to the new dBASE IV now.



dBASE IV  
Advancing the worldwide standard in data management and application development.

The truth is, no other database can do so much to improve productivity.

 Ashton-Tate®

**Software Digest RATINGS REPORT**  
The Independent Comparative Ratings Report for Selecting IBM PC Business Software

Volume 7, Number 13

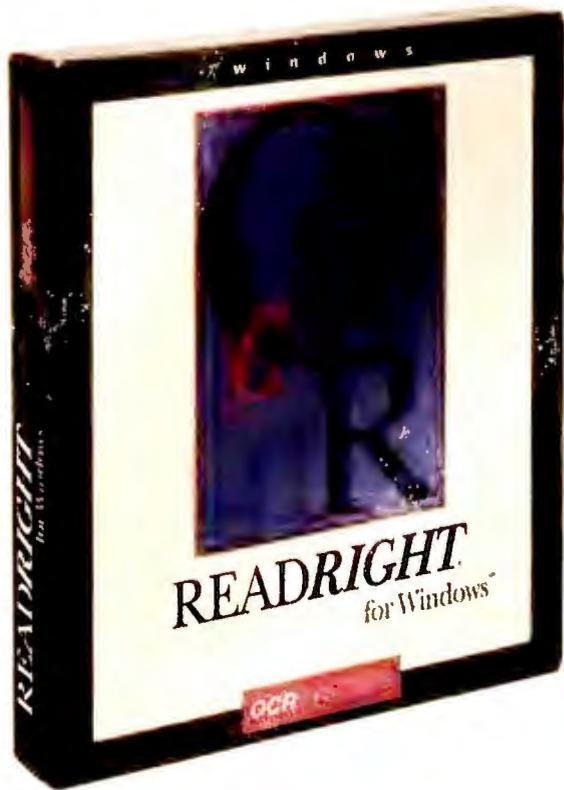
## MULTIUSER DATABASE PROGRAMS

Ratings Key: ■ 70-100 ■ 50-69 ■ under 5.0

Software Digest Rating	Overall Evaluation	Overall Power	Program Name	Version Tested	Performance	Versatility	Error Handling	Ease of Learning	Ease of Use	Memory Requirement	Price	Volume Purchase Agreements	Page
***	7.0	6.7	dBase IV	1.1	■	■	■	■	■	450KB	\$795	✓	28
**	6.8	5.1	Paradox	3.5	■	■	■	■	■	640KB	\$995	✓	32
**	6.8	7.1	FoxPro/LAN	1.02	■	■	■	■	■	512KB	\$1,095	✓	30
**	6.4	5.1	DataEase	4.2	■	■	■	■	■	640KB	\$750	✓	26
*	5.8	3.6	R:Base	3.0	■	■	■	■	■	520KB	\$995	✓	34
*	5.7	6.0	Clarion Professional Developer	2.1	■	■	■	■	■	512KB	\$845	✓	24
*	5.7	6.6	Advanced Revelation	2.01	■	■	■	■	■	640KB	\$995	✓	22

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Introducing  
ReadRight for Windows



# Can't Touch This.

**G**ood OCR shouldn't cost you a fortune. That's why OCR Systems has offered high-quality, affordable OCR products for more than 20 years. Products like ReadRight 2.01, which for the last two years has won the *Publish Reader's Choice Award* for PC OCR software. And which the *Seybold Report on Desktop Publishing* said "impressed us in virtually all areas."

So when we introduce new software like ReadRight for Windows – a product we've been developing for more than two years – you can be sure it's worth your attention. ReadRight for Windows is an omnifont OCR product that offers you the highest level of accuracy (99.9%) at a price no one else can touch. And with all the features you're looking for.

Like a built-in dictionary that enhances ReadRight's already impressive accuracy. You can even add your own words to a user dictionary. And with the pop-up error checker, you can compare recognized text against the scanned image without ever looking back at the original document.

ReadRight reads practically any page – typewritten, typeset, laser-printed, NLO dot matrix, and fax images. Even text that's bold, underlined, or italics. And it outputs the text directly into the format of your other software applications.

And that's not all. ReadRight automatically separates text from graphics, even on pages with complex layouts, for faster text recognition. Or if you don't want the whole page, you can clip the paragraphs that you want ReadRight to recognize. You can design templates to quickly process pages with similar layouts. And ReadRight handles stacks of pages, single- or double-sided. You can even defer processing so your computer isn't tied up when you need it.

So why spend a fortune for OCR when you can buy ReadRight for Windows at an untouchable price?

Features	ReadRight for Windows	WordScan Plus	OmniPage Professional	WordScan	OmniPage 3.0
Accuracy	99.9%	99.9%	99.9%	99.9%	99.9%
Omnifont	✓	✓	✓	✓	✓
Windows 3.0	✓	✓	✓	✓	✓
'286 Compatible	✓	✓	No	✓	No
Point Size	6-72	6-28	6-72	6-28	6-72
Built-in Dictionary	✓	✓	✓	✓	No
Error Verifier	✓	✓	✓	No	No
Deferred Processing	✓	✓	✓	✓	No
Multizone Clipping	✓	✓	✓	No	✓
Price	<b>\$495</b>	\$995	\$995	\$595	\$695

Call for the name of the ReadRight dealer nearest you or for a free working demonstration disk. **(800) 233-4627**

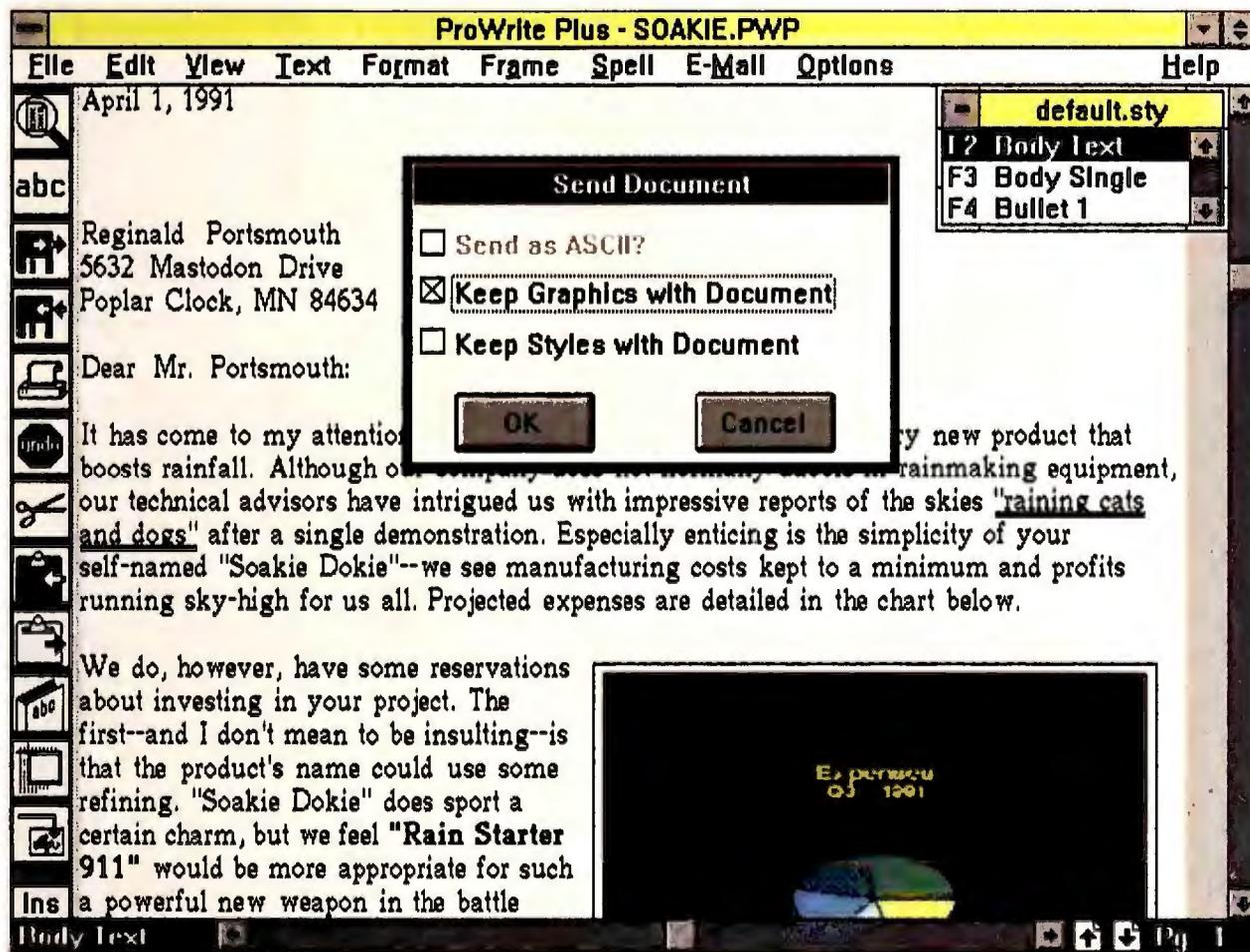
**ReadRight for Windows**  
The #1 OCR software.

# PREVIEW

PC WORLD OFFERS FIRST IMPRESSIONS OF PRERELEASE HARDWARE AND SOFTWARE

## The E-Mail Word Processor

*Software Publishing's Professional Write Plus for Windows brings full-blown electronic mail to Windows word processing.*



Based on Ami Professional, Professional Write Plus for Windows sports the familiar customizable icon bar and floating style-sheet window. The key new feature is a tightly integrated E-mail module. Here, you can send off the current document without leaving the main editing screen, choosing from various levels of formatting.

### Eric Brown

Like most editors, I'm a wordy guy. Put a whole staff of editors on an E-mail system, and the megabytes of verbiage quickly pile up. E-mail has become not only our messaging medium but our routing medium as well.

That's a problem. The simple text editors built into most E-mail packages are fine for short memos, but you usually spend a lot of time switching between E-mail and a sepa-

rate word processor. Once you're in the word processor, it's easy to forget the exact details of the message you're answering. If you do save the message to disk along with many others, you may have trouble recalling its name. Saving a file for E-mail transmission can also be a hassle—unless the recipient has the same word processor, you must save the file in ASCII, and duplicate files can waste disk space and lead to confusion. Finally, even if your

E-mail package lets you “shell out” to another application and back, you'll drum your fingers while switching.

Add up these annoyances, and you'll see why Software Publishing's Professional Write Plus for Windows makes so much sense. It's a fairly powerful word processor with E-mail built in—and because it's compatible with Novell's popular MHS E-mail standard, there's a good chance you can swap mail with your existing E-mail system.

### A New Breed of Professional

Despite its name, *Professional Write Plus* inherits almost nothing from SPC's *Professional Write*. It's based instead on *Ami Professional*—SPC licensed the code from Samna (before Lotus bought Samna), halved the price, and stripped some features to fit the executive word processor mold. *Professional Write Plus* lacks *Ami Professional's* macros, kerning, table editor, table of contents, and indexing, and there's no outlining, redlining, drawing, or charting.

Still, the program is markedly more powerful than either *Professional Write* or the

### SNAPSHOT

#### Professional Write Plus for Windows 1.0

A modified version of *Ami Professional*, Software Publishing's entry into Windows word processing boosts a full-fledged E-mail module.

#### KEY FEATURES

- MHS-compatible E-mail
- Grammar and spelling checker, thesaurus
- Frame-oriented graphics manipulation
- Customizable icon bar

#### AVAILABILITY

Morch

#### PRICING

\$249; upgrade from *Professional Write* or *Office Writer* \$50

#### Software Publishing Corp.

1901 Landings Dr.  
Mountain View, CA  
94043  
415/962-8910

Reader service no. 709

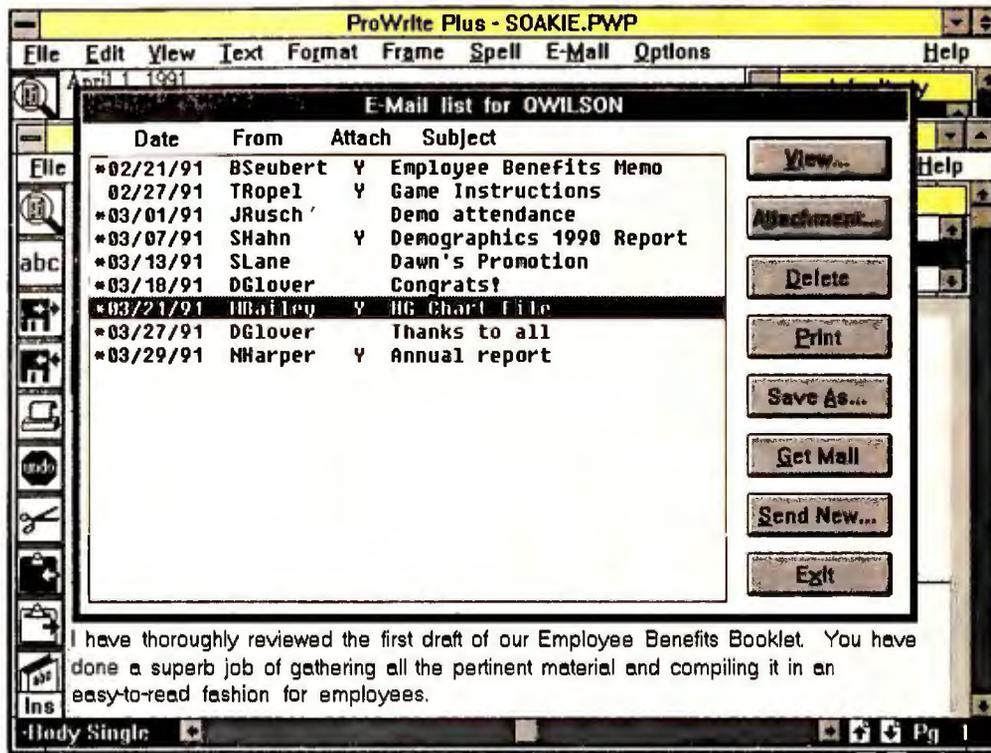
low-end *Ami*, and most executives won't mind the omissions when they consider the other top features borrowed from *Ami Professional*. These include style sheets, thesaurus, speller, footnotes, and full Dynamic Data Exchange (DDE) support for automating data transfer between *Windows* applications. *Professional Write Plus* shares *Ami Pro*'s superb formatting and graphics handling talents—like a desktop publishing package, the program lets you draw frames, import graphics, and then easily manipulate and re-scale images.

SPC even adds a few tricks of its own. You can invert graphic images and draw on an extensive list of file conversion routines. Also new: an integrated version of the popular *Grammatik* grammar checker.

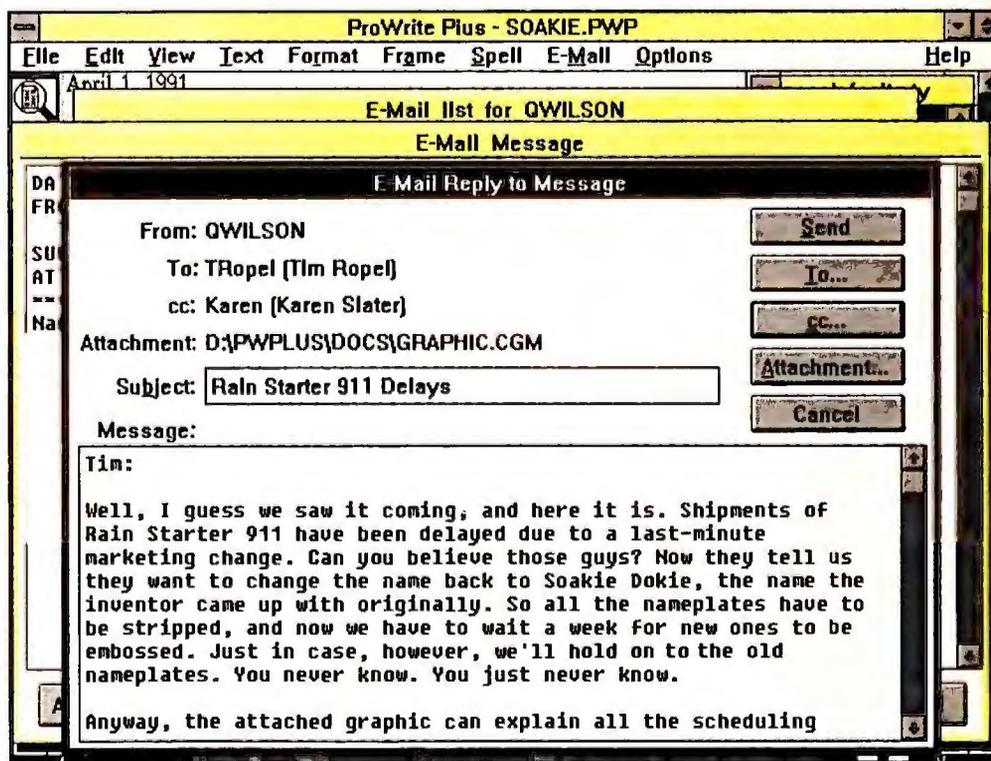
The only major interface change from *Ami Pro* is that pulldown menus have been reorganized slightly. As with *Ami Pro*, you'll enjoy well-designed dialog boxes complete with graphical examples that reflect formatting changes on the spot. You also get a customizable icon bar, but the icons lack *Ami Pro 1.2*'s slick 3-D look and feel. Unfortunately, the program shares *Ami Pro*'s major flaw—you can't open more than one window without loading another copy of the program. Overall, however, *Professional Write Plus* is smooth sailing and easier to use than *Word for Windows*.

### E-Mail a Mouse Click Away

*Professional Write Plus* isn't the first word processor with built-in E-mail—*MultiMate* was—but it's the first full-featured E-mail front end. You get standard features like distribution lists, reply, copy, printing, and attachments. You can even teach the program to launch applications with attachments, so, for example, ev-



**Professional Write Plus's MHS-based E-mail module includes all the major messaging features. You can even set the program to launch external applications with attachments.**



**When sending a message with Professional Write Plus, you can use the word processor's main editor or write short replies with this convenient minieditor.**

ery time it sees an XLS file, it automatically loads the file in *Excel*. The only key omission is message folders, and you'll miss out on extras like blind copies and return receipt.

MHS compatibility means you can exchange mail with any other MHS package, including *Da Vinci eMail*, *WordPerfect Office*, and special MHS versions of *The Network Courier* and *cc:Mail*. You'll miss out on a few of your department E-mail system's bells and whistles, however, such as bulletin boards.

But forget features. The

real treat of *Professional Write Plus*'s E-mail module is its tight integration with the word processor. To send the current document, you just select a pulldown menu option, choose a mailing list, and answer prompts asking whether to keep style and graphics or send the file as ASCII text. If you want, you can quickly pop received documents into the main editing screen.

Now that *cc:Mail*, *The Network Courier*, and other major E-mail packages sell in *Windows* versions, you may wonder whether you need

built-in E-mail. After all, with *Windows*—and a 386 and enough RAM—you can load both your E-mail and word processing packages at once and cut and paste between them. But if you're a little short on PC horsepower, or if you want to add E-mail to Novell sites without any big installation hassles, or if you just crave that extra level of integration, *Professional Write Plus* looks like a good executive decision. ☺

*Eric Brown is a senior editor for PC World.*

WARNING COMPAQ OWNERS: Exposure To The Following Pages May Cause High Blood Pressure, Loss Of Sleep, And Severe Depression.

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COMPUTER  
CORPORATION

# TOUGH ACT TO FOLLOW.

Getting more computer for less money is always a good idea. But with today's tight budgets, it's absolute genius.

Just check out the new Dell® 325P. It has a full 25 MHz 386™ DX CPU for better performance than the SX in the Compaq. There's an optional 32K RAM cache that can boost performance an additional 20%. And it's backed by a service package that's won an unprecedented 8 PC Week Corporate

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Remember those 8 Corporate Satisfaction Polls? Well one poll category we dominated is the one called "reliability"—maybe because Dell computers are designed, built and tested under the same roof. And nothing leaves the building until we're sure everything works like it's supposed to, when it's supposed to.

Then you get up to 30 days to use it.

If you aren't completely satisfied, send it back.



The Dell 325P 386 25 MHz<sup>§</sup> Lease: \$108/mo.\*\*

### THE NEW DELL SYSTEM® 325P 25 MHz 386.

- |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <p>Standard Features:</p> <ul style="list-style-type: none"> <li>• Intel® 80386 microprocessor running at 25 MHz.</li> <li>• Page mode interleaved memory architecture.</li> <li>• Standard 1 MB of RAM,* optional 2 MB or 4 MB of RAM expandable to 16 MB on the system board.</li> <li>• Integrated VGA controller with 1024 x 768 support.</li> <li>• Integrated hard drive and diskette drive interface.</li> <li>• Optional 32 KB SRAM cache.</li> <li>• Socket for Intel 80387 math coprocessor.</li> <li>• 5.25" 1.2 MB or 3.5" 1.44 MB diskette drive.</li> </ul> | <ul style="list-style-type: none"> <li>• 3 full-sized 16-bit AT expansion slots available.</li> <li>• High-performance IDE 40 MB, 80 MB, 100 MB, 190 MB, and 320 MB hard disk drives.</li> <li>• 1 parallel port, 2 serial ports, PS/2 compatible mouse port, all integrated.</li> <li>• 85 watt power supply.</li> <li>• 12-month On-Site Service Contract.</li> <li>• Optional i486 microprocessor upgrade card running at 33 MHz.</li> </ul> <p>40 MB VGA Color Plus System \$2,499</p> <p>Price listed includes 1 MB of RAM.* 80, 100, 190 and 320 MB hard drive configurations also available.</p> |
|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|

†The Dell system includes VGA Color Plus Monitor, 80 MB hard drive, 2 MB RAM. The Compaq system includes VGA Color Monitor, 60 MB hard drive, 2 MB RAM. \*Performance Enhancements: Within the first megabyte of memory 96 KB of memory is reserved for use by the system to enhance performance. Can be optionally disabled. All systems are photographed with optional extras. All prices and specifications are subject to change without notice. Dell cannot be responsible for errors in typography or photography. †Source: From the Compaq Computer Corporation price list effective October 15, 1990. \*\*Payment based on 36-month, open-end lease. ‡Leasing arranged by Leasing Group, Inc. In Canada configurations and prices may vary. Dell and Dell System are registered trademarks of Dell Computer.

# TOUGH ACT TO SWALLOW.



Compaq DeskPro 386s/20 386SX 20 MHz<sup>9</sup> Actual dealer prices may vary.

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***TechFax offers relief for insomniacs.***

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And all this coverage, including a full year of field service, comes at no additional cost.

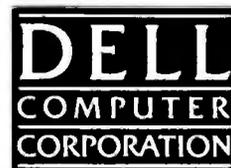
***When your needs change, your computer can too.***

Dell offers a number of ways to easily upgrade your system. Including a 33 MHz i486™ processor card to give you the hottest chip on the block. Which means you can get

a new computer without getting a new computer.

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**Circle 75 on reader service card**

# TURBOCHARGED.



Compaq has a peculiar proposition for you. Even though their servers are configured similarly to Dell's, they want to charge you up to \$16,000 more for them.

That's bad enough in normal times, but with the tight budgets these days it's ridiculous.

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The Dell Drive Array is based on the Intel® i960 RISC processor. And, depending on the application, can deliver twice the storage I/O performance of a stand alone ESDI drive.

Allowing more users to access the server more

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The Dell® 433TE, 33 MHz i486™ Server  
1 Array, 5 200 MB hard drives, 8 MB of RAM, 128 KB cache

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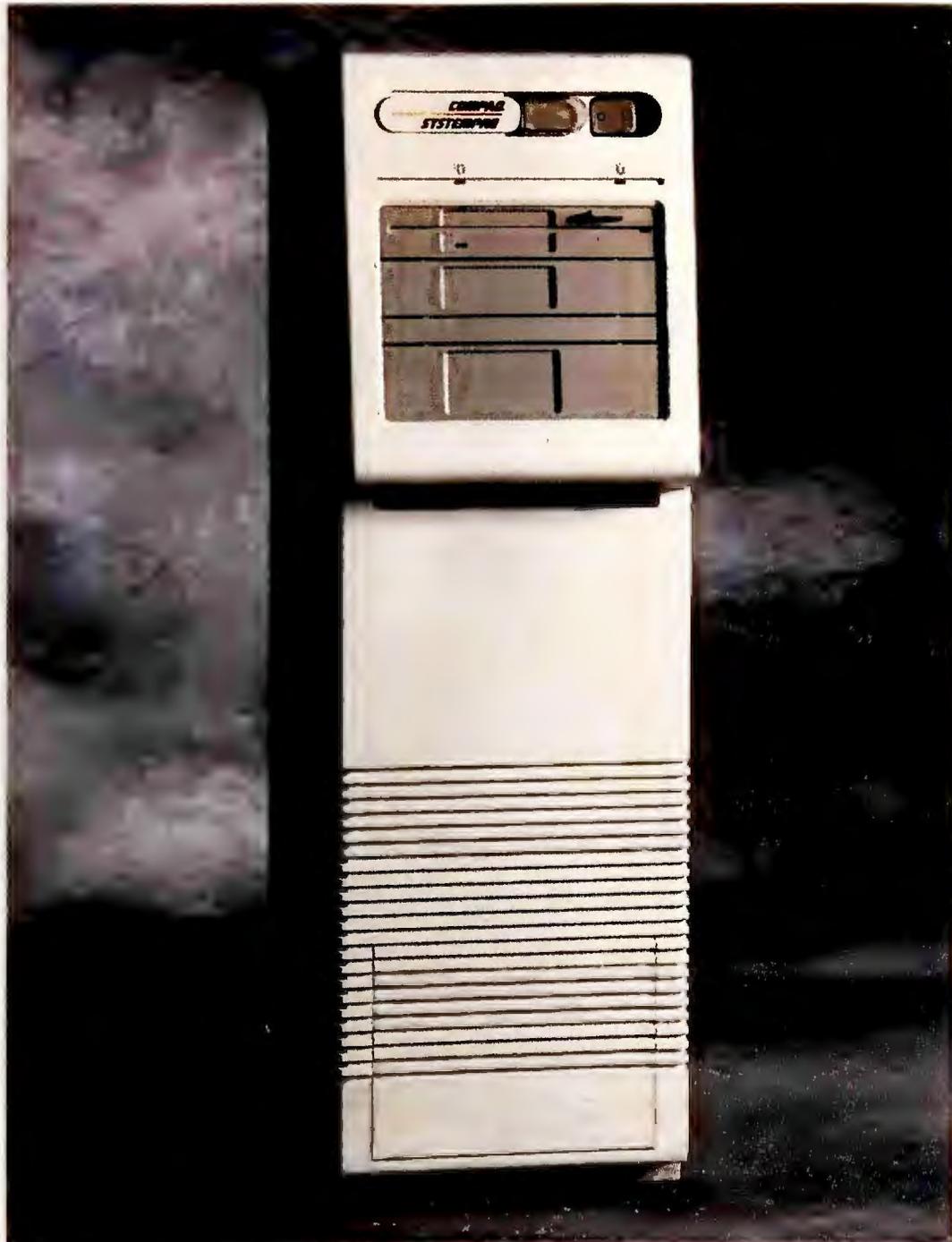
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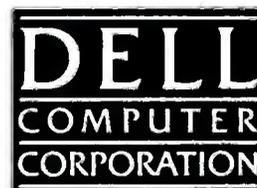
And all this coverage, including a full year of field service, comes at no additional cost to you. Pretty good for a service package that won eight *PC Week* Corporate Satisfaction Polls.

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Circle 318 on reader service card

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pads, and slips of paper that littered my desk are gone... I just put them into Agenda.'

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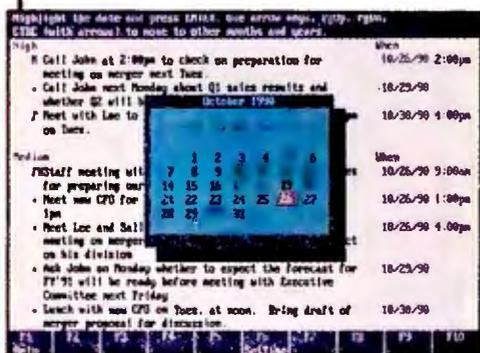
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customize applications for more specific needs. If it all sounds too good to be true, consider what these Agenda users have to say: "All of those notes,

Finally, a word to everyone who read this ad all the way from the beginning.

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Lotus Agenda 2.0 is so easy to work with, you'll start getting better control of your professional life within 30 minutes.

## Introducing New Lotus Agenda 2.0

# HP's Net-Worthy Improvement

*Big, fast, and built to take a pounding, HP's LaserJet IIISi may set a new price/performance standard for network printers.*



Fast printing and brawny paper handling make the IIISi a boon for LAN users.

*Daniel Tynan*

Nineteen ninety-one may not be the year of the LAN, but it's definitely the year of the LAN printer. Texas Instruments, Sharp, and Kodak have all announced affordable 16-page-per-minute (ppm) lasers with the speed, durability, and paper handling to serve scores of network users. But none is likely to have greater impact than HP's LaserJet IIISi.

The IIISi gives you the scalable fonts and high-quality output of the LaserJet III in a 17-ppm workhorse. At \$5495, it's bound to win the hearts of companies accustomed to printers like HP's \$20,000 20-ppm LaserJet 2000.

**Speed, Finesse, and Power**  
The HP's 17-ppm 300-dpi

Canon engine is only half the story. Unlike the 16-ppm machines, the IIISi's high-speed interface and fast RISC processor enable it to churn out complex fonts and graphics at near its rated engine speed.

The IIISi's parallel interface sucks in data at 38K per second—twice the rate of standard parallel ports. Optional \$695 ethernet or \$795 token ring boards take in files at a blistering 160K per second and let you install the printer anywhere on the LAN without having to hook it to a PC.

A 16-MHz AMD 29000 chip makes fast work of PCL 5 fonts and graphics (like those found in the original LaserJet III), but its real forte is processing PostScript files. Another \$895 buys you Adobe PostScript's 35 scalable fonts and graphics savvy. However,

the IIISi can't switch automatically between PCL 5 and PostScript; you'll have to do it from your application—and once you switch, you'll lose any fonts you've downloaded.

The IIISi comes with 13 scalable font outlines (plus 14 bit-mapped fonts for emulating the LaserJet II) and two backward-compatible font cartridge slots. The unit's rather skimpy 1MB of RAM expands to a whopping 17MB for downloading fonts and spooling print jobs. You'll need to add RAM, via 1MB (\$139) or 4MB (\$449) SIMM modules, if you want to print full-page graphics or legal-sized documents or to access HP's PostScript or \$695 duplex options.

**Sharp Text, Low Cost**

Neither Kodak, TI, nor Sharp can match HP's patented Res-

olution Enhancement Technology (RET), which varies the size and placement of toner dots for smoother text and curves. The IIISi's special microfine toner particles enhance RET's effects and lower print costs to about 2 cents a page (8000 pages per \$169 cartridge), a penny cheaper than most lasers.

The printer is built to handle 50,000 pages a month. Two 500-sheet input trays are standard, as are sophisticated collating features and an output-tray-full sensor.

As more companies jump on the LAN-wagon, the office laser will be expected to do a lot more—quickly, and for a reasonable price. The LaserJet IIISi meets those expectations, and then some. ☉

*Daniel Tynan is an associate editor for PC World.*

## SNAPSHOT

### HP LaserJet IIISi

HP's latest LaserJet combines high-quality output with the power to handle big LAN work loads.

#### KEY FEATURES

- 17-ppm engine with fast RISC processor
- High-speed interface and flexible networking options
- Low-cost operation
- Sophisticated paper handling
- One year on-site warranty

#### AVAILABILITY

March 1991

#### PRICING

\$5495; \$6595 with PostScript installed

#### Hewlett-Packard

Customer Information Center  
19310 Pruneridge Ave.  
Cupertino, CA 95014  
800/752-0900

Reader service no. 708

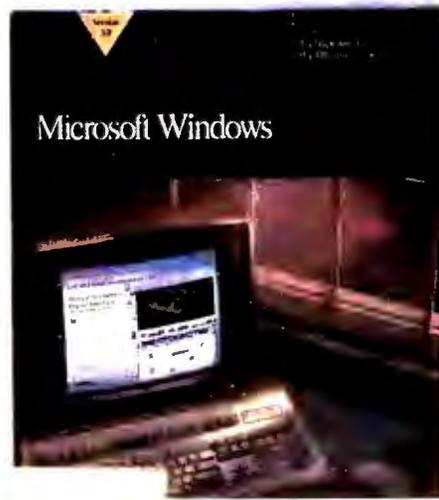
# Never



## Norton Does Windows.

The Norton Utilities is *the* safe DOS utility program for use with windowing environments like Windows® 3.0 and DesqView.

Because PC Tools and Mace Utilities are blind to multi-tasking, they can irreversibly damage your files. While the Norton Utilities 5.0 offers three full levels of safety checks under Windows 3.0.



*With a clear vision of the PC's future, the Norton Utilities 5.0 provides safe Windows 3.0 recovery.*

## Norton On Networks.

The Norton Utilities is the *only* utility program that provides file recovery on Novell and DOS-compatible networks. So you can use *File Save* along with *UnErase*® to recover deleted files, or *File Fix*™ to reconstruct Lotus® 1-2-3® and dBASE® files. From any node on the network.

What's more, MIS will appreciate the Norton Utilities' compliance with existing network security restrictions.

*System Information* provides detailed reports on network information and TSR memory allocation, as well as graphical benchmarks of disk, CPU, network, and general computer performance.

*The next best thing to being there is being on the network. And the Norton Utilities 5.0 is the only data recovery tool that is.*



## Peter Norton

When it comes to your crucial data, Peter Norton just won't take **C>FILE NOT FOUND** for an answer. With programs like the Mace Utilities® and PC Tools®, data recovery is often mission impossible. But with the Norton Utilities® 5.0, data recovery is mission *critical*—and it can recover what no other utility can.

*Data Recovery is serious business, which requires serious features. And the Norton Utilities has them all.*

DATA RECOVERY FEATURES	NORTON UTILITIES	PC TOOLS	MACE 1990
Number of DOS Error Messages With On-Line Advice	75	0	0
Different Types Of Data Loss Problems Solved			
File System Corruption	31	12	15
Physical Hard Disk Damage	6	0	0
Internal Data File Damage (i.e. dBASE, Lotus)	10	0	6
Disk Reliability Testing (Number Of Patterns)	80	0	0
System Information (Topics Reported)	94	15	16
NETWORK file recovery <small>*File Save must have been installed prior to data loss.</small>	YES*	NO	NO
WINDOWS Safe Operation	YES	NO	NO
Failsafe Design	YES	NO	NO
Effective File Encryption That Does Not Require You To Change The Way You Work	YES	NO	NO

# Say Die.

Rated #1  
Hard Disk Utility  
InfoWorld 12/10/90

## Norton's Superior Recovery Technology.

The Norton Utilities handles the toughest data recovery situations easily—predicaments other utilities handle poorly, if at all.

*Advise* explains cryptic DOS error messages in plain English so you can understand the problem, and gives specific recommendations on how to fix it. So your valuable data is not at the mercy of risky trial-and-error procedures.

Unlike the competition, Norton recovery procedures are easy to use and completely failsafe. And because you can UNDO changes, you won't make a bad situation worse. In fact, while using the Norton Utilities your data will even survive a sudden power loss. All in all, it's the safest, most extensive diagnostic and recovery utility available.

And only the Norton Utilities gives you every-

**Norton Utilities 5.0 Adds Features, Improves Interface**  
 "Norton's disk utilities now surpass anything you can find in PC Tools Deluxe or The Mace Utilities, and offer safeguards you can't find anywhere else."  
 — PC Magazine 10/16/90

Don't just take our word for it, the proof is in the press.

thing you need for optimal system performance.

The new *Norton Cache* and the improved *Speed Disk*™ make your hard drive faster and more efficient. And *Calibrate*™, which outperforms *SpinRite*™, adjusts the interleave, identifies bad sectors, and even repairs demagnetized

areas of your drive. So get serious about data recovery. See your dealer for the new Norton Utilities 5.0. To upgrade now call **1-800-343-4714** or fill out the coupon below. For more information, call **1-800-343-4714 Ext. 708** (in Canada, 1-800-465-2266). And in the immortal words of Peter Norton, "Never say die."



**\$59**

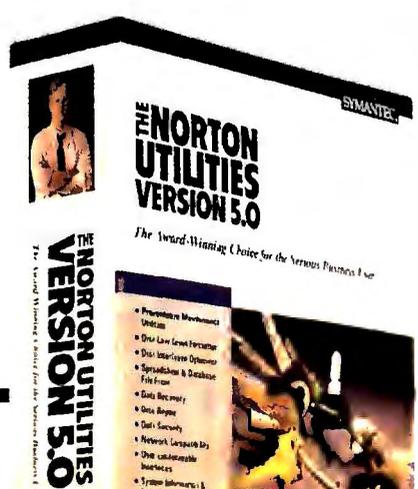
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Norton Utilities 5.0 offer expires April 30, 1991. Valid in U.S. and Canada only. Please allow 4-6 weeks for delivery. Only one upgrade per coupon. For multiple upgrades or POs, call 1-800-441-7234. For Canadian orders, call 1-800-465-2266.

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 All payments must be made in US dollars drawn on a US bank.  
 Name as it appears on your card (please print) \_\_\_\_\_  
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Quantity	Disk Size	Unit Cost
One	<input type="checkbox"/> 5 1/4-inch	<b>\$59.00</b>
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In these states, add sales tax including applicable local tax: CO 3%; GA, IA, MI, NY 4%; MO 4.225%; IN, MD, MA, OH, WI 5%; DC, FL, MN, PA, CA 6%; IL, TX 6.25%; WA 6.5%; NJ 7%; CT 8%.		
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 Cupertino, CA 95016-1690 PC, April '91

Circle 279 on reader service card





Edited by MIKE HOGAN

## Mannesmann Tally MT735

### Letter-Quality Printing: Don't Leave Home Without It



The 8.3-pound MT735 fits in a briefcase and gives you 300-dpi output at up to 6 pages per minute on the road.

Anybody who says you can't take it with you has not been paying attention to the PC printer market. The Canon BJ-10e and Seikosha LT-20 prove you no longer have to wait until you get back to the office (or even for your plane to land) to produce good-looking hard copy. Mannesmann Tally goes these offerings one better with a portable thermal transfer printer that offers laserlike performance.

The Mannesmann Tally MT735 is heftier in weight and price than the Canon and Seikosha printers, which weigh less than 6 pounds and cost under \$600. But it's much faster than its ink jet and dot matrix competitors and claims output quality rivaling that of the LaserJet IIP.

The MT735 produces 300-dpi output at up to 6 pages per minute—not bad for a machine that still weighs only 8.3

pounds and measures about 11 by 9 by 2½ inches. The \$1295 MT735 is slim enough to fit inside your briefcase or sit between your pencil sharpener and Rolodex. Its built-in NiCad battery is good for 150 pages between recharges.

Like the IIP, the MT735 comes with seven portrait and seven landscape fonts in Courier, Times, and Helvetica

equivalents. Its 1MB of RAM should be enough to print a page of mixed text and graphics, but you can't add more memory, and only 178K is available to download fonts.

The MT735's unique copy function automatically stores the last page printed in memory, letting you print multiple copies at the flick of a switch—a quick way to duplicate short documents when you're miles from the nearest photocopier.

In addition to the IIP, the printer emulates the HP DeskJet, IBM Proprinter X24, and Epson LQ850 printers. It handles letter and legal-sized paper and transparencies and comes with an 80-page sheet feeder. While you can print text using plain paper, high-quality, smooth-surface paper is recommended for graphics printing, but you still can avoid using the waxy thermal stuff.

—Daniel Tynan

#### IN BRIEF

##### Mannesmann Tally MT735

The \$1295 MT735 offers high-speed, laserlike printing in a box you can take almost anywhere.

##### Mannesmann Tally

8301 S. 180th St.  
Kent, WA 98032-0413  
800/843-1347,  
206/251-5520 (fax)

Reader service no. 636

## INSIDE PRODUCT OUTLOOK

**88 Ektaplus 7016 Printer** Kodak's multitasking network printer includes a built-in copier.

**88 IBM Token-Ring Network 16/4 Busmaster Server Adapter/A** Boost LAN throughput by up to 25 percent with an MCA board.

**90 PS/2 Model P75 486** A heavy-duty portable for heavy data slingers.

**90 Open Systems Accounting Software 4.0** Modules that were lacking are brought up to snuff.

**92 Z-486/25E, Z-386 SX/20** Advanced and basic Windows workstations.

**94 Project Scheduler 5** Now your updates to a major project can ripple through all related projects.

**94 Profitwise** Small businesses get top-of-the-line fault tolerance to guard accounting data.

**96 ZoFax 96/24P** Send faxes from your laptop with a palmtop-sized fax-modem.

**98 MouseMan Cordless Radio Mouse, Cordless Super Mouse** Liberate your desktop with a mouse that runs without a leash.

**98 Voice-It for Spreadsheets, Voice-It for Word Processing** Give users a guided tour of your worksheets or documents by attaching audible comments.

Ektaplus 7016 Printer

Get Faster Printing and a Copier Too



The Ektaplus 7016 brings you everything you could ask for in a network printer, plus a 6-ppm convenience copier.

Barely a ripple at COMDEX Fall, now there's a tsunami of 16-page-per-minute printers rolling in to carry work-group users to new levels of productivity. You can find many a worthy offering between trough and crest, with price tags that match some innovative capabilities. (For example, your options extend from the \$3295 Sharp JX-9700 to the \$5495 HP LaserJet III Si, previewed in this issue.)

Kodak packs its new Ektaplus 7016 with the full range of features and even adds something unique—a 6-ppm copier. Kodak calls it a convenience copier, meaning that it isn't intended to replace your office workhorse; it just lets you whip off a few quick copies now and then without having to leave your work area. It shares the printer's film belt, toner, and developer but uses neither the LED printing element nor the controller of the Ektaplus, so that your work group's spooled print queue can take up where it left off within 60 seconds.

The copier is the crowning touch of a first-cabin printer well equipped for network duty. The first in a line and able to hook into any node, the Ektaplus has a conservatively rated 15,000-pages-per-month duty cycle and two 250-sheet

cassette trays. You can print letterhead and plain paper up to 8½ by 14 inches alternately or have a 500-sheet print run of the same stock. The top tray has a manual single-sheet and a number 10-size business envelope feeder. The single output tray handles 200 sheets. Labels and transparencies feed reliably through the paper path.

The Kodak-designed controller has a 10-MHz Motorola 68010 microprocessor and

2MB of RAM upgradable to 4MB. You can allocate up to 1.25MB of that as a page buffer, enabling the controller to compile a full 8½ by 14, bit-mapped page all at once.

The remaining RAM can be used to hold downloadable fonts or macros or as a large print spooler. You'll want a large spooler, because you can configure the Ektaplus with up to four serial or parallel ports in any combination (one of each comes standard) and address all of them simultaneously. The Ektaplus dynamically allocates the right amount of buffer to each port and queues print jobs on a first-in, first-out basis by constantly polling the ports.

There isn't automatic emulation switching between ports, each of which must be set to one of the standard emulations—PCL 4.5, HPGL-2, Epson FX-80, IBM Proprinter, and Diablo. But the environment is preserved so you don't lose any fonts you've downloaded. You also can get Adobe PostScript with the standard 35 fonts on a \$1995

daughterboard. It carries its own Motorola 68020 and 4MB of RAM dedicated to nothing but PostScript.

The basic printer is \$5495 with 30 resident fonts that include the standard 14-font PCL 4.5 lineup and Bitstream portrait and landscape fonts. A PostScript-equipped Ektaplus is \$6995. Both models have a front slot that takes additional Kodak ROM cards. The single cartridge toner/drum results in a 3½-cents-per-page cost for consumables. —Mike Hogan

**I N B R I E F**

**Ektaplus 7016 Printer**

The 16-ppm Ektaplus 7016 has all the most innovative work-group features and throws in a 6-ppm convenience copier for good measure.

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Personal Printer Products  
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Rochester, NY 14653  
800/344-0006  
**Reader service no. 633**

IBM Token-Ring Network 16/4 Busmaster Server Adapter/A

**Bus Master Boosts LAN Performance**

Since its 1987 introduction, the promise of the PS/2's Micro Channel architecture (MCA) has been its ability to boost overall system performance by offloading certain processor-intensive tasks to bus-master cards. Despite the previous introductions of third-party products, that's been a promise that has gone largely unfulfilled—that is, until now.

MCA comes of age with IBM's new Token-Ring Network 16/4 Busmaster Server Adapter/A, an add-in board that promises to increase throughput on a LAN as much

as 25 percent by letting its on-board processor take LAN management duties off the shoulders of the server's main processor.

Designed to run in the servers of token ring LANs where many users might access the same applications or run multiple applications, the card's bus-master chip controls transmission and reception of data to and from the network, bypassing the main CPU.

The Busmaster Server Adapter/A supports token ring LANs having either 4- or 16-megabit-per-second data transfer rates. Currently, No-

vell's NetWare 386 version 3.1 and Banyan Systems' VINES network operating systems support the product.

The \$1030 adapter comes with diagnostics that perform a self-test when the server is turned on and off. —Cheryl Goldberg

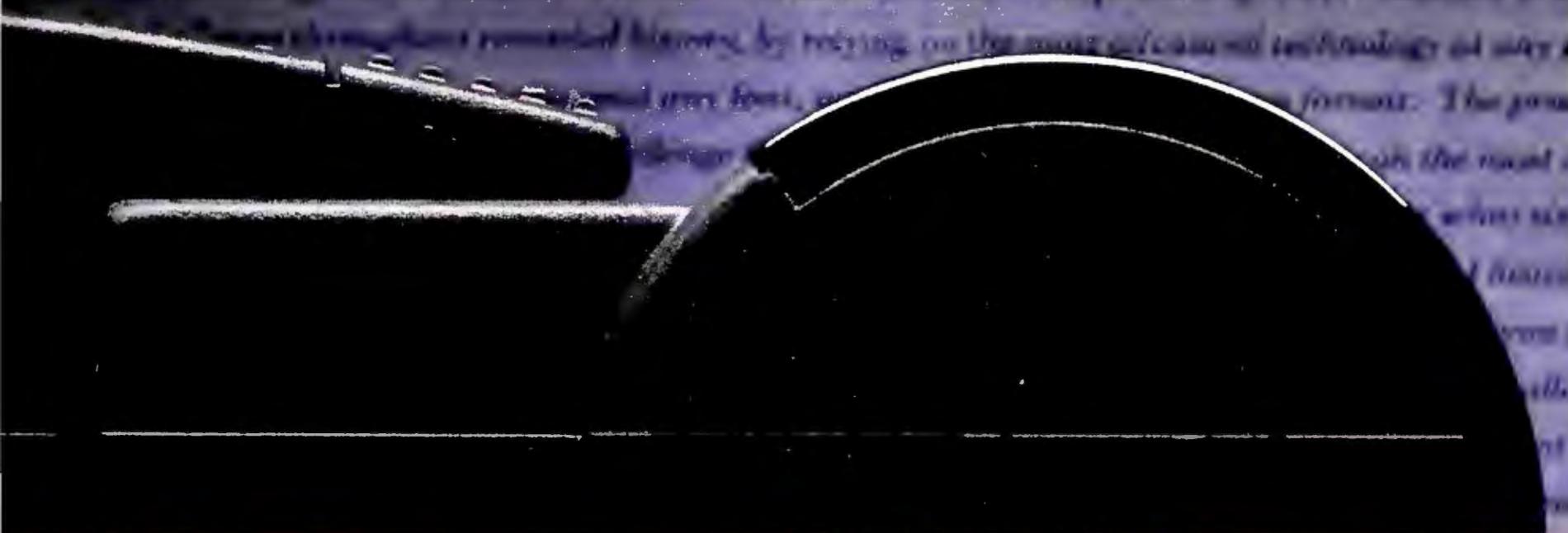
**I N B R I E F**

**IBM Token-Ring Network 16/4 Busmaster Server Adapter/A**

A token ring adapter that supports bus mastering for better network performance.

**IBM**  
800/426-2468 (dealer information)  
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# The Ultimate Typist



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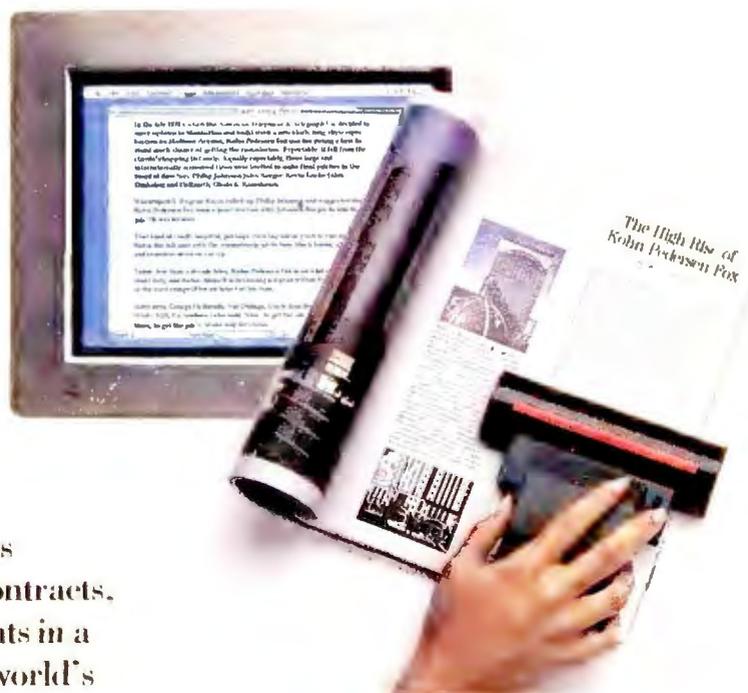
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PS/2 Model P75 486

## IBM Portable Grabs Heavyweight Crown

As with everything, when it comes to portables IBM thinks big. And heavy. And expensive. And very, very powerful. The logical culmination of the IBM thought process is the PS/2 Model P75 486, a 22-pound speed demon built around a 33-MHz 486.

The P75 is aimed squarely at traveling professionals—particularly engineers and ac-

countants who may need to tote a machine between sites on a less-than-daily basis and don't want to give up an ounce of performance or presentation muscle.

A "portable" cousin of IBM's XP 90 desktop, the P75 measures a substantial 18.3 inches wide by 12.1 inches high by 6.1 inches deep. It comes fully packed with 8MB of 70ns memory (expandable to 16MB on the system board), a SCSI controller, a 10-inch VGA gas plasma screen, a high-resolution XGA adapter with 1MB of VRAM for the fastest possible screen response, and a port for an external XGA monitor.

The P75 comes with the usual 3½-inch floppy drive, as well as serial, parallel, and mouse ports. Not so standard on portables are its full-sized 101-key keyboard, 120-watt power supply, two half-sized 8/16-bit slots, and two full-



At 22 pounds, the PS/2 Model P75 486 is not for the weak of knee, but it has enough processor speed, memory, and storage to please any traveler.

### IN BRIEF

#### IBM PS/2 Model P75 486

The pricey P75 packs top-of-the-line PS/2 components into a very powerful but hefty portable package.

#### IBM

U.S. Marketing & Services  
1133 Westchester Ave.  
White Plains, NY 10604  
800/426-2468

Reader service no. 634

sized, 32-bit Micro Channel architecture slots—the latter making this an ideal networking portable. We're not just talking about a node on a network, either; thanks to the P75's SCSI port, you can connect up to six external SCSI devices to it—without using an expansion slot.

Internal storage is equally hefty. You can choose from two fast SCSI drives: a 16ms

160MB drive and IBM's new 11.5ms 400MB drive.

As you might expect, the P75 comes down heavy on pricing, too. The 160MB configuration sells for \$15,990, while the 400MB version is \$18,890. At those prices, the P75 isn't for everyone. But if you need a portable that puts most desktops to shame, IBM has your machine. —Eric Bender

## Open Systems Accounting Software 4.0

### OSAS Modules Get Windowing Interface

A batch of project- and job-oriented improvements, an all-new bank reconciliation module, and a face-lift bring the last and most vertical *Open Systems Accounting Software (OSAS)* modules up to par with those previously enhanced. This upgrade lets you use time billing and so on with the already upgraded 4.0 versions of the general ledger, accounts receivable, accounts payable, and payroll modules.

Besides linking with these modules, version 4.0 of time billing for professional and service firms also shares the program's new windowing interface, enhanced field editing capabilities, and expanded

function keys. Additional enhancements include a redesign of the activity reports and job subtotals section in the work-in-progress journal, as well as the ability to sort work-in-progress detail items by a variety of criteria. A new fixed-price billing feature has been added so users can include expenses in a contract or bill them separately. New job summary and job profitability reports also are included in version 4.0, which sells for \$1495.

Open Systems has also upgraded its construction-industry-specific module, Contractors Reporting, Accounting, and Financial Tools Package (CRAFT), and its fixed assets

module so each can be used with the "big four" modules. As with the new time billing module, version 4.0 of CRAFT and fixed assets sports the new windowing interface. CRAFT 4.0 sells for \$1995, fixed assets for \$895.

The all-new OSAS bank reconciliation module, which ensures that bank accounts are in line with accounting records, allows for a six-character account identification. The number of accounts is limited only by available disk space. Bank reconciliation can be used as a stand-alone application or linked with other OSAS modules. The suggested retail price is \$395.

Module upgrade prices vary depending on the version currently in use. System requirements include DOS 2.0 or

later, 640K of RAM (with 512K available), a hard drive, and *OSAS Resource Manager*, which is \$295 for the single-user version and \$995 for the network version. —Roberta Furger

### IN BRIEF

#### Open Systems Accounting Software 4.0

With a new bank reconciliation module and upgrades to other components, Open Systems has brought all its modules to the 4.0 level.

#### Open Systems Inc.

7626 Golden Triangle Dr.  
Eden Prairie, MN  
55344-3732  
800/328-2276,  
612/829-1400 (fax)

Reader service no. 639

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the basic  
principle behind  
Fastback Plus,  
tear out  
this page  
and destroy it.

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your hard disk will eventually come crashing down. Manufacturers expect it. They even give hard disks an "MTBF" rating – the Mean Time Between Failures.

Before you lose your valuable data, back it up with Fastback Plus.

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**STRIKING SIMPLICITY** Fastback Plus has three user levels – beginner, intermediate and advanced. Simple menus tell you how long your backup will take, and how many diskettes you'll need. And a unique data compression feature cuts the number of diskettes you need in half. You can even automate the entire process with one-touch macros.

**DAZZLING SAFETY** Only Fastback plus gives you reliable Advanced Error Correction. To illustrate, we punched a hole

larger than a .22 calibre slug right through a backup diskette – and retrieved all the data! That's security. And if you need help dodging even bigger bullets, our technical support staff will surprise you with its courtesy and ingenuity. Just call, and you're guaranteed same-day service.

**GLOWING REVIEWS** *PC Magazine* said it best in giving Fastback Plus its prestigious 1989 Editor's Choice Award: "Fastback Plus has virtually everything a backup program needs: top-speed performance, clear menus, every imaginable option, even a built-in macro program for automating complex tasks. A superb achievement."

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Circle 71 on reader service card

Z-486/25E, Z-386 SX/20

## ZDS Aims at Top, Bottom of Windows Workstation Market

No matter what anyone tells you, to take full advantage of the new graphical *Windows 3.0* applications you'll need more than the average amount of processor speed, memory, and storage. Zenith Data Systems (ZDS) gives you a high road and a low road to full-fledged *Windows* productivity: the Z-486/25E and Z-386 SX/20, respectively.

The Z-486/25E is ZDS's first i486 computer and a compact EISA system to boot for server CAD or the most demanding desktop publishing uses. In addition to a 25-MHz processor and 4MB of RAM expandable to 64MB on the motherboard, the Z-486/25E features a new 64-bit memory bus to accelerate traffic between the two and enhance performance of complex and/or graphical applications. It can send 32-bit data to the processor and receive from memory at the same time. Three available 8/16/32-bit EISA slots speed I/O bus traffic and give you the option of adding bus-mastering cards.

The two Z-486/25E models offer integrated controllers to manage a standard 3½-inch 1.44MB floppy, another optional floppy, and one of two hard drives; you also get one parallel and two serial ports and support for the Weitek 4167 coprocessor.

The \$8599 Model 80 comes with a 640 by 480 VGA card and has a 19ms 80MB hard disk. The \$9999 Model 170 comes with a 16ms 170MB hard disk and employs a 1024 by 768 VGA-compatible Texas Instruments Graphics Architecture (TIGA) card. The TIGA card improves resolution, and its 60-MHz processor dramatically speeds up re-drawing of images for users running graphics-intensive



Zenith's Z-486/25E (above) makes a full-powered-but-compact *Windows* server for multiple Z-386 SX/20 workstations.

applications; it can be added to the Model 80 for \$899. An optional 16-inch color VGA monitor handles either 1024 by 768 or standard VGA output and lists for \$1999.

If you have a less demanding application and less to spend, the Z-386 SX/20 is a good, basic *Windows* worksta-

tion with plenty of power from the new 20-MHz version of the 386SX. That processor is bolstered by a 32K memory cache user-expandable to 128K. Included are 2MB of RAM (expandable to 16MB on the motherboard), the same drive offerings as the Z-486/25E, a VGA card, a 3½-inch 1.44MB

### Accutrak 2320

## Drives Break Backup Speed Barrier

In the office, tape backup is preferable to floppy shuffling, especially for backing up a server or extra-large hard disk. But even with average-sized disks, the typical 1MB-to-4MB-per-minute data transfer leaves you drumming your fingers for quite a while.

The Accutrak 2320 will save a good deal of wear and tear on your fingernails by giving you breakthrough 13MB-to-26MB-per-minute data transfer speeds in tape drives that offer capacities of 320MB to 640MB per minicartridge.

The base model Accutrak 2320 has a SCSI interface and is bundled with Irwin's *EzTape 2.2* tape operating system (TOS). For \$1495 you get

impressive 13MB-per-minute transfer speed and 320MB capacity per cartridge.

But for just a few hundred dollars more, you can really turn on the speed and pack in the data; a \$1795 version adds hardware data compression, doubling backup speed to a sizzling 26MB a minute and capacity to 640MB. The Accutrak 2320 can read cartridges written on any Irwin 40MB, 60MB, 80MB, or 120MB minicartridge system.

The menu-driven *EzTape* TOS supports DOS, OS/2, and UNIX/Xenix. It offers unattended backups and backs up a hard disk, individual files, or combinations of files selected by file-selection parameter

floppy drive, four open 8/16-bit slots, and one parallel and two serial ports.

You can choose the Model 40 with a 28ms 40MB hard disk for \$3499 or the Model 80 with a 19ms 80MB hard disk for \$3999. The Z-386 SX/20 uses the same compact box as the Z-486/25E. Like all current ZDS 386 and 486 systems, both have a 101-key keyboard, a Microsoft Mouse, and DOS 4.01 and *Windows 3.0* preinstalled on their hard disks. —Rex Farrance

### IN BRIEF

#### Z-486/25E, Z-386 SX/20

ZDS's new 25-MHz 486 and 20-MHz 386SX systems give you everything you need in a *Windows* workstation.

**Zenith Data Systems**  
2150 E. Lake Cook Rd.  
Buffalo Grove, IL 60089  
800/553-0331  
Reader service no. 635

(changed file only, non-EXE only, and so on). Irwin offers a Novell TOS, an OS/2 TOS, and a *Windows* TOS as options. —Rex Farrance

### IN BRIEF

#### Accutrak 2320

Irwin's Accutrak 2320 breaks the backup speed barrier with 13MB-to-26MB-per-minute data transfers to minicartridges that can hold 320MB to 640MB of data.

**Irwin Magnetic Systems, Inc.**  
2101 Commonwealth Blvd.  
Ann Arbor, MI  
48105-1561  
800/421-1879,  
313/930-9000,  
313/995-8287 (fax)  
Reader service no. 649



Now that you  
get the basics,  
here's why you  
should get the  
most popular  
backup software  
available.

## LIKE A BOLT FROM THE BLUE,

your hard disk will eventually come crashing down. Manufacturers expect it. They even give hard disks an "MTBF" rating—the Mean Time Between Failures.

Before you lose your valuable data, back it up with Fastback Plus.

**BACKUPS IN A FLASH** With Fastback Plus, you can do things that DOS Backup never dreamed of. Like back up all your daily file changes in less than a minute. Or blaze through your entire hard disk at three megabytes a minute on 386 machines, or 10 megabytes in four minutes on an AT. It even formats your backup diskettes – automatically.

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larger than a .22 calibre slug right through a backup diskette – and retrieved all the data! That's security. And if you need help dodging even bigger bullets, our technical support staff will surprise you with its courtesy and ingenuity. Just call, and you're guaranteed same-day service.

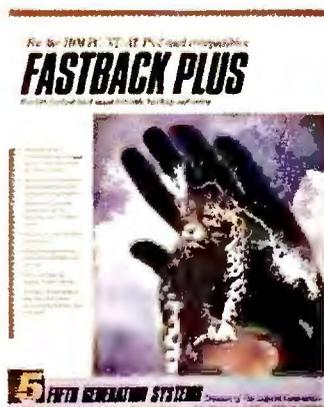
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**A POWERFUL GUARANTEE** Use Fastback Plus for 30 days, and if you're not completely satisfied, return it for a full refund. You have nothing to lose. And everything to save.

**FREE PYRO** For a limited time, get a FREE copy of Pyro!™, our popular screen-saving program just for writing "Pyro" on the Fastback Plus registration card before you return it. That's a \$49.95 value – free!

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Project Scheduler 5

## New Work-Group, Viewing Capabilities Featured

The latest release of Scitor's graphically based project management package, *Project Scheduler 5* lets you more easily consolidate independent schedules in your work group and adds expanded project viewing and multiple-report printing capabilities.

Most other project managers allow for some kind of consolidation of different projects by representing each subproject as a task in a master project that is merely a summation of those subprojects. Updating any of the tasks in the subprojects updates the master project, but it doesn't work the other way around. Scitor doesn't force you to make a common change by going through each of the subprojects independently: You simply identify the independent projects that are to be associated, which ensures that changes in the group-level plan stay consistent with each separate project and vice versa.

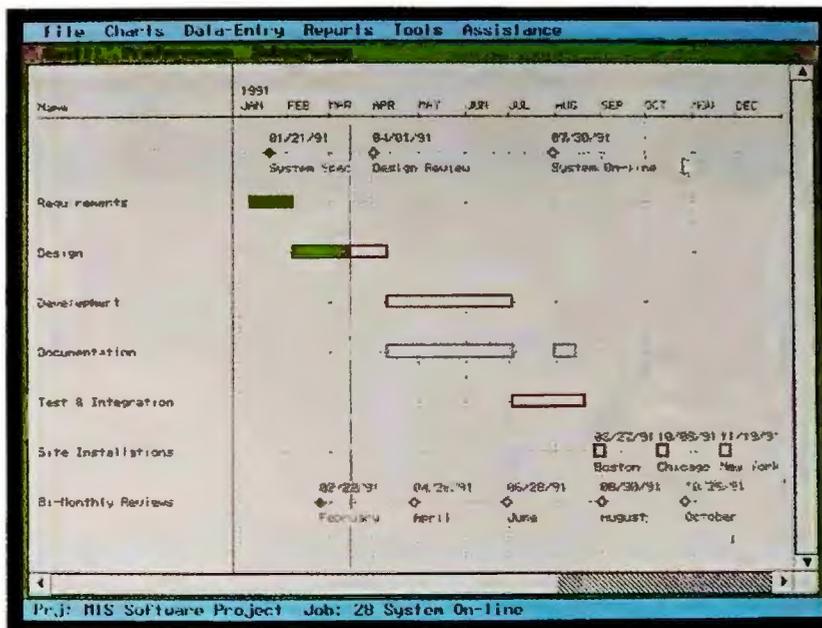
*Project Scheduler 5* gives you new ways to conceptualize all of this, first by enabling you to show multiple milestones and activities on the same line in a standard Gantt chart. This allows you to get a condensed view of the Gantt chart, showing a whole project with its series of activities on a single page. Depending on the level of detail you depict, you may be able to get more than one project on a page.

The update also gives you a new way of viewing and building a project. Many organizations plan their projects by subject area rather than by logical or time sequence, breaking tasks into more detail as departments demand. *Project Scheduler 5* enhances this approach by letting you create a "tree" chart called a Work Breakdown Structure

(WBS), which lets you eliminate the time dependency among tasks so that you can get tasks into the system that later can be linked logically in the critical path method.

Also new is a batch reporting function that allows you to store and print different views

or slices of a project in independent reports. To print, say, the tasks of different work groups in different reports, you turn on a macro recorder, make the necessary changes, and store them as a report type. Once created, these named reports for the differ-



Project Scheduler 5 lets you include different levels of detail in your Gantt charts and other types of graphs.

### Profitwise

## High-End Fault-Tolerant Features Added

Although version 2.0 of *Profitwise* is an integrated accounting program geared toward small businesses, it includes several fault-tolerant features for data integrity that rival those of high-end systems.

Version 2.0 saves your critical accounting data in a variety of ways should you encounter a system problem or power failure. For example, if your system goes down while you're in the middle of running the weekly payroll, the process restart function lets you pick up where you left off once power is restored. Using transaction rollback techniques common among minicomputer-based

systems, *Profitwise* monitors an entire transaction and does not update the data base until it's completed. Using a separate file outside the accounting data base, *Profitwise* prompts users to complete the transaction when they log back on to the system.

The program also maintains a detailed transaction log of all keystrokes since the last system backup for easy reconstruction of data in the event your accounting data base becomes unusable.

Version 2.0 lets users choose between cash- and accrual-based accounting.

The \$229 *Profitwise 2.0* re-

### IN BRIEF

#### Project Scheduler 5

*Project Scheduler 5* makes it easier to consolidate multiple projects and provides you with new ways to look at and build your master schedule.

#### Scitor Corporation

393 Vintage Park Dr.  
#140  
Foster City, CA 94404  
415/570-7700

Reader service no. 642

ent work groups can be rerun every time the tasks change.

Other new features include the ability to add text around the bars in a Gantt chart and to update the status of an activity by dragging the bars in the chart with a mouse rather than by keying in numbers.

*Project Scheduler 5* requires DOS 2.1 or later, 640K of RAM, and a hard disk and costs for \$685. Until April 30, registered *Project Scheduler 4* users can upgrade for \$150.

—Mark Burgess

quires DOS 3.1 or a later version, 640K of RAM, and a hard drive. It includes general ledger, accounts payable, accounts receivable, payroll, invoicing, inventory, job costing, fixed assets, address management, and system manager applications. Upgrades are available for \$99. —Roberta Furger

### IN BRIEF

#### Profitwise

The first major upgrade of *Profitwise* brings fault-tolerant capabilities to small-business accounting.

#### Solomon Software

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**AGFA** 

ZoFax 96/24P

**A Pocket Fax-Modem for the Road**

It isn't long after you get your laptop that you find yourself wanting to send data from the road. Not long after that, you'll want to send faxes. Most laptops have a modem option, but few offer a fax or even a slot for a third-party board.

**I N B R I E F**

**ZoFax 96/24P**

The ZoFax 96/24P is an economical, full-featured fax-modem solution for laptop users.

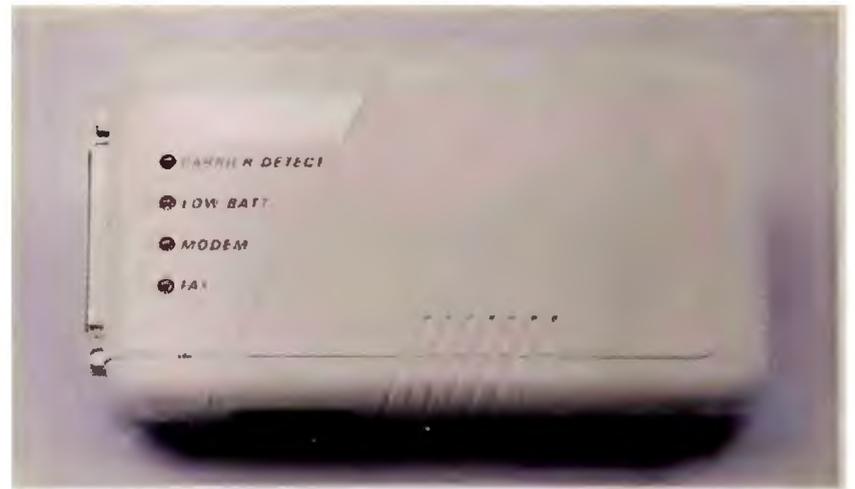
**Zoltrix Inc.**

41394 Christy St.  
Fremont, CA 94538  
415/657-1188,  
415/657-1280 (fax)

Reader service no. 638

The hand-sized ZoFax 96/24P meets your data and fax needs for as little as \$350. Hooking into your laptop's serial port, the 2½-by-5-inch ZoFax sends and receives CCITT Group III faxes at 9600 bps and data transmissions at 2400 bps or faster. A Plus version costs \$435 and uses MNP 5 error correction/data compression to improve the reliability of transmissions over noisy voice lines.

Zoltrix bundles Bit Software's *Bitcom* (to handle modem communications) and *Bitfax* with both ZoFax 96/24P and ZoFax 96/24Plus to let you schedule fax transmissions, direct incoming faxes to printer or disk, and even send multiple files.



With the palm-sized ZoFax 96/24P, you can send Group III faxes from your laptop computer.

ZoFax lets you send and receive faxes in the background using the TSR part of *Bitfax*. But since there's no on-board coprocessor to handle communications chores, you'll notice some slowdown in foreground applications while receiving, and still more while ZoFax sends your faxes. Also, the TSR takes 78K of lower-640

memory and can't be loaded in high DOS memory.

ZoFax is a couple hundred dollars under competitors. Included are an AC adapter, a 9-pin and 25-pin serial connector, a 6-foot phone cord with modular phone jack—even a battery and a carrying case that you can clip on to your belt. —Mark Henricks

**8514/Ultra, Icon Photo Board**

**Smooth Boards**

Working with the often-tiny design elements of CAD or publishing files can be frustrating, especially if you have less than a jumbo monitor. But new graphics boards from ATI Technologies and Icon Technologies promise to ease your eyes with anti-aliasing methods that smooth the "jaggies" out of curved and diagonal lines, clean up print previews, and make even 6-point type legible.

These boards take different paths to produce that result: ATI uses software fonts to smooth the edges, while Icon uses a special chip from Edsun Labs. The Icon board has more colors and greater legibility; the ATI 8514/Ultra offers more speed.

ATI's 8514/Ultra is somewhat more limited than the Icon board in that it can anti-

alias text under *Windows 3.0*, but not for DOS applications. Small text is made legible using ATI's Crystal Fonts, which can be scaled "on the fly." The 8514/Ultra bundles 13 PostScript fonts—including Times Roman and Helvetica—occupying as little as 30K per font family.

The 8514/Ultra also includes a proprietary Mach 8 graphics coprocessor that, according to ATI, can increase the speed of CAD applications, desktop publishing, and *Windows 3.0* by a factor of 10. The 8514/Ultra includes both super-VGA and 8514/A 1024 by 768 noninterlaced modes, which refresh screens one line after another to reduce flicker.

If you have an internal VGA connector, you can still use your old VGA card with this board or you can buy the 8514/Ultra + VGA that includes the VGAWonder + adapter built onto the Ultra board. It is \$100 more than the regular 8514/

Ultra, which includes 512K for \$599 or 1MB for \$799.

The Icon Photo Board is a VGA board that uses the new Edsun Labs chip to alleviate jaggies on the rounded edges of letters and graphics. The chip emulates 24-bit True Color displays, offering an effective resolution of 2048 by 1536 with up to 786,432 simultaneous colors out of 16.7 million on a standard VGA monitor.

Selling for \$475 with 1MB of memory, the Photo Board has IBM VGA compatibility and will support a 1024 by 768 noninterlaced monitor and resolutions of 800 by 600 and 680 by 480. Icon's library includes drivers for *Windows 3.0*, *AutoCAD/AutoShade*, *1-2-3* and *Symphony*, and *Micro Station PC*. As a bonus, the Photo VGA Board allows spreadsheet gurus to take advantage of a 132-column driver for *1-2-3* and *Symphony*.

If you're a CAD or DTP user, the Icon Photo Board can

give you more color with greater legibility. If speed is what you're after, the ATI 8514/Ultra may be a better choice. —Susan Lusty

**I N B R I E F**

**8514/Ultra, Icon Photo Board**

The 8514/Ultra and the Icon Photo Board give you clearer text and graphics on your screen at VGA and greater resolutions, and speed and color enhancements.

**ATI Technologies Inc.**

3761 Victoria Park Ave.  
Scarborough, Ontario  
Canada M1W 3S2  
416/756-0718,  
416/756-0720 (fax)

Reader service no. 645

**Icon Technologies**

317 Varsity Park #8  
15th St. NW  
Charlottesville, VA 22903  
800/933-3731

Reader service no. 646

# The flood has arrived. May we interest you in an ark?



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Circle 57 on reader service card

MouseMan Cordless Radio Mouse, Cordless Super Mouse

**Freewheeling Mice**

There's no doubt that a conventional mouse can be pesky at times, taking up space on your desktop and getting tangled with papers and coffee mugs. Both Z-Nix and Logitech take your mouse off its tether, letting you roll it around any part of your desktop that's convenient.

A cordless mouse retains the same basic shape and mechanical principle as a regular mouse, but instead of a cord, the mouse houses a transmitter that sends signals to a stationary receiver plugged into your PC. The Cordless Super Mouse from Z-Nix uses infrared signals; Logitech's MouseMan Cordless Radio Mouse uses radio waves.

The Cordless Super Mouse operates like the remote control for your TV or VCR and requires a clear line of sight between mouse and receiver. The receiver takes in signals within a 90-degree arc side to side and up and down from its electronic eye and from as far away as 6 feet. The receiver, which doubles as a mouse stand and battery charger for the mouse's two 8-hour batteries, can be placed on your desktop or your PC. One of the two one-year batteries is being recharged in the receiver while the other is being used by the mouse.

The MouseMan Cordless Radio Mouse is the first radio-controlled mouse on the market. It runs on a frequency low enough not to interfere with other machinery on your desktop and has an operating range of 6 feet in a 360-degree circle around the receiver. Similar to a cordless telephone or garage-door opener; the receiver for a radio-controlled mouse can be located anywhere within its receiving



**Cordless Super Mouse and MouseMan Cordless Radio Mouse (above) rove without a leash.**

range, even under your desk, and it doesn't mind clutter; but it has to function at specific frequencies so it doesn't interfere with other equipment in your office or your neighbor's.

All MouseMan units initially are set to the same de-

fault channel within the frequency, but they come with up to eight channels so that if you're operating within one meter of another MouseMan, you can switch channels. The MouseMan runs on a common lithium battery, and it sustains its one-year life by running at lower levels when the mouse is not active.

Both the Cordless Super Mouse and the MouseMan Cordless Radio Mouse connect to a serial port on your PC and work with any Microsoft Mouse-compatible software. Special utilities bundled with the hardware can modify keyboard-based software to work with the mouse. The Z-Nix Cordless Super Mouse retails for \$164.95, while the Logitech MouseMan is \$199.

—Melissa Riofrio

**Voice-It for Spreadsheets, Voice-It for Word Processing**

**Tell It Like It Is, Hear It Like You Tell It**

Ever get lost in your spreadsheet formulas or wish that you could point out the critical or overly technical parts of your business reports to your readers in layman's terms? By using the voice annotation capabilities of *Voice-It*, you can add your perspective to thorny *WordPerfect* documents and *1-2-3* spreadsheets. These \$99 programs use the Artisoft LANtastic Voice Adapter Board, which is bundled with the Artisoft Handset. If you don't already have this hardware, you can buy it with the software for an extra \$100.

After *Voice-It* is installed, it resides within the utility section of your main application (so far, it supports only *1-2-3* or *WordPerfect*), and you can call it using hot keys.

First, place your cursor on the cell or paragraph that you want to explain, then activate *Voice-It* by hitting <Alt>

<F7>. Type **R** (for record) and talk away into the Handset. When you're finished, type **Q**, and the utility closes and returns you to your application. Although you can talk all you want, be prepared to pay the piper in kilobytes—expect 480K of hard disk space to disappear for each minute of speech (248K if compressed).

**I N B R I E F**

**Voice-It for Spreadsheets, Voice-It for Word Processing**

*Voice-It* lets you clarify *1-2-3* spreadsheets and *WordPerfect* documents by attaching voice notes.

**Voice-It, Inc.**

1001 Snowden Farm Rd.  
Collierville, TN 38017  
901/853-4456

**Reader service no. 647**

**I N B R I E F**

**Cordless Super Mouse, MouseMan Cordless Radio Mouse**

See how they run: Get greater desktop maneuverability with either the infrared Cordless Super Mouse or the radio-controlled MouseMan Cordless Radio Mouse

**Z-Nix Co., Inc.**

211 Erie St.  
Pomona, CA 91768  
714/629-8050,  
714/629-4792 (fax)

**Reader service no. 643**

**Logitech Inc.**

6505 Kaiser Dr.  
Fremont, CA 94555  
415/795-8500,  
415/792-8901 (fax)

**Reader service no. 644**

So how do your readers know where to find your pearls of wisdom? In *1-2-3* they can run a search function that will generate a list of the cell numbers in which notes appear. Or they can invoke *Voice-It* to find the audio notes for them. *Voice-It for WordPerfect* uses markers within the text to visually aid users in locating and playing the notes. Of course, they always have the option of plowing through the numbers or words sans audio notes or repeating audio notes along the way.

Your *Voice-It*-annotated files can travel across any local area network as binary text files or be stored on floppies. *Voice-It* is available for *1-2-3* 2.x and *WordPerfect* 5.x formats. Support for ASCII files is anticipated around midyear. Expect the *1-2-3* version of the utility to take up 40K of conventional memory; the *WordPerfect* version will use 75K. Also tack on an additional 6K for the LANtastic Voice Adapter. —Cathy Smith

**AW...  
WHAT  
THE  
HECK!**

**Let's see  
the other  
guys beat  
this Price!**



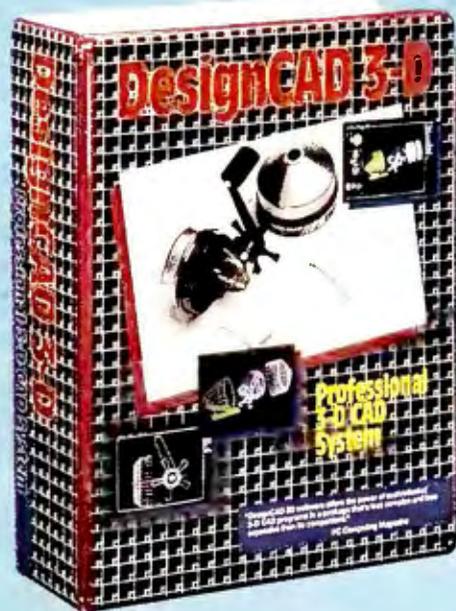
December 11, 1990  
DesignCAD 3-D, Version 3.1



**If there ever was a CAD program out to prove that AutoCAD, CADKEY, VersaCAD, and other \$3000 programs are overpriced, it's DesignCAD!**

**(MicroCAD News review)**

# DesignCAD 3D



# \$399

### *We Added...*

to DesignCAD 3D version 3.1:  
A Basic-like programming language entitled BasicCAD.  
We added new commands.  
We added hardware support for dozens and dozens of new

devices. We made hundreds of overall internal enhancements! We improved the manuals, the packaging and the speed!

### *How much extra did we charge?*

Nada. Nothing. Zip. No extra charge at all. Oh, sure...our accountant said we could increase the price. Our lawyer said there was no legal reason not to charge more. A minister said we had no moral obligation to keep the same price! So, why didn't we raise the price for DesignCAD 3D version 3.1? Because...in the Great American Tradition we said "Aw...What the Heck. Let's see the other guys beat this price!" DesignCAD 3D version 3.1 sells for \$399.

### *Does this include everything?*

Yes. We include everything! The programming language, the hardware device drivers (more than 450), built-in shading capability, hidden line removal capability, solid-object modeling capability, translators to-and-from other file formats, are all included!

### *How can you afford to sell a program like this at such a low price?*

This is our most often asked question. We have a simple answer. Volume. We sell thousands of these programs each month! If we were to charge thousands of dollars per copy (like our competitors) we would restrict our sales to the professional trades only. By lowering our price we sell to professional architects and engineers as well as the ordinary individual!

Many ordinary individuals purchase DesignCAD 3D for personal projects. Many people purchase DesignCAD 3D and perform CAD Drafting at nights and on weekends as a second job! People design "dream homes" and "widgets". The uses are limited only by YOUR imagination!

Remember - American Small Business Computers also sells a 2D version of DesignCAD. It costs only \$299! Write or call for FREE brochures that will help you determine which program best suits your need.



**American**  
Small Business Computers, Inc.  
327 South Mill Street • Pryor, Oklahoma 74361  
(918) 825-4844 • FAX (918) 825-6359

Circle 306 on reader service card

VoiceFax

## Callers Get Faxes on Demand

The marriage of fax and voice-recognition technologies has spawned a service that developers describe as unattended fax retrieval. It works like this: Customers call a *VoiceFax*-equipped computer, listen to a computer-generated message, and type in a product code number and their fax number using a phone touchpad, and the desired document is automatically faxed to them—all without a human operator's assistance.

*VoiceFax* is for you if you're a professional information broker or in any business seeking a more cost-effective means of dispensing data to customers, prospective customers, or even off-site employees. *VoiceFax* lets a caller select from up to 500 different text and graphic documents using a three-digit PIN that is provided beforehand.

Your documents can be created with desktop publishing software and have multiple fonts and complex graphics. *VoiceFax* can import and export ASCII, Paradox, DBF, and WKS file formats.

*VoiceFax* lets you customize all aspects of the system, from caller access levels to voice messages. You can limit the number of calls or documents available to each caller per day or confine incoming calls to a particular area code. You can restrict public access to generic product information, while permitting off-site sales staff to receive sensitive corporate faxes. You can change your on-line messages using the telephone handset as a microphone, and any feature of the system can be modified without using programming or scripting languages.

*VoiceFax* monitors and records all on-line usage, providing valuable demographic

data. You can create reports on the number of daily fax transmissions, client account data, and present system configuration.

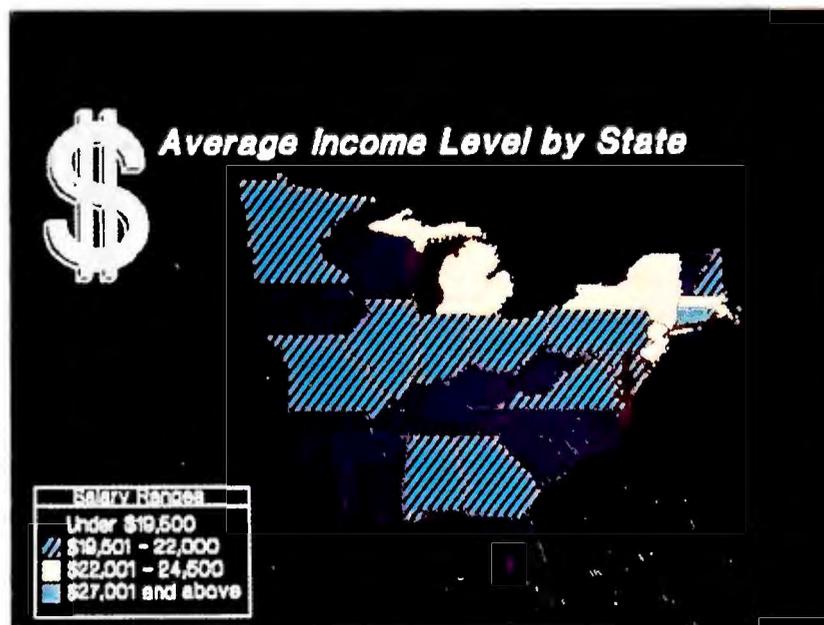
*VoiceFax* isn't cheap, and it requires a 386 or 486 with 4MB RAM, an 80MB hard disk, VGA graphics, a voice-recognition board, a fax board, and two dedicated phone lines. A bundle of the voice software, a run-time version of *Paradox* data manager for managing your fax documents, a Tone-

Talker TT-100 voice-recognition board from BCB Electronic Sales, and a GammaFax fax board from GammaLink sell for \$5895. Full turnkey systems start at \$8995 for a 386/25-based PC with *VoiceFax*, the *Paradox* run-time version, and ToneTalker TT-100 and GammaFax boards.

*VoiceFax* supports multiple fax boards for multiple transmissions but is limited to a single incoming voice line, leaving many customers with an "all lines busy" recording. The firm is developing a version for multiple voice lines. —Art Wilcox

Harvard GeoGraphics

## Charting a Path to the Mainstream



Harvard GeoGraphics maps present your data graphically using a variety of colors, fills, symbols, titles, and legends.

**H**arvard GeoGraphics brings mapping software out of the chart room and onto the business desktop. This \$395 charting stand-alone, which is compatible with Software Publishing's popular *Harvard Graphics*, lets you support your presentations with customized world, U.S., state, and county maps and even more detailed maps of aggregate three-digit ZIP code sections.

*Harvard GeoGraphics*

contains a data base of over 60,000 U.S. and 3000 international cities. But you can import and map your own data via WK1, WKS, ASCII, and delimited ASCII files. Data and graphics are automatically linked—if data changes, the associated map changes.

You can customize maps with variable fills, text callouts, city icons, and images from the symbol library in a variety of colors. You also can

**IN BRIEF**

**VoiceFax**  
VoiceFax lets your customers or off-site personnel select documents and fax them to themselves, without assistance from a human operator.

**VoiceFax Inc.**  
1675 W. 8th Ave. #106  
Vancouver, B.C.  
Canada V6J 1V2  
604/732-9771,  
604/732-3007 (fax),  
604/222-8444 (VoiceFax demo line)

**Reader service no. 648**

rotate and position symbols and text and size the maps.

Printouts can be in landscape or portrait mode on letter-, legal-, or A4-sized pages, and you can export map files in *Harvard Graphics*' CHT and SYM formats, and in CGM, EPS, HPGL, and PCX.

- You can shell out to other applications without leaving your map in *Harvard GeoGraphics*, and speed keys help you streamline routine tasks.

You'll need DOS 2.1 or later, 640K of RAM, a CGA or better graphics adapter (for color), and a hard disk. Current users of *Harvard Graphics U.S. MapMaker* can upgrade for \$95. —Rex Farrance

**IN BRIEF**

**Harvard GeoGraphics**  
Predrawn maps and a large geographic data base help you make an impact with your business presentations.

**Software Publishing Corp.**  
1901 Landings Dr.  
Mountain View, CA  
94043  
415/962-8910

**Reader service no. 640**



“There is very little more you can ask for from a computer.”

— *PC Magazine*  
January 15, 1991

But ask anyway!



# How about:

- ✓ Editor's Choice
- ✓ 33MHz '386
- ✓ 128K SRAM Cache
- ✓ Up to 32MB Motherboard Memory
- ✓ Eight Bay Vertical Case
- ✓ 250 Watt Power Supply
- ✓ Twin Cooling Fans
- ✓ DOS 4.01 & Windows & Mouse
- ✓ FCC Class B
- ✓ 24 Hour a Day Toll Free Sales and Technical Support

"The combination is as close to unbeatable as you can get."

— *PC Magazine*



Take it from the experts. ZEOS builds the best '386 systems! "Quality comparable with IBM or Compaq... Excellent Value... Blows away every other computer... ZEOS is top drawer... Unbeatable... Top Honors... A smart choice!"

The industry experts love ZEOS systems. And you will too. Why?

Because ZEOS really does build the very best '386 systems you can buy. In naming the ZEOS '386-33 *Editor's Choice*, *PC Magazine* said ZEOS shows "that you needn't be among the most expensive to be the best." But what does that mean to you?

It means that when you purchase your new ZEOS '386 you will receive more Performance, superior Quality, and better Support than you can get anywhere else. Take performance for instance.

#### **CACHE MEMORY MEANS PERFORMANCE!**

That's why each and every ZEOS '386DX system has a minimum of 64K SRAM Cache standard; *our 33MHz screamers come standard with a 128K*

*Cache*. Having an on-board memory cache is important in realizing the full potential of any '386 processor. That's why only low end '386DX systems are sold without a Cache. That's why ZEOS gives you a Cache, and all the extra performance that comes with it!

And it's not only the Cache that's fast, so is everything else. In choosing the ZEOS '386-33 as *Editor's Choice*, *PC Magazine* noted "ZEOS International designed this machine for speed—and came up with a system that topped four of our benchmark tests and excelled on the remaining ones." Designed for speed. Absolutely.

Speaking of speed. Standard in your new ZEOS '386 will be one of our *incredibly fast* 85MB or 130MB IDE hard drives. These babies were designed for the '386 and they come packing all the speed you'll need. Like *PC Magazine* said, ZEOS designs for speed. And for Quality Too.

#### **ZEOS QUALITY. SECOND TO NONE.**

When you buy your new ZEOS system you are buying *absolute Quality*. As an example, every ZEOS '386DX system comes with a 250 Watt power supply. They cost more, they're better too. Much Better. We invest more in our power supplies to help assure you years of trouble free operation. Even the small details can make the difference.

Like our floppy drives. We use only genuine Teac®. They are the best money can buy. The same is true of *all* the components of your system. Only *the very best* are used. Everything is top notch. Top quality. Top Value.

You'll especially like the value you find in our money saving ZEOS system packages. And when you opt for any package with 4 Megs of memory, we also include the new version of Microsoft®

Sim  
the H

## SYSTEMS

Windows and a mouse, plus Microsoft DOS 4.01. All at no additional charge. A rip-roaring Cache, extra Memory and Windows 3.0. What more could there be? From ZEOS, lots more.

### **ZEOS 24 HOUR A DAY SUPPORT. TOLL FREE.**

If you should need assistance, you want your computer company to be there no matter what the hour. That's why ZEOS invented *24 Hour a Day Sales and Technical Support*. We did it for you. And it's the best in the business. As a ZEOS customer, you are supported around the clock, *any time of the day or night*. With ZEOS you can have complete confidence in support, in your system and in the company.

Because at ZEOS, we not only build our own systems, we design them from the ground up too. Unlike most of the others, ZEOS maintains its own chip level Research and Development Labs plus our own board level manufacturing facility. All right here in St. Paul, Minnesota, USA.

You can buy with confidence too because ZEOS is a strong and rapidly growing public company (NASDAQ Symbol: ZEOS). As a matter of fact, according to *INC. Magazine*, ZEOS is America's 19th fastest growing public company! And, our professional

Systems Consultants and expert Technical Support staff serve tens of thousands of customers World Wide, Twenty Four Hours a Day.

Performance. Quality. Price and Support. And all of it backed by the ZEOS Customer Satisfaction Package which includes our 30 Day Absolute Satisfaction Money Back Guarantee, One Full Year Limited Warranty and our Express Parts Replacement Policy. You're going to be very satisfied. We don't just say it. *We Guarantee it!*

### **ORDER YOUR NEW ZEOS '386 TODAY!**

As *PC Magazine* recently said "It's difficult to be more eloquent about the ZEOS '386-33 than it already is about itself." They went on to say ZEOS shows "you needn't be among the most expensive to be the best." We couldn't have said it better ourselves.

Why not pick up the phone and give us a call right now. Your own expert Systems Consultant is waiting here now to help you tailor your new ZEOS '386 to your specific needs. Buying your ZEOS '386 is perhaps the best purchase decision you'll ever make! After all, your satisfaction is absolutely *Guaranteed*.

**CALL NOW TOLL FREE**

**800-423-5891**

### **DON'T FORGET THE OPTIONS!**

As *PC Magazine* said, ZEOS offers "more options than even the most configuration hungry hound could possibly need." Because every ZEOS system is custom built you may choose from a huge selection of hard drives, video packages and many other options. On-site service is available too. Call 800-423-5891 for details.

## **ZEOS '386 SYSTEMS— A FEW EXPERT OPINIONS:**

***PC Magazine*, "Out of 104 machines from 58 companies... For Overall Excellence we selected ZEOS International..."**

***InfoWorld*, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent. Value: Excellent!"**

***Government Computer News*, "Arguably the fastest MS-DOS and OS/2 micro in the world."**

***PC Resource*, "ZEOS ...provides quality comparable with IBM or Compaq and does so for about 70% of the price."**

***PC Magazine, Editor's Choice*, "The ZEOS blows away every other computer... a smart choice."**

**ZEOS '386 SYSTEMS.  
A SMART CHOICE  
INDEED!**



**Get Started Fast and Easy!  
ZEOS '386-25 Desktop.  
64K Cache, 85MB IDE  
drive, 1MB Memory.  
ONLY \$2295**

This is the place where high performance begins. Your own ZEOS 25MHz '386 caching system. \$2295. Incredible!

- Ultra High Speed 64K SRAM Cache, providing Zero-Wait State performance vastly superior to page/interleave memory schemes.
- Genuine Intel® 80386 25MHz CPU. Full 80387 and Weitek® math coprocessor support.
- 1MB of High Speed DRAM, expandable to a total of 16MB.
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- ZEOS/RS 101 key SpaceSaver Keyboard.
- ZEOS I/O Card with Two High Speed Serial plus Parallel and Game ports.
- 1-32, 6-16 and 1-8 bit expansion slots.
- Rugged ZEOS 5-bay desktop case with 250 Watt power supply for increased system expandability, an important extra at no additional cost.
- 30 Day Absolute Satisfaction Money Back Guarantee and ZEOS Customer Satisfaction Package.
- One Full Year Limited Warranty with Express Parts Replacement.
- 24 Hour a Day Toll Free Technical Support, 365 Days a Year.

**Upgrade from 85MB to 130MB for only \$225 or go up to 200MB for only \$495. Packages with our 130MB standard go to 200MB for only \$270!**



**ZEOS '386-25 Desktop!  
130MB IDE Drive, 4MB  
Memory, 1024 VGA Color,  
Windows & More.  
ONLY \$3195**

For incredible 25MHz speed and power don't miss the ZEOS '386-25 package. Loaded and ready to go!

- Ultra High Speed 64K SRAM Cache. It races right past other 25MHz systems and never looks back!
- Intel® 80386 25MHz CPU. Full 80387 and Weitek® support.
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- Ultra Fast 130MB IDE Hard Drive, Teac® 1.2MB and Teac® 1.44MB Floppy Drives.
- ZEOS 14" High Res 1024x768 VGA Color monitor with Tilt/Swivel Base plus High Speed 16-bit VGA 1024 color graphics card with 512K video RAM.
- ZEOS/RS 101 key SpaceSaver Keyboard.
- ZEOS I/O Card with Two High Speed Serial plus Parallel and Game ports.
- 1-32, 6-16 & 1-8 bit expansion slots.
- Rugged ZEOS 5-bay desktop case with 250 Watt power supply for increased system expandability, an important extra at no additional cost.
- Microsoft® DOS 4.01 with Disk Cache Software *plus* Microsoft Windows™ 3.0 and mouse!
- Full ZEOS Satisfaction Package.

**ZEOS '386 33MHz Vertical  
system. Perhaps the fast-  
est in the world! 130MB  
IDE, 4MB Memory, 128K  
Cache, VGA Color &  
Options Galore.  
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You simply cannot buy a better 33MHz '386 system. Feature for feature nothing can touch the ZEOS '386-33!

- Ultra High Speed 128K SRAM Cache. Coupled with the fastest motherboard on the market. Unbelievable performance. Believe it!
- Genuine Intel® 80386 33MHz CPU. Full 80387 and Weitek® math coprocessor support.
- 4MB of High Speed DRAM, expandable to a whopping 32MB on the motherboard.
- Ultra Fast 130MB IDE Hard Drive, Teac® 1.2MB and Teac® 1.44MB Floppy Drives.
- ZEOS 14" High Res 1024x768 VGA Color monitor with Tilt/Swivel Base plus High Speed 16-bit VGA 1024 color graphics card with 512K video RAM.
- ZEOS/RS 101 key SpaceSaver Keyboard.
- ZEOS I/O Card with Two High Speed Serial plus Parallel and Game ports.
- 2-32 and 6-16 bit expansion slots.
- Rugged ZEOS 8-bay vertical case with 250 Watt power supply for maximum expandability.
- Two cooling fans for added reliability and increased component life.
- Microsoft® DOS 4.01 with Disk Cache Software *plus* Microsoft Windows™ 3.0 and mouse!
- 30 Day Absolute Satisfaction Money Back Guarantee and ZEOS Customer Satisfaction Package.
- One Full Year Limited Warranty with Express Parts Replacement.
- 24 Hour a Day Toll Free Technical Support, 365 Days a Year.

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Z-Card and COD.

# ZEOS '386 Systems.

~~Five~~  
~~Four~~ Times  
Editor's Choice

“Deserving of this award is the ZEOS 386-33 with its superior combination of performance, expandability, and price.”

— *PC Magazine, On Why the ZEOS 386-33 Wins Editor's Choice.*

Call Now!  
800-423-5891

# 10 Good Reasons To Buy From ZEOS®

## Reason #1

### "Overall Excellence"

As *PC Magazine* said "Price is always a consideration. So are benchmark test results. But both factors can be deceiving, which is why we consider them in the context of other aspects that will make the difference months and years down the road!"

These are the attributes which *PC Magazine* used in awarding ZEOS the coveted Editor's Choice, not once but five times. And "Overall Excellence" are the very words *PC Magazine* used in describing ZEOS systems comparing them to all others.

## Reason #2

### Dazzling Performance.

In one recent '386 review, *PC Magazine* awarded ZEOS Editor's Choice. "The ZEOS '386 blows away every other computer... a smart choice" is what they said. And in another recent review, *Government Computer News* said the ZEOS 33MHz '386 is "arguably the fastest MS-DOS and OS/2 micro in the world!"

Dazzling Performance is built into every ZEOS system. It's a key component of ZEOS Overall Excellence.

## Reason #3

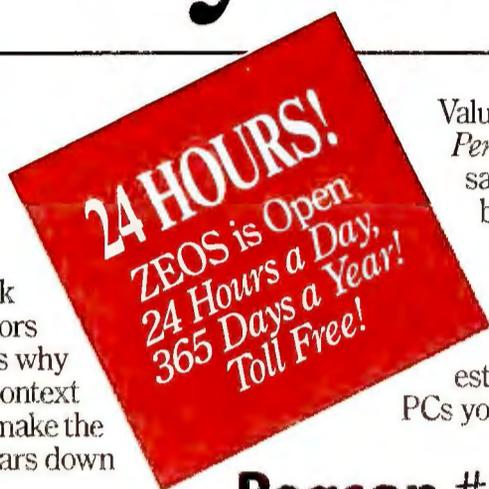
### Exceptional Quality.

*PC Resource Magazine* put it this way, "ZEOS... provides quality comparable with IBM or Compaq and does so for about 70% of the price." ZEOS uses only the very best components. And every system is fully tested and burned-in right in our own labs.

## Reason #4

### Value.

*InfoWorld* says, "We find the ZEOS '386 an excellent value. Speed: Excellent. Compatibility: Excellent.



Value: Excellent"

*Personal Computing* said, "ZEOS... is the best value we've come across... its performance is right up there with the slickest, most expensive PCs you can buy."

## Reason #5

### Warranties and Guarantees.

ZEOS believes in its products. That's why we offer each and every customer our 30 Day Absolute Satisfaction Money Back Guarantee, no questions asked. Plus, our One Full Year Limited Warranty and Express Parts Replacement Policy. Optional On Site Service is available too. Call for details.

## Reason #6

### 24 Hour Toll Free Technical and Sales Support.

At ZEOS, the customer is #1. That's why we invented 24 Hour a Day Tech Support. For *your* convenience. If you buy a product from us we feel we should be there to help, any time of the day or night. Give us a call Toll Free! 800-423-5891. Anytime!

## Reason #7

### Experience.

Almost unique in the mail order computer industry, ZEOS maintains its own chip level Research and Development staff. In addition to Systems Manufacturing, we also operate our own Board Level Manufacturing facility.

ZEOS has been involved in Research and Development since our incorporation back in 1981. Our strong and experienced Research, Manufacturing and Technical Staff translates into superior factory direct computer systems for you.

## Reason #8

### A Sterling Reputation.

In magazine after magazine and review after review ZEOS systems are cited for Overall Excellence, for Excellent Value, as the Right Choice and so on. All of this is flattering but the most important thing is this: What do our customers think? Frankly, they love us. The systems and the support. That means more to us than anything.

## Reason #9

### Easy to Buy.

ZEOS systems are easy to buy. You can pick up the phone any time of the day or night and order your new ZEOS computer. And we accept MasterCard, Visa, Discover, American Express, and Corporate Purchase Orders from Fortune 1000 Companies, Colleges, Universities and Governments. Complete Leasing Programs are available as well.

And now the Z-CARD! It's your very own ZEOS Credit Card and you can apply today. With the Z-CARD you can charge your ZEOS purchases and pay in easy monthly installments. It's just like a Bank Card. Why not apply for your Z-CARD now!

## Reason #10

### You're Going to be Very Satisfied.

When it comes right down to it, you're going to be very satisfied with your new ZEOS system. Our goal is your complete satisfaction. And that's our commitment to you. To quality. To performance. To reliability and support. To *Value*. We don't just say it, *we Guarantee it!*

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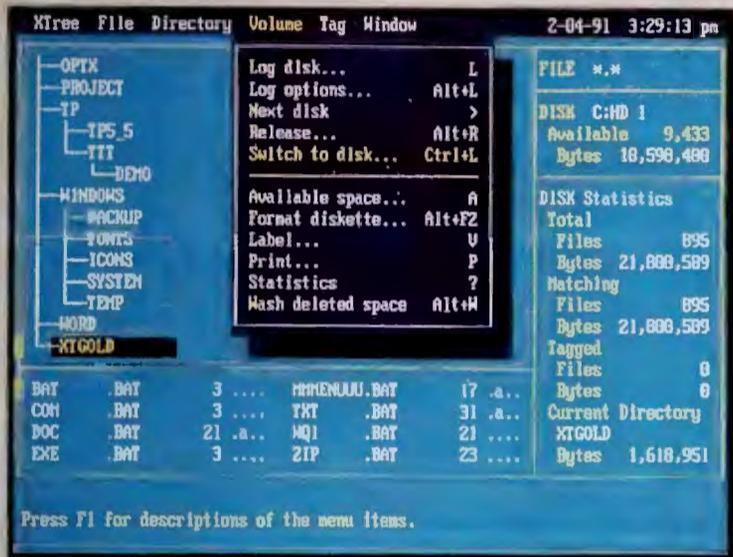
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# UPDATE

## New Versions of Your Favorite Products

### XtreeGold 2.0



Version 2.0 of the XtreeGold DOS shell includes new pulldown menus and file viewers in numerous formats.

Version 2.0 of the XtreeGold DOS shell includes new pulldown menus and file viewers in many more formats. You can print or copy text from a file that you're viewing, although you can't launch the application from the file that created it as you can with Norton Commander. Other additions include an auto-install feature that searches your

hard disk and automatically adds applications to your menus and the ability to undelete lost files, compare subdirectories, and move files between drives. XtreeGold 2.0 retails for \$149; upgrades are \$35. Xtree Co., 4330 Santa Fe Rd., San Luis Obispo, CA 93401; 800/388-3949, 805/541-8053 (fax).

Reader service no. 652

### Who-What-When Enterprise

Who-What-When Enterprise brings the personal and resource management capabilities of the single-user product to any DOS 3.1-compatible network, including Novell NetWare. With it, you can link work-group members' personal calendars, card files, phone lists, memos, and group resource and project schedules in real time. The six-station server pack is \$695; each additional five-station pack is \$495, and a 20-station pack is \$1495.

Chronos Software, 555 De Haro St. #240, San Francisco, CA 94107; 800/777-7907, 415/626-5393 (fax).

Reader service no. 651

### QMS-PS 810, 820, 2210, 2220

QMS has extended the automatic emulation switching of its QMS-PS 410 personal printer to its QMS-PS 810, 820, 2210, and 2220 lasers. The bundled TSR software will automatically recognize and adjust between Adobe Post-

Script print jobs and those in any one of the other standard emulations offered with these printers—among them, PCL 4, HPGL, Diablo, and Epson. You select emulations through a pop-up DOS window that takes less than 10K of conventional memory. QMS, Inc., One Magnum Pass, Mobile, AL 36689-1250; 800/631-2692, 205/633-4866 (fax).

Reader service no. 653

### Generic CADD 5.0

Generic Software has released five symbol libraries for use with its Generic CADD Starter Kit and Generic CADD 5.0. In addition to common business icons, the new libraries include hundreds of predrawn symbols for use in the design of office interiors, printed circuit boards, local area networks, and maps. The first two libraries are \$99.95 each; the others are \$49.95 each. Generic Software, Inc., 11911 N. Creek Pkwy. S, Bothell, WA 98011; 800/228-3601, 206/483-6969 (fax).

Reader service no. 654

### Norton Backup 1.2

The new version of Norton Backup lets PC managers implement preset backup procedures for an entire office or company and offers more kinds of network and multiple-drive support. Users can pick from several companywide, preset routines such as daily backup of all files or incremental backups, depending on, say, time available. Symantec maintains that version 1.2 of Norton Backup is 30 percent faster than its predecessor. Upgrades for the \$149 pro-

gram can be purchased for \$10. Symantec Corp., 10201 Torre Ave., Cupertino, CA 95014-2132; 800/441-7234, 408/253-9600.

Reader service no. 650

### Artemis Planner 2.0

Enhanced interactive drawing capabilities in version 2.0 of Artemis Planner let managers do preliminary project planning most efficiently. For example, you can now create logic links between the bars on your Gantt charts just by clicking and moving them. You can move whole blocks of tasks to see the effect of a new sequence. Upgrades to the \$895 package are \$175. Metier Management Systems, 12701 Fair Lakes Cir. #350, Fairfax, VA 22033; 800/477-6648, 703/222-8203 (fax).

Reader service no. 656

### Great Plains Accounting Series 5.35

Great Plains Accounting Series 5.35 lets you choose whether to post transactions on a module-by-module basis or simultaneously across all modules. With the former, you can continue to enter data into unaffected modules while a module posts; only the tables of affected files are locked. Module prices range from \$495 to \$995. Great Plains Software, 1701 S.W. 38th St., Fargo, ND 58103; 800/456-0025, 701/281-3171 (fax).

Reader service no. 655

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

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Or Quattro Pro  
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# o,

## CA Shocks Spreadsheet World With 70% Price Cut: Highly-Rated SuperCalc5 Now Only \$149.00

CAMBRIDGE, Mass — Early today Computer Associates announced a dramatic price reduction on one of the industry's most popular and best-selling spreadsheet programs, SuperCalc5.

Effective immediately, the suggested retail list price for SuperCalc5 has been slashed from \$495.00 to \$149.00. This means that the new street price for SuperCalc5 — which is Lotus 1-2-3 compatible — will very likely be under \$100.00.

This bold, new pricing strategy is great news for spreadsheet users. It means now everyone can afford to trade up to the most advanced spreadsheet technology in the industry. And unlike Lotus 1-2-3 3.0 or Excel for Windows, which have been

"We've always listened closely to what users want and they've been concerned with high spreadsheet prices and the expensive hardware upgrades which are often required," said a CA spokesperson, "Users told us that they wanted the latest spreadsheet technology, but they needed it at a price they could afford and in one application that would run on all of their PCs. That is exactly what we're giving them. SuperCalc5 at this new low price is by far the best value in the spreadsheet industry."

Initial reaction amongst spreadsheet users and software dealers has been overwhelmingly positive. "This is terrific," said one user, "It's about the best value I've ever seen."

It's the beginning of a revolution.

The affordable spreadsheet revolution. Now every user in America can afford the most advanced spread-

sheet technology. The latest breakthroughs. Newest features. Hottest 3-D graphics.

It's all there inside SuperCalc5. With Lotus 1-2-3 compatibility, presentation quality graphics and spreadsheet linking, SuperCalc5 has

become one of the most popular, best-selling spreadsheets in the industry.

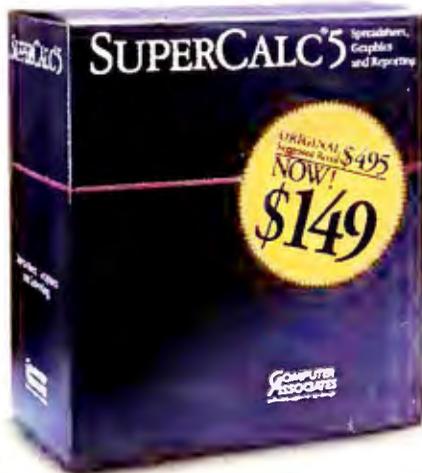
More than 3,000,000 copies have been

sold and unlike some others, SuperCalc5 runs on virtually every type of PC that exists.

If you've been thinking about moving up to a more powerful, full-featured spreadsheet, now's the time.

Move up to SuperCalc5 and get everything you've always wanted for hundreds of dollars less than Lotus 1-2-3, Excel or Quattro Pro. For the name of your nearest SuperCalc5 dealer call 1-800-CALC-149.

Do it right now. After all, at this price, why wait?



# 33-MHz 386s: Survival of the Fastest

**When demanding future applications arrive, will you be ready? Buy one of the nine 33-MHz 386s reviewed here, and enjoy power for today and tomorrow at a practical price.**

*Scott Spanbauer*



Remember when the 33-MHz 386 was cutting-edge technology? That isn't so anymore, which is good news for the price conscious. On average, a 386/33 costs a full \$1800 less than an equivalent 25-MHz 486 (\$1200 less if you buy the 386 with a math coprocessor). True, 486/25s are nearly 44 percent faster than 386/33s in CPU-intensive tests, but they're only slightly faster at disk-intensive chores. With power enough to take you well into the nineties, 386/33s are the best bargains in high-end computing.

Many buyers shopping for a file server assume they need a 486, but at today's prices, a 486 is a waste of money. File server performance depends more on the hard disk and the amount and speed of the RAM than on the CPU, and that makes the 386/33 a wiser purchase.

A 386/33 can also make a good workstation, but it's not for everyone. Some users are probably better off buying a 20-MHz 386SX for about half the cost. Because it's a 386, an SX will still run *Windows* reasonably well if you don't do a lot of multitasking or run high-end graphics programs. If you do, the SX's pace will be leisurely, making a full-blooded 386 a better choice.

## Putting Technology in Its Place

We scrutinized nine 33-MHz 386s for your shopping pleasure, everything from small-footprint desktop com-

puters to full-strength floor-standing towers. Our standard system configuration included 4MB of RAM, a 100MB to 150MB hard disk, VGA graphics, a color monitor, a mouse, and the latest available version of DOS. For network testing, we installed the manufacturer's 300MB (or next larger capacity) hard disk. To obtain realistic prices, we polled more than 100 retailers in eight major cities nationwide to find the street prices of systems equipped in our configuration.

As the PC World Test Report reveals, performance scores varied considerably. Before you buy a system, make sure it performs well in your applications—it may be lightning fast in one application but agonizingly slow in another. The *Windows* test is a key gauge of desktop performance, the NetWare test of server performance.

Expandability is key to long-term usefulness, especially in a server. Having plenty of drive bays and expansion slots will ensure that you can give your PC infusions of life-extending technology over the years. Five of the reviewed systems offer an EISA (Extended Industry Standard Architecture) bus, which promises higher throughput and backward compatibility with standard AT-style boards. But the jury's still out on EISA: Few add-on boards exploiting it have arrived, and on the whole, the AT-style systems tested here performed just as well as the EISA systems.



Is it a server or just a supersonic desktop? These two Best Buys can play both roles, but the speedy Arche Legacy 386-33 is better at desktop duty, while the expandable AST Premium 386/33TE is the top server.

Besides speed, RAM capacity is the other advantage that the standard 80386 chip has over the less expensive SX. Yet many of the systems reviewed here support only 16MB of CPU-speed RAM—the SX's limit. For a workstation, 16MB, which is OS/2's and *Windows*' current capacity, will be sufficient for many years to come. But that's not true for a server, where more buffers and a

larger cache translate into performance gains. Novell's NetWare 386 can take advantage of up to 4 gigabytes today, and you can expect other network operating systems to follow suit.

Currently, memory beyond 16MB is probably useful only if your server commands a large, busy NetWare 386 LAN, and it's probably not cost-efficient even then. But



**Is ALR kidding? Only \$3796 for a 33-MHz 386? No joke—that's the price for a fully equipped unit, including built-in EISA graphics. It may be the desktop bargain of the roundup, but fairly limited expandability and shaky technical support make it a no-go as a file server.**

as the demand on your network grows, you'll be tempted to buy more RAM. And as memory gets cheaper, you'll be glad to have someplace to put it. (See the sidebar "Buying Smart" for more details on buying criteria.)

So what's the verdict? Two systems, both reasonably priced, win *PC World* Best Buy honors in a virtual tie. The blazing Arche Legacy 386-33 is your best choice as a small server or a high-end workstation, while the ever-expandable AST Premium 386/33TE can handle any network you're likely to throw its way. With either of these systems, power computing can be within your means.

### **ALR BusinessVEISA 386/33**

**PROS:** Rock-bottom price, high fast-RAM capacity, upgradable CPU

**CONS:** Poor service and support; no room for full-height drive; obstructed slots

At first glance, ALR's BusinessVEISA 386/33 looks darn near invincible. Its performance is quite good (it came in first in our NetWare test and second in the *Paradox* test), and its \$3796 street price is by far the lowest in the roundup. If not for ALR's below-average service and support, the system might have won a Best Buy. Still, the BusinessVEISA is a good choice for individuals or as a

server for a small LAN.

As you'd expect in a small-footprint desktop, the VEISA's chassis is fairly cramped inside. You can install two third-height and two half-height drives, but this is the only system reviewed that lacks room for a full-height drive. For the time being, that limits you to about 300MB of storage.

Thanks to its CPU-on-a-board design, you can swap the 33-MHz 386 for a 25- or 33-MHz 486. The VEISA has a full six open slots, three of them EISA, but because its CPU board gets in the way, one of the 16-bit slots can take only a half-length board. If you install more than 17MB of RAM, you'll obstruct the other 16-bit slot. Aside from that, the VEISA's chassis and front panel are well laid out and easy to work on.

ALR's support services aren't as well designed: Phone support ends at 5 on weekdays, with no free weekend hours and no toll-free number. Our experiences in calling ALR's technical support were much the same as they've been in the past; we once got through to a technician after a 10-minute wait, but the other times we had to wait for a call back. We once waited until the next day. ALR provides no on-site service, but several of the ALR dealers we talked with offer it at an additional cost, and one provided it free for one year.

Despite its fast NetWare scores, ALR's BusinessVEISA 386/33 is too cramped to serve large networks, and the technical support may deter others. But an unbeatable price makes it a good deal for bargain hunters.

### **Arche Legacy 386-33**



**PROS:** Fastest in the roundup, two-year warranty

**CONS:** Flimsy case, additional RAM cards eat up slots

Arche's Legacy 386-33 turned in a blistering performance, particularly under *dBASE IV* and NetWare, beating all comers overall. Combine that with

## BUYING SMART

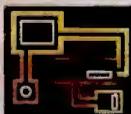
A 33-MHz 386 is a smart buy for a high-performance workstation or a network server. The key issues are speed, expandability, and fast-RAM capacity, followed by design, service, and pricing.



### PERFORMANCE

The speeds of your processor, hard disk, RAM, and video controller all affect performance, but to different degrees, depending on the nature of the job at hand.

Poor video throughput will slow down Windows performance but won't affect a file server, and while a sluggish hard disk slows all applications, it doesn't affect 1-2-3 as much as it does dBASE. When examining our test results, keep your applications in mind.



### EXPANDABILITY

A computer should be able to grow with your needs. Plenty of expansion slots and drive bays will let you continue to enhance your system.

All the systems reviewed here have enough drive bays to make a good workstation. If your system has three front-loading bays for two floppy drives and a tape drive, plus one internal hard disk bay (even if it's only 3½ inches), it will be sufficient.

But you'll want more than that for a server. A full-height bay gives you the freedom to install one big drive or two small ones. Look for at least one full-height bay in your drive server, as well as three front-loading bays.

Workstations and servers have pretty much the same requirements for expansion card slots. In a server, you'll want various I/O cards. In an individual PC, you may eventually want a network card, an internal modem, a printer controller, a fax board, a mouse card, a scanner board, or some combination of these. Either way, five slots will probably be sufficient, and six is even more reassuring. Note the difference between slots and free slots; any slots that are used for standard controllers, VGA boards, or RAM cards don't count.

But what kind of slots should your system have? There are two standards for expansion buses that promise better throughput than the old AT bus: EISA (Extended Industry Standard Architecture), which is compatible with the old bus, and Micro Channel, which isn't. These buses may prove valuable in the future—especially for servers, where bus throughput is a major bottleneck—but they have yet to prove their worth. No Micro Channel models were available for this review.



### FAST-RAM CAPACITY

You'll probably buy your new system with 4MB to 8MB of RAM, and that's plenty at the moment. But someday you may want more, and that's when your system's capacity for CPU-speed RAM—memory that bypasses the slower bus—may prove too low. For a personal workstation, 16MB of fast RAM is probably all you'll ever need, but for a file server, you'll want support for at least 32MB.



### DESIGN AND CONSTRUCTION

A well-designed, well-built computer will give you fewer headaches in the years to come. Look for a chassis that gives you easy access to connectors, peripherals, and internal switches—or, preferably, one that has no internal switches at all.

Unless you're buying a server, ergonomics are also important. Ideally, the on/off control and the reset switch should be placed on the front panel. A sharp color display with a tilt-and-swivel monitor is a must, and a comfortable keyboard is also essential.

Also important is an upgradable CPU. You won't have to worry about your system becoming obsolete as long as you can pop in a 486 card down the line.



### SERVICE AND SUPPORT

Chances are you're going to need some kind of assistance with your computer. Look for prompt, toll-free telephone support during the hours most convenient to you and free on-site service during the warranty period. For systems with direct manufacturer support, we called at three different times of the day to check on the availability (but not the quality) of help.

As with any high-tech gadget, your 386/33 should come with a one-year warranty, minimum. If you run a small business, you'll find optional extended warranties that include free on-site service can be a wise investment. Such policies should be available for around \$200 a year. —S. S.

## FEATURES EVALUATION

### Expandability Is the Key to a Winning Server

If you need a network server, you'll want a 33-MHz 386 with plenty of slots and drive bays and support for lots of CPU-speed RAM. The Arche Legacy 386-33 and the AST Premium 386/33TE—both Best Buys—provide room to grow.

- Yes
- No
- n/a = not applicable

	ALR Business/EISA 386/33	Arche Legacy 386-33	AST Premium 386/33TE	AT&T 6386E/33 NGS	Compaq Deskpro 386/33L	Dell System 333D	NEC PowerMate 386/33E	Tandy 403 LX	Zenith Data Systems Z-386/33E
<b>Standard features</b>									
Street price <sup>1</sup>	\$3796 <sup>2</sup>	\$5612 <sup>3,4</sup>	\$6218 <sup>5</sup>	\$10,743 <sup>6</sup>	\$8092 <sup>7</sup>	\$4659	\$5108 <sup>8</sup>	\$7072 <sup>9</sup>	\$6728
List price <sup>1</sup>	\$6571 <sup>2</sup>	\$5960 <sup>3</sup>	\$11,739 <sup>5</sup>	\$11,248 <sup>6</sup>	\$10,943 <sup>7</sup>	\$4659	\$9170 <sup>8</sup>	\$7247 <sup>9</sup>	\$11,298
Weitek 3167 coprocessor support	●	●	●	○	●	●	●	●	●
Memory cache	●	●	●	●	●	●	●	●	●
Built into motherboard									
Parallel port	●	○ <sup>10</sup>	●	●	●	●	●	●	○ <sup>10</sup>
Serial port	1	1 <sup>10</sup>	2	2	2	2	2	1	○ <sup>11</sup>
Floppy disk controller	●	○ <sup>12</sup>	●	●	●	●	●	●	●
Hard disk connector	●	○	●	○	● <sup>13</sup>	●	○	●	●
Mouse port	●	○	●	●	●	●	●	●	○
VGA	○	○	○	○	○	○	○	○	○
800 by 600 super VGA	○	○	○	○	○	○	○	○	○
1024 by 768 super VGA	○	○	○	○	○	○	○	○	○
<b>Fast RAM</b>									
Capacity	49MB	32MB	80MB	40MB	100MB	16MB	16MB	16MB	20MB
<b>Expandability</b>									
8/16/32-bit EISA slots/number free	3/3	0/0	10/8	0/0	7/7	0/0	5/5	0/0	7/4
8/16-bit slots/number free	2/2 <sup>14</sup>	6/4 <sup>15</sup>	0/0	7/5	0/0	5/5	2/0	6/5	0/0
8-bit slots/number free	1/1	2/1	0/0	1/1	0/0	1/1	0/0	0/0	0/0
Drive bays <sup>16</sup>	4	5	6	8	7 <sup>17</sup>	4	5	4	5
Accepts full-height drive	○	●	●	●	●	●	●	●	●
Largest hard disk option	330MB	380MB	1GB	300MB	420MB <sup>18</sup>	650MB	300MB	440MB	320MB
Optional drive arrays	○	○	○	○	●	○	○	○	○
		<b>BEST BUY</b>	<b>BEST BUY</b>						

good expandability and a reasonable \$5612 price (the actual street price should be lower; Arche dropped the list price by \$1795 after we completed our price survey), and you have a clear Best Buy.

An unassuming AT box, the Legacy provides five half-height bays, including two internals that can accommodate a full-height drive. You also get five free slots, but if you want more than 8MB of

RAM, you'll have to sacrifice one of the two fast-RAM slots, which can also take standard 8/16-bit cards. To bring the Legacy up to its full 32MB capacity, you'll have to give up both of these.

The Legacy receives mixed reviews on design. Its thin sheet-metal chassis hardly inspires confidence, there's no front-panel on/off switch, and installing a coprocessor requires removing the motherboard. On the bright side, the

Legacy features a front-panel reset button and an LED display that shows processor speed.

Moreover, the Arche Legacy 386-33's motherboard has more than the usual share of proprietary, application-specific chips. These reduce the component count, increasing the machine's reliability.

Support is top-notch. Arche is the only company in this review that offers a

	ALR Business/EISA 386/33	Arche Legacy 386-33	AST Premium 386/33TE	AT&T 6386E/33 WGS	Compaq Deskpro 386/33L	Dell System 333D	NEC PowerMate 386/33E	Tandy 4033 LX	Zenith Data Systems Z-386/33E
<b>Design and construction</b>									
Switchless setup	●	●	●	○	●	●	○	●	●
Compact footprint	●	●	n/a	n/a	○	●	○	○	●
Tilt-and-swivel monitor	●	●	●	●	●	●	●	○	●
Front-panel on/off switch	●	●	●	●	●	●	●	●	○
Front-panel reset button	○	●	●	●	○	●	○	●	○
Upgradable CPU	●	●	●	○	●	○	○	●	○
<b>Service and support</b>									
Warranty period (years)	1	2	1	1	1	1	1	1	1 <sup>19</sup>
Free on-site service	○ <sup>20</sup>	● <sup>21</sup>	● <sup>22</sup>	○ <sup>23</sup>	○ <sup>22</sup>	●	○ <sup>22</sup>	○	● <sup>24</sup>
Toll-free support number	○	●	●	●	○ <sup>22</sup>	●	○	○	○ <sup>22</sup>
Doily support (hours)	9	10	11	24	○ <sup>22</sup>	15	12	9	○ <sup>22</sup>
Weekend support	○ <sup>20</sup>	●	● <sup>25</sup>	●	○ <sup>22</sup>	● <sup>26</sup>	○ <sup>22</sup>	○	○ <sup>22</sup>
Electronic BBS	●	●	●	○	○	●	●	●	●
		BEST BUY	BEST BUY						

<sup>1</sup> Except as noted, price based on 4MB RAM, 100MB or larger hard disk, 1.2MB (or 1.44MB 3 1/2-inch) floppy drive, VGA and color VGA monitor, at least one parallel and two serial ports or one serial port 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 \$99 to the street price and \$125 to the list price to represent the cost of a basic Microsoft Mouse.

<sup>2</sup> With 106MB hard disk and 5MB RAM.

<sup>3</sup> With 104MB hard disk.

<sup>4</sup> Price may be lower due to recent list price change.

<sup>5</sup> Includes 330MB SCSI drive.

<sup>6</sup> Includes 135MB hard disk.

<sup>7</sup> Includes 120MB hard disk.

<sup>8</sup> Includes 140MB hard disk.

<sup>9</sup> With 105MB hard disk.

<sup>10</sup> One on standard I/O card.

<sup>11</sup> Two on standard VGA card.

<sup>12</sup> Built into standard ESDI controller card.

<sup>13</sup> 320MB and 650MB drives and all drive arrays use advanced ESDI controller in expansion slot.

<sup>14</sup> One slot can accept only a half-length card.

<sup>15</sup> Including two proprietary memory slots that accept standard 8/16-bit boards if not needed for RAM.

<sup>16</sup> One full-height bay counts as two half-height bays.

<sup>17</sup> Using proprietary drives; five with standard drives.

<sup>18</sup> 420MB drive array pair. 650MB option available using external drive chassis.

<sup>19</sup> Or three months of on-site service.

<sup>20</sup> Optional through Intel.

<sup>21</sup> Optional during first 30 days for \$149 for two years.

<sup>22</sup> May be available through dealer. Some variation will be found from one dealer to another.

<sup>23</sup> Via direct sales representatives; various options are available.

<sup>24</sup> 3 months as alternative to 12 months carry-in.

<sup>25</sup> Saturday 7-1.

<sup>26</sup> Saturday 8-4.

two-year warranty; on-site service for that period is available for a low \$149. There's no weekend support, but all our toll-free weekday calls were answered immediately.

The Legacy comes with generous support, plenty of drive bays, and incredible speed. If EISA is important, look elsewhere. But otherwise, the Legacy is a Best Buy whether you're looking for a zippy workstation or a fast server.

## AST Premium 386/33TE



**PROS:** Excellent expandability and RAM capacity, low price for tower

**CONS:** None

AST's tower delivers almost everything a server needs: plenty of expandability and 80MB of fast-RAM capacity. The Premium performed well in our speed

tests, if unspectacularly. Although the list price is high, AST systems tend to be deeply discounted, and we found this one going for an average of \$6218. It's a great deal as a server, and it's not bad as a workstation, either.

The 386/33TE provides enough elbowroom to take you well into the nineties. In addition to its great fast-RAM capacity, you get eight free EISA slots (more than any of its rivals provide), six



Typically fast and pricey, the state-of-the-art Compaq Deskpro 386/33L exudes fit and finish. Meeting desktop and server needs with equal ease, it delivers the small footprint of a workstation plus one-of-a-kind drive array technology for expanding storage on a server.

drive bays, and an upgradable CPU. The company even offers a 16MB hard disk option for really big jobs.

Solidly built, the Premium has a notably quiet fan. Technical support is toll-free and available during part of the weekend. There's also an automated phone service that faxes you information on request. Response is fast—only once were we put on hold, and only for a minute.

With its relatively low price and superb expandability, the Premium makes a great server. If you want assurance that your new system will remain up-to-date in the coming years, the Premium 386/33TE is for you.

### AT&T 6386E/33 WGS

**PROS:** Plentiful drive bays and high RAM capacity

**CONS:** Sky-high price

The best description of this floor-standing monolith from AT&T is "industrial strength." That applies to its overbuilt case and too-high \$10,743 street price. Forget the excellent expandability and RAM capacity—the 6386E/33 WGS is just too expensive to compete.

The 6386E/33 has eight drive bays, the most of any system reviewed. The massive chassis has another redeeming quality: Only weight lifters would be

able to steal it. The front panel provides a reset button, but the on/off switch is oddly placed near the floor. Worse, configuring RAM, printer, and serial port settings requires searching for and setting countless jumper pins scattered around the system board.

Phone support is good. It's toll-free, and it's open on weekends, but twice we had to hold for several minutes before receiving help.

The 6386E/33's outstanding expandability is not worth the high price. Other systems are almost as expandable, and for ten grand you could buy a terrific 486.

### Compaq Deskpro 386/33L

**PROS:** Excellent expandability and RAM capacity; upgradable CPU

**CONS:** Expensive

Like ALR, Compaq shoehorns a lot of computer into a fairly small space, but the Deskpro's superior design gives it a far broader range. The 386/33L features a modular processor board, seven free EISA slots, optional drive array technology, and a whopping 100MB capacity for fast RAM. Performance was good, but we didn't see the lightning speeds we've come to expect from Compaq systems. We did see a Compaq price, though—\$8092 on the street. Still, the 386/33L is a good value, especially as a large-volume server.

Compaq's unique drive array technology is perfect for serving a large, growing LAN. This extra-cost option lets multiple hard drives act as one, either to speed access or to preserve data integrity. For instance, two 210MB drives can perform as one very fast 420MB drive or as a single 210MB drive that backs itself up as it works. Four such drives can provide up to 840MB of storage, 630MB with data integrity features on. Compaq's drive arrays work only with special hard disks distributed by Compaq.

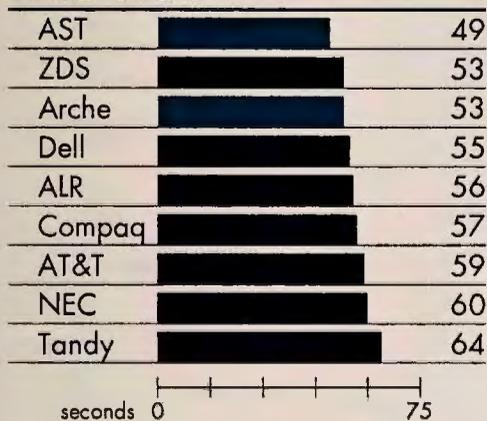
The 386/33L's high RAM capacity is

## Arche's Legacy 386-33 Takes the Lead

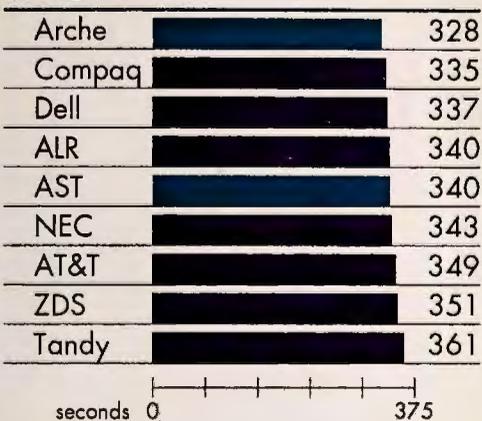
Top performance at a winning price helps the Legacy 386-33 earn its Best Buy stripes. Note the system's clear lead in the 1-2-3 and dBASE IV tests. The NEC PowerMate 386/33 runs Windows fastest, thanks to special enhancements.

■ Best Buy

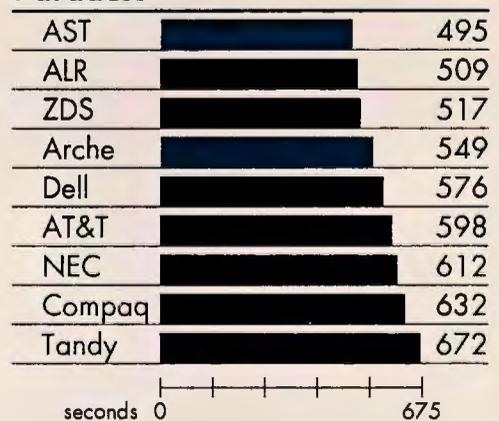
### WordPerfect



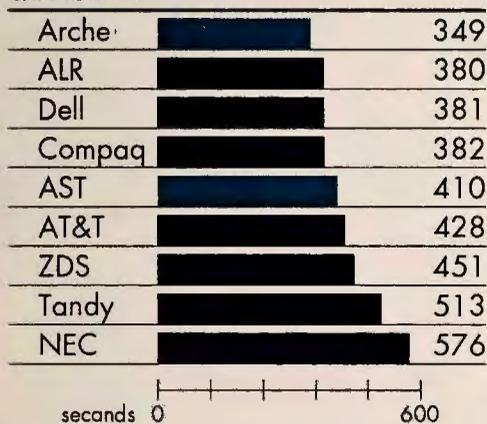
### 1-2-3



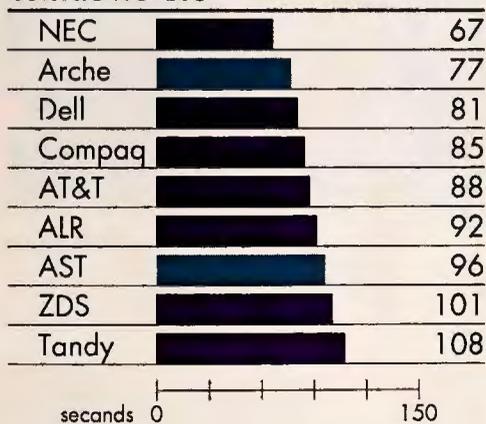
### Paradox



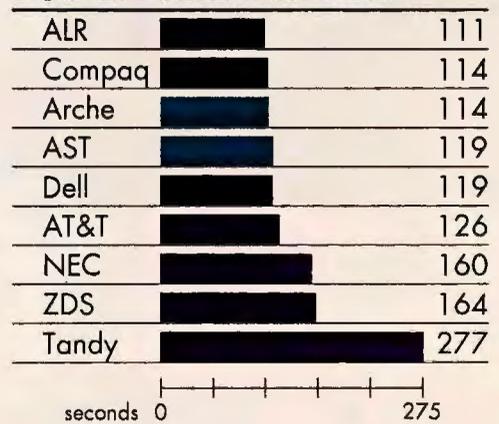
### dBASE IV



### Windows 3.0



### NetWare office simulation



#### Methodology

All the computer systems were tested with 4MB RAM in the single-user benchmarks and 8MB RAM in the Novell NetWare office simulation. Every computer was tested with the vendor's version of DOS, and the systems had the following hard disk configurations for the single-user tests: Dell System 333D and Zenith Data Systems Z-386/33E, 100MB; Tandy 4033 LX, 105MB; ALR Business-VEISA 386/33, 106MB; Compaq Deskpro 386/33L, 120MB; AT&T 6386E/33 WGS, 135MB; NEC PowerMate 386/33E, 140MB; Arche Legacy 386-33, 104MB; AST Premium 386/33TE, 330MB. For the office simulation test, each system had the manufacturer's 300MB (or next larger) hard disk.

#### WordPerfect

The time it takes to reformat three *WordPerfect 5.1* documents that vary in size from 5K to 55K is measured. The files are basic text with some boldface and underlined text; one of the documents includes a TIFF image.

#### dBASE IV 1.1

With the caching feature enabled, the time required to complete an unindexed search for a single record in a 100,000-record parts table is measured. Then the table is indexed, the transaction processing module is run, and 600 records are posted.

#### 1-2-3

The 1-2-3 2.2 test measures the time required to complete the following operations: The application is loaded. Then three separate worksheets (arithmetic, financial, and scientific) are loaded, and various changes are made and recalcs run on each. Subsequently the MAPS add-in from Management Advisory Services is used to run a number of financial forecasts.

#### Windows 3.0

Timing begins and ends at the DOS prompt. *Windows* is launched, along with a macro that loads both *Excel* and a financial worksheet and initiates a recalc. Then the macro loads *Samna's Ami Professional* and a 50K document, in which is

placed a 500K TIFF image. Finally, the macro launches *Micrografx Designer*, opens a drawing, displays it on screen, and exits to DOS.

#### Paradox

Starting with an orders table, each record is compared with an available stock table where the current prices for items are found, and the resulting records are inserted into an invoice table.

#### NetWare office simulation

Each of 24 workstations runs one or two of the LAN applications *WordPerfect 5.1*, *1-2-3 2.2*, and *Paradox 3.0*. Typical files in various sizes are loaded, and operations are performed with delays interspersed to simulate normal use, but only operations that access the server's hard disk are measured. Every workstation also occasionally copies files to and from the server. Finally, the times are averaged and totaled.

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



D is for Desktop, E is for Effort, L is for Low price, and L is for Long support hours. The Dell System 333D lacks the capacity to serve users on a large LAN, but it will please everyone else.

coupled to a high price: Compaq's proprietary memory modules cost about \$400 per megabyte, compared with \$80 per megabyte for standard SIMMs. You can upgrade to a 33-MHz 486 CPU by swapping processor cards. The system chassis shows the usual Compaq attention to fit and finish, and the case uses thumbscrews.

As we go to press, Compaq has just announced toll-free technical support, correcting a long-standing policy of not supporting users directly. Time constraints prevented our testing the quality of the new support, and we are therefore not changing our original support rating of Fair.

The 386/33L did a bit better than the

AST on our NetWare tests but overall did a bit worse. If drive arrays attract you, the Deskpro is a great buy for a server. Otherwise, the less expensive AST is the wiser choice.

### Dell System 333D

**PROS:** Super support, low price, fast

**CONS:** Limited CPU-speed RAM capacity

At \$4659, Dell's System 333D is one of the least expensive computers in this roundup, yet it outperformed every computer here but the Arche. The *D* in 333D stands for *desktop*, so it's hardly surprising that this system lacks the

storage and RAM capacities desirable in a large server. But it's a good choice for a smaller, less-ambitious server and a superb deal as a workstation.

Dell builds almost everything into the system board, giving you six free AT-style slots. The four half-height drive bays and 16MB of CPU-speed RAM are adequate for most workstations but not for many servers. It's the only unit reviewed to include super VGA rather than standard VGA, so you don't have to pay extra for higher-resolution graphics.

The design is superb inside and out. The 333D's small-footprint chassis is sturdy yet light—it opens with thumbscrews and features front-panel on/off and reset switches.

Dell's support is the best in the business. The one-year warranty includes on-site service, the long support hours include Saturdays, and the number is toll-free. On each of our test calls, we held for only 1 or 2 minutes. As with AST, you can phone a machine and get additional documentation faxed to you.

The 333D is a fast, well-supported system at a great price. The 16MB RAM limit and modest device capacity rule it out for serving large LANs, but the Dell System 333D is a nice departmental server and a super workstation.

### NEC PowerMate 386/33E

**PROS:** Low price, excellent expandability, fast in Windows

**CONS:** Limited RAM capacity, slow non-Windows performance

NEC's PowerMate 386/33E has a low \$5108 street price and plenty of room for expansion. But it's limited by a 16MB fast-RAM ceiling, and aside from a zippy *Windows* score, performance was relatively slow.

Designed with *Windows* in mind, the system comes with the program. NEC says the PowerMate's excellent *Windows* performance is likely due to a proprietary application-specific integrated circuit (ASIC) chip that controls mem-

## EXECUTIVE SUMMARY

### Arche and AST: Power for Today and Tomorrow

Cutting-edge performance and room for at least 32MB of fast RAM ready these systems for the future.

Experience 486-class performance for thousands less with a 33-MHz 386. If you want a workstation ready to run future applications, pick an excellent performer with room for more than 16MB of fast RAM.



Thanks to blazing speed, room for 32MB of fast RAM, and excellent service and support, the **Arche Legacy 386-33** wins a Best Buy—it's the best workstation of the bunch. But if you need a server, choose the **AST Premium 386/33TE**. This tower PC can't quite match the Legacy's performance, but it accommodates a whopping 80MB of fast RAM, has room for six drives (including a 1GB option), and sells at a deeply discounted street price.

	ALR Business/EISA 386/33	Arche Legacy 386-33	AST Premium 386/33TE	AT&T 6386E/33 MGS	Compaq Deskpro 386/33	Dell System 333D	NEC PowerMate 386/33E	Tandy 4033 LX	Zenith Data Systems 7-386/33E
<b>Performance</b>	Good	Excellent	Good	Good	Good	Good	Fair	Poor	Fair
<b>Expandability</b>	Fair	Good	Excellent	Excellent	Excellent	Good	Excellent	Fair	Fair
<b>Fast-RAM capacity</b>	Excellent	Excellent	Excellent	Excellent	Excellent	Good	Good	Good	Good
<b>Design and construction</b>	Good	Good	Good	Fair	Excellent	Excellent	Good	Excellent	Fair
<b>Service and support</b>	Fair	Excellent	Excellent	Good	Fair	Excellent	Good	Good	Poor
<b>Price</b>	Excellent	Good	Good	Poor	Fair	Good	Good	Fair	Fair
<b>Overall value</b>	Good	Excellent	Excellent	Fair	Good	Good	Good	Fair	Fair
		<b>BEST BUY</b>	<b>BEST BUY</b>						
Reader service no.	681	682	683	684	685	686	687	688	689

#### How we rate 33-MHz 386 systems

We rate these systems based on information in the Features Evolution and the PC World Test Report, combined with our opinions of quality, reliability, and user benefit.

**Performance** is derived from standard-deviation analysis of benchmark results, with extra weight given to the Novell NetWare office simulation, 1-2-3, and Windows tests.

**Expandability** covers the number and kind of free slots available, as well as the number of drive bays and the capacity of available hard disks. An Excellent rating requires five open slots, five half-height drive bays, and the ability to accept a full-height drive or a second hard disk.

**Fast-RAM capacity** refers to the amount of RAM installable on system and memory expansion boards that is available to the CPU without wait states. To win on Excellent rating, a system must accept at least 32MB of fast RAM.

**Design and construction** evaluates the quality of manufacture, accessibility of controls, and ease of use when working inside the computer. To earn an Excellent rating, a system must be built around a sturdy, easily accessible chassis, offer switchless setup of memory, drives, and ports, and be free of major design flaws.

**Service and support** includes the length of warranty and the quality and availability of phone

support, documentation, and other support services. At least one year's full warranty, long support hours, and effective response to our test calls are required for an Excellent rating. Extra credit is given for toll-free and weekend technical support and free on-site service.

**Price** ratings are determined by calculating the standard deviation from the average street price. The street prices used were determined from our survey of over 100 dealers in eight U.S. cities.

**Overall value** is averaged from all the above criteria, with special emphasis placed on performance and expandability.

ory management, a major *Windows* bottleneck. Elsewhere, the system's performance was disappointing, especially at NetWare. By the time you read this, NEC is scheduled to ship a more expensive controller that should improve network performance.

The 386/33E's architecture mixes the old and the new. All five open slots are EISA, but you must flip motherboard switches to set up the system. One nice touch: NEC includes a floor

stand so you can use the unit as a tower.

NEC's support is responsive: Each of our calls was answered immediately. Unfortunately, the company offers no toll-free access, on-site service, or weekend support, but some NEC dealers may fill some of these gaps.

With better performance, this roomy, well-designed computer would make a fine server. For now, however, the PowerMate is a good buy only if you need a *Windows* workstation.

### Tandy 4033 LX

**PROS:** Well designed; excellent support

**CONS:** Slow, pricey, NetWare incompatibilities

At first glance, Tandy's 4033 LX looks good: It's a well-designed box that comes with a great support policy. But the \$7072 price is high, there are only four drive bays, and the 16MB fast-RAM limit is unexceptional. Worse, the

4033 LX is slow, coming in near the bottom in all our speed tests. It really crawled in our NetWare office test, but that was mainly because of a BIOS-compatibility problem. In order to complete the tests, we had to exclude the BIOS from the RAM cache.

The 80386 that powers the 4033 LX sits on a modular board, but no 486 is available, and Tandy remains mum on future upgrades. You get five open AT-style slots, but the system's four-drive capacity is adequate only for a workstation, and two of the slots require third-height drives, which reduces your selection somewhat.

The 4033 LX's fairly compact chassis offers several amenities, including front-panel on/off and reset controls. Tandy's tech support response was adequate: We were on hold from 2 to 8 minutes each time we called.

But a nice front panel and good support don't add up to a good computer. Completely out of the question for use as a server, the Tandy 4033 LX is also too slow and too expensive to make a good workstation.

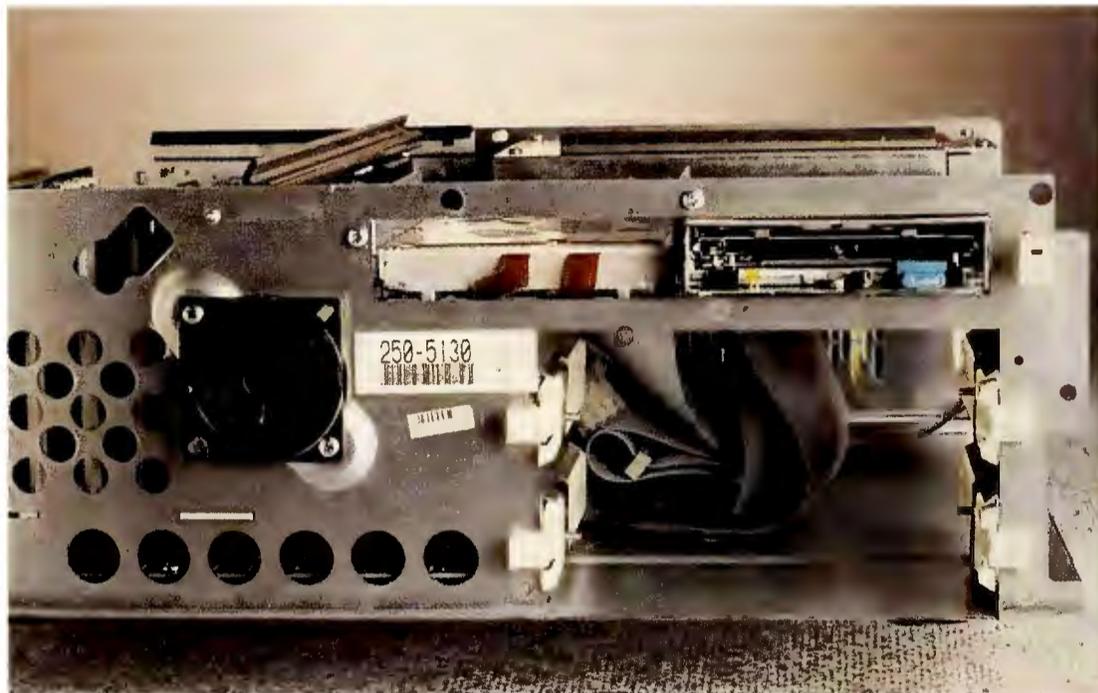
## Zenith Data Systems Z-386/33E

**PROS:** None

**CONS:** NetWare incompatibility, slow, only four free slots

The Z-386/33E's most notable feature is its caching disk controller, which can host a whopping four ESDI, seven SCSI, and two floppy drives at once. But despite the high-tech effort, this \$6728 system from Zenith Data Systems (ZDS) is slow (it came in next to last in our NetWare test) and suffers from NetWare compatibility problems.

If the caching controller makes you think "server," think again. In theory, a caching controller should improve performance, but our tests didn't bear that out. What's more, the three-layered controller sits in one EISA slot, but it's so wide that it takes up space that ZDS could have allocated to another slot. VGA and I/O take up two more slots,



The Tandy 4033 LX is solidly built, but with its four-drive limit, moving up to a large hard disk means losing a floppy or tape drive or buying more expensive external peripherals.

leaving only four open slots—the smallest total in the roundup. Otherwise, the Z-386/33E is a standard sheet-metal AT-clone box with room for five half-height drives.

A bug in ZDS's NetWare 3.0 drivers caused the NetWare DOWN command to hang the system. ZDS provides a work-around if you ask for it, but it's no substitute for well-written drivers. ZDS promises that a 3.1 driver will be available shortly.

As a workstation, the Z-386/33E still suffers from poor performance and a dearth of open slots. And the price is on



The Z-386/33E's unique caching disk controller eats up an extra slot.

the high side for a one-user machine.

ZDS earns a demerit for service and support—it's entirely dealer based. The odd warranty lets you choose between three months with on-site service or a year without it.

It appears that the Z-386/33E was rushed to market a little too quickly. It's not recommended.

### A 33-MHz for Every Occasion

The Arche Legacy 386-33 is your Best Buy if you're looking for a modest server or a hot workstation. It's affordable, astonishingly fast, and reasonably roomy. But if "reasonably roomy" isn't enough, AST's Premium 386/33TE gives you expandability galore for only about \$600 more. For the money conscious, the Dell System 333D makes a terrific workstation, although it's too limited to serve most LANs.

Chances are you'll be happy with any of these three systems for years. And when the time comes to replace it—say, five years from now—bargains may be available on 50-MHz 586 systems. ☺

*Scott Spanbauer is a contributing editor for PC World.*

**For more information about all products in this article, circle reader service no. 905.**

## WHERE TO BUY

### **ALR BusinessVEISA 386/33**

Advanced Logic Research, Inc.  
9401 Jeronimo  
Irvine, CA 92718  
800/444-4257,  
714/581-9240 (fax)  
LIST PRICE: Model 101 with 1MB of RAM, 5¼-inch 1.2MB floppy drive, one parallel and one serial port, one mouse port, 101-key keyboard \$1995; Model 40 same as Model 101 except with 2MB RAM, 40MB IDE hard disk, 3½-inch 1.44MB floppy drive (in addition to 5¼-inch 1.2MB floppy drive), 800-by-600 VGA adapter and color display \$4999; Model 80 (same as Model 40 except with 80MB IDE hard disk) \$5499; Model 110 (same as Model 40 except with 106MB IDE hard disk) \$5699  
ACCESSORIES: 1MB RAM \$199; 150MB ESDI hard disk \$1800, 330MB ESDI hard disk \$2590; 150/250MB tape drive \$1100; 14-inch 800 by 600 super-VGA color display \$699; AGS advanced graphics subsystem with 1024-by-768 graphics adapter, drivers, 15-inch color display \$3300  
WARRANTY: one year parts and labor, carry-in to ALR or Intel  
EXTENDED WARRANTY: through dealer or Intel  
TECHNICAL SUPPORT: voice and fax toll numbers, M-F 8-5  
OTHER SUPPORT: in-house BBS  
**Reader service no. 681**

### **Arche Legacy 386-33**

Arche Technologies, Inc.  
48881 Kato Rd.  
Fremont, CA 94539

800/422-4674,  
415/683-6754 (fax)  
LIST PRICE: desktop version with 4MB of RAM, 5¼-inch 1.2MB floppy drive, ESDI 32K look-ahead caching controller (handles up to five peripherals), one parallel and two serial ports, 101-key keyboard, DOS 3.3 \$4325, tower version (otherwise configured like desktop version) \$4525; both versions available in an IDE configuration for \$175 less  
ACCESSORIES: 1MB RAM \$170, expansion card populated with 4MB CPU-speed RAM \$980; 44MB IDE hard disk \$495, 104MB IDE hard disk \$975, 380MB ESDI hard disk \$2225; 3½-inch 1.44MB floppy or 5¼-inch 1.2MB floppy drive \$110; 8-bit 256K VGA graphics adapter \$145, 16-bit 512K 1024-by-768 VGA graphics adapter \$295; 14-inch monochrome flat-screen display \$135, 14-inch VGA color display \$565, DOS 4.01 \$60  
WARRANTY: two years parts and labor, carry-in; optional two-year TRW on-site service \$149  
EXTENDED WARRANTY: through dealer  
TECHNICAL SUPPORT: toll-free number, M-F 7-5  
OTHER SUPPORT: technical manual \$35  
**Reader service no. 682**

### **AST Premium 386/33TE**

AST Research Inc.  
16215 Alton Pkwy.  
Irvine, CA  
92713-9658  
714/727-4141,  
714/727-9363 (fax)  
LIST PRICE: Model 5 with 4MB of RAM, 5¼-

inch 1.2MB floppy drive, one parallel and two serial ports, one PS/2-compatible mouse port, 101-key keyboard \$6495; Model 335 (same as Model 5 except with 330MB SCSI hard disk and caching controller with 1MB of disk cache) \$10,495; Model 665 (same as Model 335 except with 660MB SCSI hard disk and caching controller with 1MB of disk cache) \$11,495  
ACCESSORIES: 8MB RAM \$1400, unpopulated Cupid RAM expansion card (holds up to 32MB) \$375, 1MB RAM for Cupid RAM card \$130, 4MB RAM for Cupid RAM card \$700; 110MB IDE hard disk \$1250, 320MB ESDI hard disk (no controller) \$2900, ESDI controller \$300, 1GB SCSI drive (no controller) \$6500; SCSI host adapter (supports seven SCSI peripherals) \$500; 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive \$150; 800 by 600 super-VGA graphics adapter \$329; 14-inch VGA monochrome display \$225, 14-inch 800 by 600 super-VGA color display \$695; DOS 3.3 \$95, DOS 4.01 \$125, OS/2 Standard Edition 1.1 \$340, OS/2 Standard Edition 1.21 \$345  
WARRANTY: one year parts and labor, carry-in  
EXTENDED WARRANTY: available  
TECHNICAL SUPPORT: toll-free number, M-F 6-5, Sat. 7-1  
OTHER SUPPORT: in-house BBS, fax tech support  
**Reader service no. 683**

### **AT&T 6386E/33 WGS**

AT&T  
One Speedwell Ave.  
Morristown, NJ 07920  
800/247-1212  
LIST PRICE: with 4MB of RAM, 3½-inch 1.44MB floppy drive, 135MB hard disk with ESDI controller, one parallel and two serial ports, one PS/2-compatible mouse port, 101-key keyboard \$9995  
ACCESSORIES: 16MB expansion board populated with 4MB RAM \$1750, 2MB RAM \$599; 135MB ESDI hard disk \$2700, 300MB ESDI hard disk \$3750; 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive \$225; 33-MHz 80387 coprocessor \$1595; VGA color/monochrome graphics adapter \$449, 8514/A advanced graphics adapter \$995; 12- or 14-inch VGA monochrome display \$255, 14-inch VGA color display \$599, 20-inch multifrequency (up to 1280 by 1024) VGA color display \$3600; PS/2-compatible mouse \$110; DOS 3.3 \$95, DOS 4.01 \$150, OS/2 Standard Edition 1.1 \$340  
WARRANTY: one year parts and labor, carry-in  
EXTENDED WARRANTY: through direct sales representatives  
TECHNICAL SUPPORT: through direct sales representatives  
OTHER SUPPORT: E-mail  
**Reader service no. 684**

### **Compaq Deskpro 386/33L**

Compaq Computer Corp.  
P.O. Box 692000

Houston, TX  
77269-2000  
800/231-0900  
LIST PRICE: Model 120 with 4MB of RAM, 3½-inch 1.44MB floppy drive, 120MB IDE hard disk, one parallel and two serial ports, one mouse port, VGA on the motherboard, 101-key keyboard \$9999; Model 320 (same as Model 120 except with 320MB ESDI hard disk and controller) \$12,499; Model 650 (same as Model 320 except with 650MB ESDI hard disk and controller) \$15,499  
ACCESSORIES: 32-bit 6-socket unpopulated memory expansion board \$449, 2MB single-socket memory module \$799, 8MB single-socket memory module \$4499, 8MB dual-socket memory module \$3999, 32MB dual-socket memory module \$17,999; 120MB IDE hard disk \$1999, fixed disk expansion unit with 300MB hard disk \$6399, 320MB ESDI hard disk and controller \$5899, 650MB ESDI hard disk and controller \$8899, fixed disk expansion unit with 650MB hard disk \$9399, 240MB drive array pair with controller \$3999, 420MB drive array pair with controller \$5999; 3½-inch 1.44MB, 5¼-inch 360K, or 5¼-inch 1.2MB floppy drive \$275; 80/120MB tape drive \$899, 150/250MB tape drive \$1999, 320/525MB tape drive \$2399; 33-MHz Intel 80387 coprocessor \$1599, 33-MHz Weitek 3167 coprocessor \$2199; 2400-bps internal modem \$399; (continues)

**WHERE TO BUY**

(continued)

32-bit dual-speed token ring controller \$1299; advanced graphics 1024 by 768 board \$1299, 512K advanced graphics RAM board \$339; 14-inch VGA monochrome display \$299, 14-inch VGA color display \$699, 16-inch advanced graphics color display \$1699; DOS 3.31 \$120, DOS 4.01 \$150, OS/2 Standard Edition 1.1 \$340, OS/2 Standard Edition 1.21 \$340  
**WARRANTY:** one year parts and labor, carry-in  
**EXTENDED WARRANTY:** through dealer  
**TECHNICAL SUPPORT:** through dealer  
**OTHER SUPPORT:** none

**Reader service no. 685**

**Dell System 333D**

Dell Computer Corp.  
 9505 Arboretum Blvd.  
 Austin, TX  
 78759-7299  
 800/426-5150,  
 512/338-8700 (fax)  
**LIST PRICE:** with 4MB of RAM, 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive, one parallel and two serial ports, one mouse port, super VGA on the motherboard, 101-key keyboard \$3301  
**ACCESSORIES:** 1MB RAM customer kit \$99, 4MB customer kit \$599; factory installed RAM 1MB \$99, 2MB \$199, 4MB \$599, 8MB \$1199, 16MB \$2399; 40MB IDE hard disk \$399, 80MB IDE hard disk \$599, 100MB IDE hard disk \$799, 190MB IDE hard disk \$999, 330MB ESDI hard disk with controller \$1799, 650MB ESDI hard disk

with controller \$2799; 3½-inch 1.44MB, 5¼-inch 360K, or 5¼-inch 1.2MB floppy drive \$99; 40MB internal tape drive with adapter \$329, 40MB external tape drive with adapter \$429, 150/250MB internal tape drive with adapter \$799; 33-MHz 3167 Weitek coprocessor \$1195; 1200-bps internal modem with communications software \$79.95, 2400-bps internal modem with communications software \$129; 8-bit ethernet card \$199, 16-bit ethernet card \$279, 8-bit Arcnet card \$159, 8-bit 4-mbps token ring card \$399, 8-bit 16/4-mbps token ring card \$795; VGA adapter \$199; 16-color (simultaneous) advanced graphics 1024 by 768 adapter \$899, 256-color (simultaneous) advanced graphics 1024 by 768 adapter \$1299, 16-inch color display with 16-color 1024 by 768 adapter \$1999; 14-inch VGA monochrome display \$149, 14-inch VGA color display with adapter \$399, 14-inch super-VGA color display with adapter \$499; serial mouse \$59.95; DOS 3.3 \$99.95, DOS 4.01 \$119, OS/2 Standard Edition 1.21 \$299  
**WARRANTY:** one year parts and labor, free on-site service  
**EXTENDED WARRANTY:** available  
**TECHNICAL SUPPORT:** toll-free number, M-F 6-9, Sat. 8-4  
**OTHER SUPPORT:** in-house BBS

**Reader service no. 686**

**NEC PowerMate 386/33E**

NEC Technologies, Inc.  
 1414 Massachusetts Ave.  
 Bóxborough, MA  
 01719  
 800/632-4636  
**LIST PRICE:** with 4MB of RAM, 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive, one parallel and two serial ports, one mouse port, 101-key keyboard, DOS 3.3 with GW BASIC, Windows 3.0 \$5999  
**ACCESSORIES:** 2MB RAM module \$499; 140MB ESDI hard disk and controller \$1900, 300MB ESDI hard disk and controller \$3300, 300MB hard disk mirroring bundle (caching ESDI controller, two 300MB ESDI hard disks, mirroring module) \$6000; caching ESDI controller \$1450; hard disk mirroring module \$800; 3½-inch 1.44MB or 5¼-inch 1.2MB floppy drive \$199, 150MB tape drive \$1399; 33-MHz 80387 coprocessor \$1299; 1024 by 768 VGA adapter board \$999; NEC MultiSync 2A color VGA display \$799; DOS 4.01 \$130, OS/2 Standard Edition 1.1 \$325  
**WARRANTY:** one year parts and labor, carry-in  
**EXTENDED WARRANTY:** through dealer  
**TECHNICAL SUPPORT:** through dealer  
**OTHER SUPPORT:** in-house BBS

**Reader service no. 687**

**Tandy 4033 LX**

Tandy Corp.  
 1800 One Tandy Center  
 Fort Worth, TX 76102  
 817/390-3011  
**LIST PRICE:** with 2MB

of RAM, 3½-inch 1.44MB floppy drive, VGA card, one parallel and one serial port, one PS/2-compatible mouse port, IDE connector \$4999  
**ACCESSORIES:** 4MB RAM \$700, 8MB RAM \$1999, 16MB RAM \$4100; 52MB IDE hard disk \$599, 105MB IDE hard disk \$899, 40MB SCSI hard disk (no controller) \$699, 80MB SCSI hard disk (no controller) \$999, 170MB SCSI hard disk (no controller) \$1899, 440MB SCSI hard disk (no controller) \$2599; SCSI host adapter \$350; 3½-inch 1.44MB, 5¼-inch 360K, or 5¼-inch 1.2MB floppy drive \$170; 60MB tape drive \$400, 160MB SCSI tape drive \$1099; 33-MHz 80387 coprocessor \$994; 14-inch VGA monochrome display \$200, 14-inch color VGA display \$500, 14-inch color 800 by 600 super-VGA display \$629; DOS 3.3 with GW BASIC \$100, DOS 4.01 \$140, Windows 3.0 \$149  
**WARRANTY:** one year parts and labor, carry-in  
**EXTENDED WARRANTY:** through dealer  
**TECHNICAL SUPPORT:** through dealer  
**OTHER SUPPORT:** in-house BBS, CompuServe and PC-Link forums

**Reader service no. 688**

**Z-386/33E**

Zenith Data Systems  
 2150 E. Lake Cook Rd.  
 Buffalo Grove, IL  
 60089  
 800/553-0331  
**LIST PRICE:** Model 150

with 4MB of RAM, 3½-inch 1.44MB floppy drive, interface card with one parallel and two serial ports, 150MB ESDI hard disk with 1MB cache memory, VGA adapter, Microsoft Mouse, DOS 4.01, Windows 3.0 \$10,599; Model 320 (same as Model 150 except with 320MB ESDI hard disk with 1MB cache RAM) \$11,999  
**ACCESSORIES:** 1MB RAM \$299, 4MB RAM \$1199; 150MB ESDI hard disk with 1MB cache memory \$2499, 140MB 5¼-inch hard disk and controller \$1900, 320MB ESDI hard disk with 1MB cache RAM \$3599; 3½-inch 1.44MB floppy drive \$248, 5¼-inch 360K floppy drive \$199, 5¼-inch 1.2MB floppy drive \$250; 150MB SCSI tape drive (runs off the standard ESDI controller) \$1299; 33-MHz 80387 coprocessor \$1499; 1024 by 768 VGA-compatible Texas Instruments Graphics Architecture (TIGA) card \$899; 14-inch paper-white VGA monochrome display \$299, 14-inch color VGA display \$999; OS/2 Standard Edition 1.21 \$339  
**WARRANTY:** one year parts and labor, carry-in, or three months of on-site service  
**EXTENDED WARRANTY:** through ZDS reseller  
**TECHNICAL SUPPORT:** through ZDS reseller  
**OTHER SUPPORT:** in-house BBS and CompuServe forum

**Reader service no. 689**



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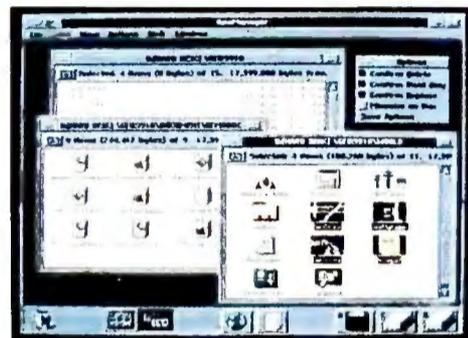
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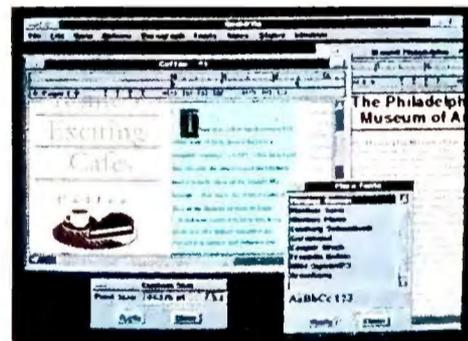
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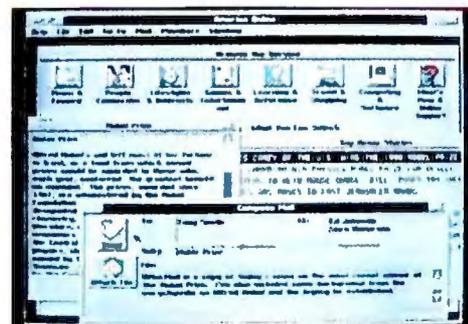
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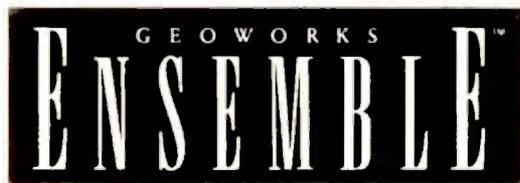
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2150 Shallick Ave., Berkeley, CA 94704, (415) 644-0883. *Named PC Computing's Most Valuable Product for 1990; PC Magazine's 1990 Technical Excellence Award Finalist; Byte Week's Best Of Comdex 1990. \*\*\$9.95 rebated with retail purchase. GeoWorks, GeoWorks Ensemble, and Scalable User Interface are trademarks of GeoWorks, Inc. All other product names are trademarks of their respective holders. © 1990*

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 **HEWLETT  
PACKARD**

# More Profits From Personal Finance

Where does all the money go? These personal finance packages let you know—and help you hang on to more of it.

*Suzanne M. Colvin*



You spend most of your time trying to make money. Why spend the rest of your time trying to count it? Whether you need to track multiple investments, scrape up the money for a house, or simply balance your checkbook, personal finance software can help you make sense of your dollars.

The four personal finance packages reviewed here let you balance a checkbook, print checks, create budgets and reports, and keep track of income and expenses—without having to sort through stacks of checks or reams of bank statements. Most go further, letting you estimate yearly income taxes and import data into full-fledged tax preparation programs. Some track investments, manage loans and assets, and even let you pay your bills via modem (see the sidebar “Is CheckFree Hassle Free?”).

But two packages stand out. For managing checkbook transactions and investments, the \$60 *Quicken 4.0* is a steal. Unfortunately, *Quicken* comes up short in budgeting and loan tracking features. Only *Managing Your Money 7.0* gives you everything you'd want in a personal finance package. Though its \$220 price tag puts the biggest dent in

your wallet, its investment savvy and abundance of features easily earn it *PC World's Best Buy*.

You can also use *Quicken* and *MYM* to manage a home business such as personal consulting or simple property management, thanks to their ability to segregate business and personal expenses and to track accounts receivable and payable. But you can't use these packages to, say, print customer invoices or compute volume discounts, and they

## Only Managing Your Money 7.0 gives you an accurate estimate of your tax liability.

lack the modules needed to compute payroll and manage manufacturing and inventory. Small businesses that require such features would do better with a low-cost accounting package (see “Budget-Wise Accounting,” November 1990). But for simple business operations, either is a worthy investment.

## Andrew Tobias' Managing Your Money 7.0



**PROS:** Integrated tax estimator and CheckFree modules, strong investment module, additional analysis features

**CONS:** Complex, expensive

MECA's \$220 *Managing Your Money* has been around a long time, but this is one old dog that's continued to learn new tricks. Version 7.0 adds a smooth menu-driven interface, improved reporting and transaction features, and the ability to handle multiple years of historical data. As always, the package is blessed with the pithy expertise of investment guru Andrew Tobias. Though *Quicken* continues to nip at its heels on the low end, *MYM's* wealth of features makes it the Best Buy.

*MYM's* check-writing and budgeting capabilities are exceptional. The program maintains budgets for five years, and it keeps up to two years' historical transactions on line. From its checklike entry screen you can summon a list of all transactions with one payee or of all transactions in a budget category. And because *MYM* comes with the *Check-Free* electronic checking module built in, you can pay your bills from your PC. Simply enter the check information, mark it as a *CheckFree* transaction, and send it off via modem.

*MYM* helps relieve some dread at tax time. Its estimator module includes a summary Form 1040 plus supporting tax schedules, and it's the only program reviewed that gives you an accurate estimate of your tax liability, including exemptions and limitations. You can also import data directly into MECA's *Tax-Cut* tax preparation package.

Budding Wall Street moguls will appreciate *MYM's* strong investment module, though it lacks a few of the extra features available in *Quicken*. You can track any type of investment transaction—including purchases, sales, dividends, and interest—and link to MECA's *Managing the Market*, which

* VIEW OR EDIT: Insurance *				
	1990 Budget	1990 Actual	Difference	1991 Budget
January	\$125.00		\$125.00	\$140.85
February	\$126.25		\$126.25	\$142.26
March	\$127.51		\$127.51	\$143.68
April	\$128.79		\$128.79	\$145.12
May	\$130.08		\$130.08	\$146.57
June	\$131.38		\$131.38	\$148.04
July	\$132.69		\$132.69	\$149.52
August	\$134.02		\$134.02	\$151.01
September	\$135.36		\$135.36	\$152.52
October	\$136.71		\$136.71	\$154.05
November	\$138.08		\$138.08	\$155.59
December	\$139.46		\$139.46	\$157.15
Totals	\$1,585.31	\$0.00	\$1,585.31	\$1,786.37
1991		1992	1993	1994
Right-hand col	\$2,012.93	\$2,268.22	\$2,555.88	\$2,880.83

Page Scroll 13 of 24

F5 - Divide amount over years      F9 - Graph Bar  
 F7 - Copy amount and add \$      or 1.0 % per month      F10 - Modify actuals  
 F8 - Change tax category (currently: Not a Tax Category)

F1-Help      F5-Add/OK      Esc-Back up      11:30:12p

With *Managing Your Money 7.0*, you can compute budgets for up to five years and increase budgets by a fixed amount or percentage to account for inflation.

## BUYING SMART: INVESTING IN PERSONAL FINANCE

Personal finance packages should make managing your cash flow simpler, with easy-to-use modules for balancing your checkbook, creating budgets, and reining in expenses. The best programs also help handle your taxes, investments, and personal property, presenting information in a variety of reports. Here's what to look for.



### CHECKBOOK MANAGEMENT

The heart of any finance package is its checkbook manager. The best ones have data entry screens resembling a check and search your financial data as you type, identifying common transactions and filling in the rest. Balancing your checkbook is a lot easier when the program displays uncleared transactions and lets you edit them as you go. And since you'll want to print checks using special paper, look for a package that prints multiple checks at once. Better yet, find one that lets you submit payments electronically—a great way to automate recurring expenses like mortgage payments.



### BUDGETING AND EXPENSE TRACKING

Checkbook management alone isn't enough; you'll also need to create budgets and track expenses. Look for a package that lets you assign category names instead of numbers to transactions and link multiple categories (like wages

and taxes) to a single transaction (such as your paycheck). It should maintain at least two years of historical data—so you'll always be able to look ahead or behind one month, even at year-end—and automatically determine budgets based on prior budget data. Avoid packages that make you manually enter each month's budget, year after year.



### INCOME TAX ASSISTANCE

Personal finance software can help lighten your tax load. The top programs identify tax-related items, such as charitable contributions, and print a report for use at tax time. For even greater help, look for a tax-estimator module that computes exemptions and deductions and can export data to a tax preparation package.



### INVESTMENT MANAGEMENT

A good financial package helps you take stock of your stock, tracking historical investment activity and classifying it as short- or long-term—a key to figuring your taxes. The system should maintain transactions by date, easily update stock prices, and keep a history of stock transactions or prices so you can review trends over time. Make sure the program provides basic reports such as tax and earnings, capital gains, and return on investment.



### LOANS AND ASSET TRACKING

A good financial package tracks other items that contribute to your net worth, such as household goods, property, and loans. Select a package that reduces your loan balance every time you make a checkbook payment. Also consider packages that offer an analysis module for planning your financial future. If you need to manage a home business, look for the ability to track payables and receivables and segregate personal and business transactions.



### REPORTING

Your program should print a variety of flexible reports—including budget versus actual reports and net worth statements. Look for a package that prints check registers sorted by date, check number, payee, bank account, and/or expense category. It should also let you prepare custom reports and import data into a spreadsheet.



### EASE OF USE

If the program you choose doesn't make managing your finances easier, you've wasted your money. Look for an amenable interface with pull-down menus and context-sensitive help, plus default expense categories for easy start-up. Most important, avoid packages that use accounting terminology—especially if you're somebody who wouldn't know a debit from a credit. —S. M. C.

automatically updates stock prices on line. But unlike *Quicken*, *MYM* doesn't maintain a history of stock prices—information that may interest avid investors—and it can't prepare a return-

on-investment report.

Helpful extras abound. Sophisticated financial analysis features help you decide whether to rent or buy a home, when to refinance a mortgage, and how

much to sock away for a college or retirement fund. Another module determines your net worth—useful for filling out credit applications or gauging how much insurance to buy. You also get such

## FEATURES EVALUATION

### One for the Money

Best Buy Managing Your Money Offers a wealth of features.

- Yes ○ No
- Deficient
- ▼ Limited only by available disk space

	Andrew Tobias' Managing Your Money 7.0	Cheque-It-Out 1.1	MoneyCounts 6.5	Quicken 4.0
<b>Standard features</b>				
Price	\$219.98	\$49.95	\$35	\$59.95
RAM required	512K	448K	384K	384K
Context-sensitive help	●	●	○	●
Loads default categories	●	●	○	●
<b>Checkbook management</b>				
Checkbaoklike interface	●	●	○	●
Searches by category or payee	●	○	●	●
Prints multiple checks	●	○	●	●
Automated CheckFree interface	●	○	○ <sup>1</sup>	●
<b>Budgeting and expense tracking</b>				
Uses text category descriptions	●	○	●	●
Allocates multiple categories	●	○ <sup>2</sup>	●	●
Tracks expenses by department	●	●	● <sup>3</sup>	●
Na. of years budget data maintained	5	1	1	1
Na. of years actual data maintained	2	▼	1	▼
Increases budget by fixed amount	●	○	●	○
<b>Income tax assistance</b>				
Identifies taxable categories	●	○	○	●
Report of tax-related transactions	●	○	○	●
Estimates based on budget or actual	●	○	●	○
Considers limitations	●	○	○	○
Links to tax preparation software	●	○ <sup>3</sup>	●	●
<b>Investment management</b>				
Displays stock price trends	○	○	○	●
Segregates short- and long-term items	●	○	○	●
Portfolio status and income reports	●	○	○	●
Return-on-investment report	○	○	○	●
<b>Loan and asset tracking</b>				
Computes loan payments and amortization schedules	●	○	●	○
Reduces loan for checkbook payments	●	○	●	○
Tracks accounts payable/receivable	●	●	○ <sup>4</sup>	●
<b>Reporting</b>				
Flexible report sorting	●	○ <sup>5</sup>	○ <sup>6</sup>	●
Prints list of outstanding checks	●	●	●	●
Prints yearly budget report by month	●	●	●	●
Prints budget-versus-actual report	●	●	●	●

<sup>1</sup> CheckFree software must be purchased separately.

<sup>2</sup> User must exit checkbook entry screen.

<sup>3</sup> Extra-cost option

<sup>4</sup> Payables only.

<sup>5</sup> Can't sort by payee.

<sup>6</sup> Sorts only by month or year.

PIM-like utilities as a calculator, a mailing list, and a reminder pad.

But power has its price: *MYM*'s many facets make it more difficult to learn. Each new feature adds menu choices, sometimes forcing users into a complex series of decisions. Fortunately, a menu-driven interface and detailed on-line advice make feature-rich *MYM* about as easy to use as it can be.

*MYM* has just about everything you could want in a financial manager, and then some. If you don't want those fancy extras—and don't need to track loans—*Quicken* is probably your best bet. Otherwise, *MYM* is top dog in this field.

### Cheque-It-Out 1.1

**PROS:** Flexible reports, unlimited historical data, strong reconciliation features

**CONS:** Hard to use, can't track investments or other assets, poor check printing

*Cheque-It-Out* is just a babe in the woods compared to old-timers like *Managing Your Money*. Unfortunately, Hooper's \$49.95 program is still suffering growing pains. It's not as easy to use as *Quicken* or *MYM*, and it won't help you manage sophisticated investment transactions, compute loans, or estimate your taxes. While adequate for simple checkbook management and for producing reports, it's only a fair value.

As with most packages, the program's check-manager screen looks like a personal check: Simply fill in the amount, payee, and date, and assign it a category (such as rent). You can segregate checks into departments, which is useful for, say, managing rental properties. But unlike with the other programs, you must exit the check-entry screen to record recurring transactions or those with multiple categories, like mortgage payments. And you can print only one check at a time—no batch printing allowed.

*Cheque-It-Out* also comes up short in the budget department. It maintains an unlimited amount of past financial data but only one calendar year's worth of

## KNOW YOUR OPTIONS

### Do You Need a Personal Finance Package?

Whether you're starting a career or a home business, you'll benefit from on-line financial guidance. Your choice depends on how complicated your financial picture is.

What is your financial picture?

#### SIMPLE single income, no investments

Do you need to create budgets?

No



Fill out checkbook manually.

Yes

Do you have loans?

No



Select finance package with strong budget/expense tracking features.

Yes



Look for package offering sophisticated loan management.

#### COMPLEX multiple incomes and/or investments

Do you own stock or other long-term investments?

No



Look for basic checkbook management and budgeting features.

Yes



Look for portfolio management and financial analysis features.

Do you plan to prepare your own taxes?

No



Select package that reports on tax-related transactions for use by your accountant.

Yes



Look for links to tax preparation software.

#### HOME BUSINESS

Do you need to track inventory, process payroll, or handle a large volume of receivables?

No



Look for personal finance package with accounts payable/receivable and departmental features.

Yes



Use small-business accounting package.

## IS CHECKFREE HASSLE FREE?

Dan Lavin

In the future, all financial transactions will be electronic—at least, if the *CheckFree* people have anything to say about it. This \$30 electronic checking program—built into *Quicken 4.0* and *Managing Your Money 7.0*—promises to make your paper checkbook virtually obsolete.

Using *CheckFree* is simple. Just fill in the amount, date, and payee on a checklike data entry screen and “mail” payments via modem to a local number. *CheckFree* automatically records payments in your check register and transfers funds from your account to the payee’s via the Federal Reserve System used by almost all banks. (Firms unequipped to handle electronic payments are mailed printed checks.)

*CheckFree* costs about 45 cents per check (less if you send a lot of

checks), comparable to the cost of bank charges and stamps. Its advantages are timely check processing and automatic handling of recurring payments such as mortgage bills.

Promise, however, does not always jibe with reality. Last year, *PC World* received several complaints about the service, ranging from unposted payments to poor customer support. *CheckFree* says it solved these problems; to test that claim, we used *CheckFree* to pay our bills for a month.

In general, payments went through without a hitch, though the gas company payment took about four days to post. We also called tech support several days at different times. Each time the phone was answered by an actual human, who capably handled our questions.

Still, some cautions remain. You should examine bank statements to ensure that payments are posted on time. And if you write a check at the corner store, you must remember to record it on line, or financial chaos will result. *CheckFree* won’t entirely replace your checkbook, but it can help simplify your life—and make paying bills a little less painful.

### WHERE TO BUY

#### **CheckFree 2.0**

CheckFree Corp.  
720 Greencrest Dr.  
Westerville, OH 43081  
800/882-5280  
LIST PRICE: \$29.95, plus \$9 per month for 20 transactions, \$3 for each additional 10  
REQUIREMENTS: 256K, DOS 2.1 or later version, modem  
Reader service no. 605

budgets, so if you’re working on January’s budget, you can’t see what you did in December. *Cheque-It-Out* won’t copy budget data from one month to another—you must enter it manually. And because the program displays only one monthly budget at a time, you can’t view an entire year’s data at once.

*Cheque-It-Out*’s strengths are its reconciliation (checkbook balancing) and reporting features. The program lets you reconcile more than just bank accounts—it can flag medical expenses filed with your insurance company, for instance—but you can’t edit account transactions as you go. Flexible report capabilities enable you to sort by date, check number, or entry order and print weekly, biweekly, semimonthly, and yearly reports.

Despite strong reporting and reconciliation capabilities, *Cheque-It-Out* has

too many gaps to earn a recommendation. If you’re looking for simple, low-cost checkbook management, *Quicken* costs only \$10 more.

### **MoneyCounts 6.5**

**PROS:** Inexpensive, good loan management

**CONS:** No checkbook interface, poor checkbook balancing features, unreliable tax estimator, limited reporting

At first glance, Parsons Technology’s \$35 *MoneyCounts* looks like a bargain. Dig beneath the surface, however, and you’ll find flaws. It’s the only program that lacks a checkbook interface, and its checkbook balancing and tax estimator are poor. Low price and solid loan management are *MoneyCounts*’ primary virtues, and overall it’s only a fair value.

*MoneyCounts* isn’t the friendliest financial companion. Instead of completing an on-screen check, you must fill in an old-fashioned data entry screen. Check numbers are required and must be numeric, which means there’s no easy way to identify automated teller transactions. On the other hand, the program searches financial records as you type, filling in the entry screen when it finds a match with previously entered data.

*MoneyCounts* handles only bank accounts—you can’t track non-cash items such as charitable contributions of property, and there isn’t a default set of expense categories for easy start-up. *MoneyCounts* also lacks an electronic check-paying facility; the program accepts *CheckFree* data, but you must purchase *CheckFree* separately.

Checkbook balancing is extremely

poor. A good program lists all uncanceled checks at once and allows you to mark canceled checks as you find them. *MoneyCounts* displays transactions one at a time in the order they were recorded; you must search your bank statement for each item to see if it cleared.

*MoneyCounts*' simple income tax estimator uses annualized actual or budget information to estimate liabilities, and the program links to Parsons' own *Personal Tax Preparer*. However, it doesn't properly compute certain deductible amounts, such as medical expenses. Don't rely on *MoneyCounts* to provide an accurate tax estimate.

*MoneyCounts* offers basic reporting capabilities, but printing the reports proved difficult. The program prints transactions in transaction-number order and can't sort by date or check number or by multiple criteria at the same time (for example, by payee in chronological order).

*MoneyCounts*' strongest feature is its loan capability, where it bests all but *MYM*. The financial calculator estimates loan payments and present and future values and, unlike *Quicken*, correctly reduces your loan balances when you record loan payments in your checkbook.

If all you need to do is manage loans, *MoneyCounts* is a possibility. If you're more than just a loan ranger, however, you should pony up the silver for a more well-rounded package.

## Quicken 4.0

**PROS:** Inexpensive, easy to use

**CONS:** Limited loan and budget tracking, no tax-estimation module

Dollar for dollar, there isn't an easier personal finance package than *Quicken 4.0*. Its checkbook manager is first-rate, and its investment manager is the best in the roundup. So why isn't the \$60 *Quicken* a Best Buy? Because it lacks the loan management, budgeting, and tax-estimation panache of *Managing*

## EXECUTIVE SUMMARY

### Manage Your Money Easily— From Checks to Taxes

*Programs like Managing Your Money help keep your personal finances in top fiscal condition.*

Personal finance software lets you write checks, balance your checkbook, manage loans and investments, and plan your economic future.



Best Buy **Managing Your Money 7.0** does all the little things right, from handling checks and balances to gauging how big a bite Uncle Sam will take—and it gives you plenty of extra tools for long-term investment planning. Runner-up **Quicken** is cheaper and easier to use, but it lacks MYM's loan-handling prowess and tax acumen.

	Andrew Tobias' Managing Your Money 7.0	Cheque-It-Out 1.1	MoneyCounts 6.5	Quicken 4.0
<b>Checkbook management</b>	Excellent	Fair	Fair	Excellent
<b>Budgeting and expense tracking</b>	Excellent	Fair	Fair	Good
<b>Income tax assistance</b>	Excellent	n/a	Fair	Good
<b>Investment management</b>	Excellent	n/a	n/a	Excellent
<b>Loan and asset tracking</b>	Excellent	n/a	Good	n/a
<b>Reporting</b>	Excellent	Good	Fair	Excellent
<b>Ease of use</b>	Good	Fair	Fair	Excellent
<b>Overall value</b>	Excellent	Fair	Fair	Excellent
	<b>BEST BUY</b>			
Reader service no.	602	603	604	n/a

#### How we rate personal finance programs

We rate personal finance programs based on information in the Features Evaluation table, combined with our hands-on evaluation of user benefit and ease of use.

**Checkbook management** measures the ability to record transactions, print checks, and balance checkbooks. To earn an Excellent rating, packages must perform all functions easily, automate the recording of recurring payments, and provide electronic checking.

**Budgeting and expense tracking** gauges how well the program lets you prepare budgets and compare them against actual results. Packages with an Excellent rating maintain data for more than one year, copy data from other budgets, and let you allocate multiple categories to transactions.

**Income tax assistance** evaluates how programs prepare tax reports and estimate taxes. An Excellent rating means the program provides reports on tax-related transactions, produces a reliable tax estimate, and provides links to a tax preparation program.

**Investment management** refers to the tracking and analysis of investment transactions. To be rated Excellent, a package must easily update stock prices, track historical transactions or stock prices, and provide flexible reports.

**Loan and asset tracking** considers the ability to manage assets other than bank or investment accounts. An Excellent program must accurately track loan transactions, manage accounts receivable and accounts payable, and offer financial planning analysis.

**Reporting** rates the sorting and printing of financial information. An Excellent score means the package prints reports for any user-defined period in a variety of sorted orders and lets you create and store customized reports.

**Ease of use** is critical. An Excellent rating means the program is easy for novices to use, employing a pulldown menu interface with context-sensitive help, minimal or no accounting terminology, and default categories for easy start-up.

**Overall value** combines ratings for all criteria, taking into account price and technical support.

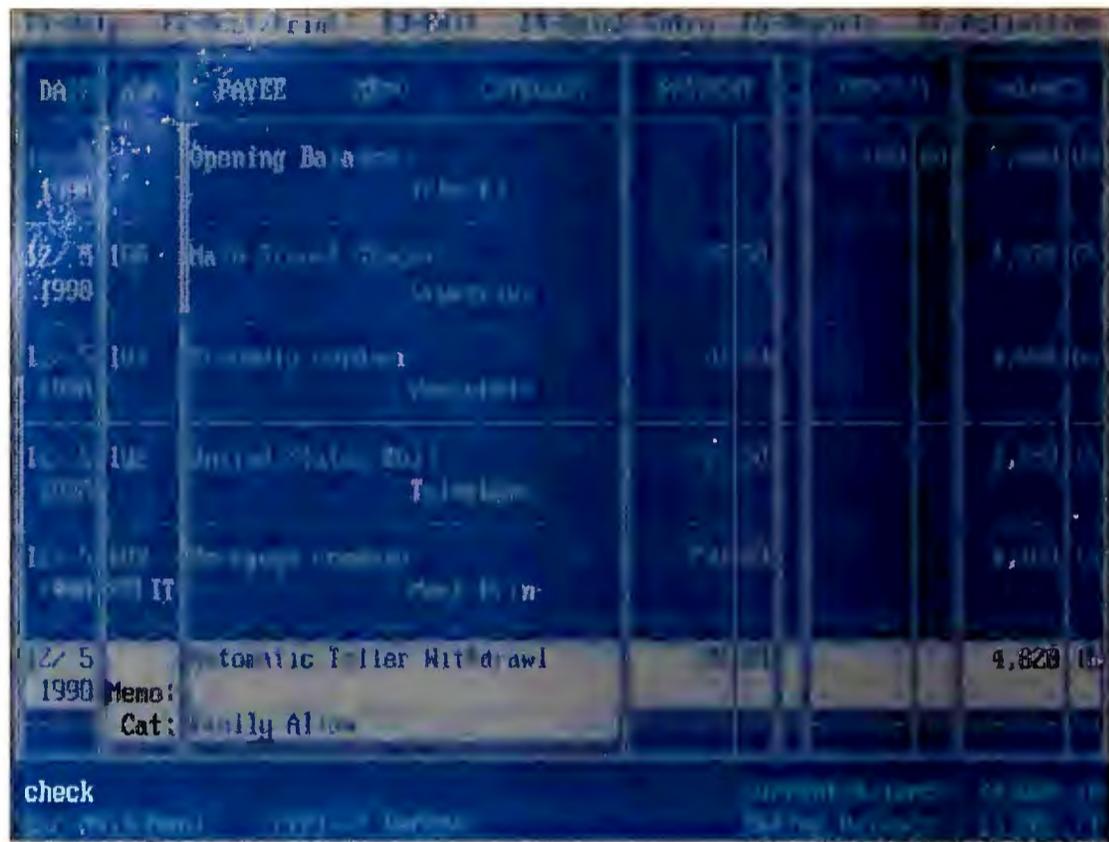
*Your Money.* It's an excellent buy, but not the best one.

*Quicken's* outstanding feature is its ease of use—it can be installed and running in minutes. Its unique check register screen looks just like the one you fill in manually when you write a check. Like *MYM*, *Quicken* also sports a built-in *CheckFree* module.

The program is a whiz at expense tracking. You can easily maintain one checkbook and segregate business and personal expenses by using more specific expense category names such as Rent/Prop1, Rent/Prop2, or Rent/Personal—perfect for managing multiple rental properties or a home business. *Quicken* also lets you mark expense categories as tax related, for easy printing of income tax reports. However, there's no tax-estimation module. Instead, you can export the tax data to Chipsoft's *TurboTax*.

Version 4.0's new investment management module tops *MYM's* in some key areas. Easy to understand and use, it tracks two items that no other package maintains: historical stock prices and return on investment. *Quicken's* investment reports are thorough, but unlike *MYM*, it can't automatically update stock prices on line.

*Quicken's* weaknesses are in budgeting and loan tracking. It maintains budgets for one year only and can't create monthly budgets based on loan schedules or easily increase amounts for inflation. You can manually allocate loan payments between principal and interest,



**Quicken 4.0's** check register screen lets you enter and view multiple items, review your bank balance, and balance your checkbook by typing an X in the Cleared column.

but *Quicken* won't do it automatically.

If you're looking for a simple way to manage your checkbook or track investments, *Quicken 4.0* is a fine choice. But users with more sophisticated financial profiles should opt for *MYM*.

**Ledger Domain**

When you need a package that will help you manage your checkbook, look no further than *Quicken*. But if you want to develop and maintain your personal financial empire, Best Buy *Managing Your Money 7.0* is the only choice. No other program combines an accurate income tax estimator and investment

module with the ability to track loans and plan for the long term.

You work hard for your money. Personal finance software makes it easier than ever for you to keep an eye on your assets—and make your money work for you. ☺

*Suzanne M. Colvin, CPA, is a manager with one of the Big Six accounting firms. Dan Lavin is technical editor for NeXTworld magazine.*

**For more information about all products in this article, circle reader service no. 901.**

**WHERE TO BUY**

**Andrew Tobias' Managing Your Money 7.0**  
MECA Software, Inc.  
327 Riverside Ave.  
Westport, CT 06880  
203/222-9150,  
203/226-2437 (fox)  
LIST PRICE: \$219.98  
REQUIREMENTS:  
512K, DOS 2.0 or later version  
TECHNICAL SUPPORT:  
unlimited, toll number,

M-F 8-8  
OTHER SUPPORT:  
newsletter  
**Reader service no. 602**  
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Colorado Springs, CO 80949  
800/245-7789,  
719/528-8997 (fox)  
LIST PRICE: \$49.95  
REQUIREMENTS:

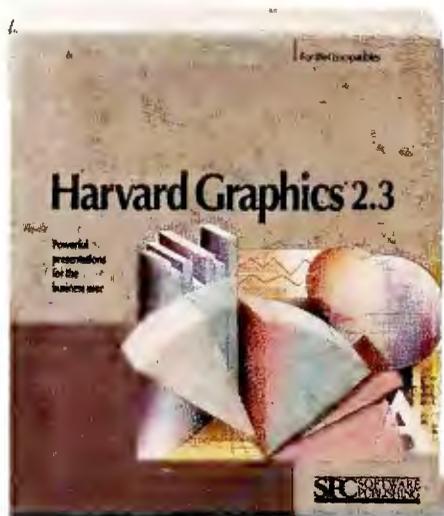
448K, DOS 2.0 or later version  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8:30-5:30  
OTHER SUPPORT:  
newsletter,  
CompuServe forum  
**Reader service no. 603**  
**MoneyCounts 6.5**  
Porsons Technology  
375 Collins Rd. NE  
Cedar Rapids, IA

52406  
800/223-6925,  
319/395-0217 (fox)  
LIST PRICE: \$35  
REQUIREMENTS:  
384K, DOS 2.0 or later version  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8:30 a.m.-9 p.m., Sat. 9-1  
OTHER SUPPORT:  
CompuServe forum  
**Reader service no. 604**

**Quicken 4.0**  
Intuit  
P.O. Box 3014  
Menlo Park, CA 94026-3014  
800/624-8742  
LIST PRICE: \$59.95  
REQUIREMENTS:  
320K for DOS 2.0,  
384K for DOS 3.0  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 5-5  
OTHER SUPPORT: none



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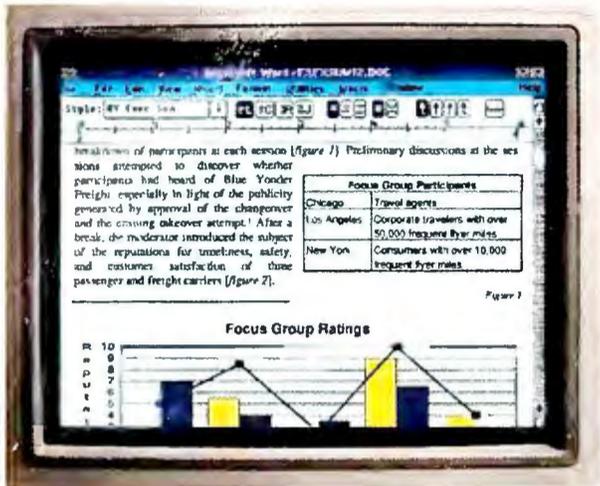
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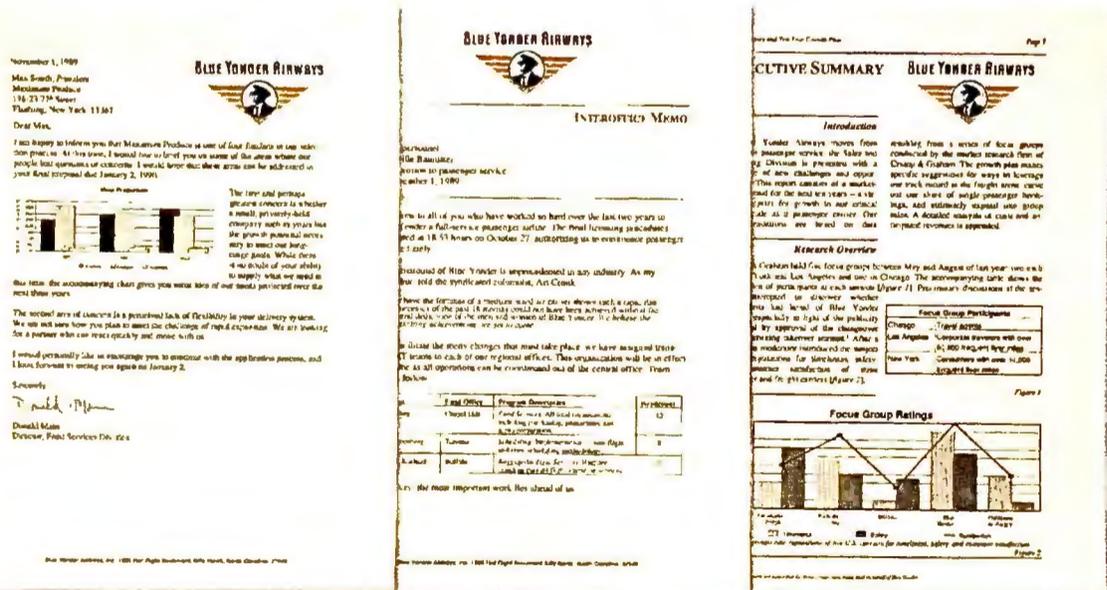


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# Easier Tools for the On-Line World

A wealth of information can be yours when you install a modem and a communications package. Discover which of 14 programs make the process painless.

*Judy Heim*



The information is out there, just waiting for you: sprawling data bases full of everything from business histories to bowling ball futures; services for home shopping, banking, investing, and travel booking; and thousands of bulletin board systems brimming with free software and potential contacts.

The only way to get at these riches is with a modem and a communications package, a tandem that many companies depend on for handling PC-to-PC file transfers between branch offices. Faxes are fine, but they're uneditable images, dead on arrival. When you send by modem, the file lives on.

Though you'll rarely be aware of the modem itself, you *will* be getting personal with your communications software, so make sure you're the best of friends. Only a few new bells and whistles have arrived since our last roundup a year and a half ago, but, more important, most programs have become easier, especially for new users.

### Windows on Communications

Four of the packages reviewed here seek an edge in ease of use by tapping *Windows*' visual approach to computing. Compared to character-based programs, all the *Windows* packages make it easier to cut and paste text to and from on-line sessions, and all let you work on another program while you're transferring files. Some offer Dynamic Data Exchange (DDE) links to other *Windows* applications for automating communications—they can pass selected on-line news to *Ami Professional*, for example, where a macro automatically formats it into a custom newspaper. Several packages offer innovative icon-based front ends—just click on an icon, and your modem dials CompuServe; click on the airplane icon, and start making travel reservations.

What could be easier? Nothing—if the icons were easy to set up. Although we're wild about *Windows*, we were at a loss to find a Best Buy among the *Windows* packages—each had at least one major problem or omission. Oddly

enough, the promising icon-based interfaces of *DynaComm* and *MicroPhone* turned out to be the thorniest, and the least innovative *Windows* contender—*Crosstalk for Windows*—was the best *Windows* value.

*Windows* communications packages will undoubtedly improve, but for now the winners are among new, easier-to-use versions of old character-based reliables. We awarded four Best Buys. *Crosstalk Mk.4* is perfect for the high-end communicator who needs a heavy-duty scripting language, and its scaled-down sibling, *Crosstalk Communicator*, is tops for beginners. *HyperAccess/5* and *Procomm Plus* are aimed at the masses of casual users who fall in between.

So how did we make our choices? Ease of use is all-important, but features count too. You'll want a full list of error-checking file transfer protocols so you can swap files at the fastest possible speed without losing a byte of data. Basic messaging features such as a dialing directory are also crucial.

Multitasking features like background transfers are helpful if you send large files. Next in importance are ad-

vanced script languages for creating unattended applications; terminal emulations for logging on to minicomputers and mainframes; and remote operations, which let callers dial in to your unattended PC and swap files (see "Buying Smart" for more details).

### Crosstalk Mk.4 2.0



**PROS:** Powerhouse script language, multiple sessions, numerous emulations

**CONS:** Skimpy remote mode, thorny documentation

*Crosstalk Mk.4*'s original incarnation was blighted by a clunky interface that inspired users to hack together their own front ends. But DCA has changed all that with version 2.0—the much-improved interface revolves around a slick, *Procomm*-like dialing directory. *Crosstalk Mk.4*'s new ergonomics, combined with its heavyweight script language and sound terminal emulations, makes it well worth its \$245 price tag. It's the Best Buy for the corporate power user with plans to design custom applications, and at last it's a good deal for



Best Buys *Crosstalk Communicator* and *Crosstalk Mk.4* share the same easy-to-use dialing directory interface. You can modify the display to show other fields, such as the phone number and the last time an entry was called.

## BUYING SMART: CHECKING OUT COMMUNICATIONS SOFTWARE

When evaluating a communications package, the key buying issue is ease of use, followed by messaging and file transfer support. Next in importance is multitasking, then session automation, remote options, and terminal emulations. Here are the key features to look for.



### EASE OF USE

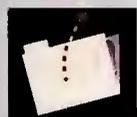
This is crucial. A program must offer an intuitive customizable interface off line and on line. Good interfaces have well-designed menus, dialing directories, hot keys, and mouse support. The package should provide easily modifiable preset scripts for popular services. Easy installation, clear documentation, and unlimited technical support are helpful.



### MESSAGING

Each package should have an easily accessible dialing directory where you can view and modify all entries in one place. If you like to log on to BBS's, you'll want a queue dialer, which dials the next number if the first is busy.

On line, you'll want an auto-capture buffer so you can scroll back through text, and you should be able to cut and paste that text to your local terminal screen and vice versa. Other on-line essentials include print and capture commands, an on-screen clock, and good status feedback during file transfers. You'll need a capable text editor or the ability to shell out to a word processor.



### FILE TRANSFER

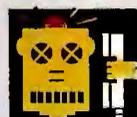
When swapping files with other PCs or on-line services, you'll want to use an error-checking protocol to make sure ev-

ery byte that is sent is also received—even if you have an error-correcting modem. All the programs offer old reliables like XMODEM, but if your program has a faster protocol, such as YMODEM or ZMODEM—and your remote partner has the same—you can save a lot of time and money. Demand XMODEM, CompuServe B, Kermit, YMODEM, and ZMODEM.



### MULTITASKING

If you frequently swap large files you'll want to be able to run other applications while a file transfers in the background. Performance shouldn't degrade, and you should have plenty of RAM left to run large applications. Less crucial—a few high-end programs let you run more than one session at a time either via multiple modems or a multitasking X.25 network such as Tymnet. This could come in handy for a stockbroker who wanted to keep tabs on two stock services at once.



### SESSION AUTOMATION

This category rates the power and flexibility of the script language and other tools for automating communications. You'll want keystroke macros so you can send frequently used text strings or launch scripts. Also essential is a learn mode that lets you record a log-on procedure and run it as a script.

You'll probably want to write a script that automatically logs on to a service such as CompuServe or MCI Mail, uploads and downloads E-mail, and logs off—perhaps in the middle of the night when rates are lowest. For this, you'll need to get

your hands dirty with a script language. Corporate developers who need to create front ends for novice users will want far more power, such as the ability to create custom on-line interfaces with windowing commands.

Some programs offer special script editors that let you select commands from menus, and tools such as debuggers can help you troubleshoot a script. If you have a Windows package, it should support Dynamic Data Exchange (DDE) so you can automate transfers with other Windows programs—for example, downloading a Dow Jones stock quote and handing it to Excel, where a spreadsheet is automatically updated.



### REMOTE MODE

These packages aren't true remote packages like Carbon Copy, but they all offer a remote host function so callers can dial in while the PC is unattended and swap files. The remote mode should provide several layers of password protection. Authorized users should be able to access DOS, and you should be able to define access by directory, not just by drive. The best packages are like miniature BBS's, with menus that guide the caller.



### TERMINAL EMULATIONS

All the packages should offer the basic emulations, including TTY, VT-100/102/52, ANSI (IBM PC), and IBM 3101. With these, you can log on to just about any popular service or BBS. If you need to log on to a variety of minis and mainframes, it's best to have a good selection of more exotic emulations. —J. H.

# FEATURES EVALUATION

## Messaging and Protocols: The Keys to Communications

Crosstalk Mk.4 wins the features competition with solid messaging and a complete list of file transfer protocols. It also sports advanced features like multitasking and a variety of emulations.

- Yes
- No
- ◐ Deficient

	Crosstalk Mk.4 2.0	Crosstalk Communicator	Crosstalk for Windows 1.1	DynaComm 3.0a	HyperAccess/5 1.1	Microphone II 1.0	Mirror III 2.0	Procomm Plus 2.0	Qmodem SST 4.2	Relay Gold 4.0
<b>Standard features</b>										
List price	\$245	\$99	\$195	\$295	\$99.95	\$295	\$149	\$119	\$79.95	\$299
RAM required	320K	320K	320K	150K	350K	256K	470K	192K	320K	256K
Windows application	●	●	●	●	●	●	○	●	○	○
Mouse support	●	●	●	●	●	●	●	●	○	○
<b>Messaging</b>										
Interactive dialing directory	●	●	○	○	●	○	●	●	●	●
Cut and paste fram buffer	◐ <sup>1</sup>	◐ <sup>1</sup>	●	●	●	●	◐ <sup>1</sup>	●	◐ <sup>1</sup>	●
On-line text editor	●	●	●	●	●	○	●	●	●	●
Hat key ta external ward processor	●	●	○	●	●	○	●	●	●	●
Split-screen chat made	◐ <sup>3</sup>	◐ <sup>3</sup>	◐ <sup>3</sup>	○	◐ <sup>3</sup>	○	●	●	●	●
Queue dialing	●	●	○	○	●	●	●	●	●	○
<b>File transfer protocols</b>										
Kermit	●	●	●	●	●	○	●	●	○	●
XMODEM/XMODEM CRC	●	●	●	●	●	●	●	●	●	●
YMODEM-G	●	●	○	○	●	●	●	●	●	●
CompuServe B	●	●	●	●	●	○	●	●	○	○
ZMODEM	●	●	●	○	●	○	◐ <sup>4</sup>	●	●	○
Praprietary	●	●	●	●	●	○	●	●	○	●
Data compression	●	●	○	○	●	○	●	●	○	●
<b>Multitasking</b>										
Background file transfer	●	●	◐ <sup>5</sup>	◐ <sup>5</sup>	●	◐ <sup>5</sup>	●	●	○	●
Multiple sessions	15	●	◐ <sup>7</sup>	◐ <sup>7</sup>	●	◐ <sup>7</sup>	○	●	○	15
<b>Session automation</b>										
Keyboard macros	●	●	●	●	●	◐ <sup>8</sup>	●	●	◐ <sup>8</sup>	●
Prewritten lag-in scripts	●	●	●	●	●	●	●	●	○	○
Learn made	●	●	●	●	●	●	●	●	●	◐ <sup>9</sup>
<b>Remote mode</b>										
Remote access	●	●	●	●	●	●	●	●	●	◐ <sup>10</sup>
Remote access to DOS	●	●	●	●	●	○	●	●	●	◐ <sup>10</sup>
Remote menus	●	●	○	○	●	○	●	●	●	○
<b>Terminal emulation</b>										
VT-100/102/52	●	●	●	●	●	◐ <sup>12</sup>	◐ <sup>12</sup>	●	◐ <sup>13</sup>	◐ <sup>12</sup>
ANSI and TTY	●	●	●	●	●	●	●	●	●	●
IBM 3101	●	●	●	●	●	○	●	●	○	●
Other emulations	11	1	1	7	7	0	18	28	2	5
	BEST BUY				BEST BUY			BEST BUY		

<sup>1</sup> Limited to copying screen to file.

<sup>2</sup> Poste only.

<sup>3</sup> Requires o script.

<sup>4</sup> Must install seperately ond register os shoreware.

<sup>5</sup> Vio Windows.

<sup>6</sup> For "experimental" purposes only.

<sup>7</sup> Multiple sessions possible with multiple modems if you install multiple copies of programs.

<sup>8</sup> Can only store test strings in function keys.

<sup>9</sup> Works only in TTY mode.

<sup>10</sup> Collers must also use Relay Gold.



powerful CASL language, fully documented. Neither its interface nor CASL takes full advantage of *Windows*, but it's your all-around best *Windows* value.

As with any *Windows* program, you select options from pulldown menus and then fill out dialog boxes. There are no icons, but you can customize and color-code 12 "buttons" that can launch scripts as well as issue keystrokes. The installation routine is tops—you can even select an on-line tutorial that covers communications basics.

*Crosstalk for Windows* is easy to set up, but it sorely needs a dialing directory. To get on line, you have to open the File menu, then select a phone book entry, and click again to dial. The entries are short and lack comments, and to find related data such as phone numbers and attached scripts, you must go to a separate menu.

Added to CASL are six commands that control DDE links to other *Windows* applications. But CASL lacks *DynaComm's* tools for easily constructing *Windows* dialog boxes, scrolling lists, and buttons to custom front ends.

File transfers run in the background without a hitch, and cutting and pasting to the built-in notepad is a breeze. An above-average remote host mode offers solid security, but no menus.

*Crosstalk for Windows* lacks a dialing directory and yet fails to offer a better system that would exploit *Windows*. Still, it's a friendly, capable program and a solid buy.

### DynaComm 3.0a

**PROS:** Good script language, windowing, icon-driven front ends

**CONS:** Limited remote mode, hard to set up, weak documentation, limited protocols, poorly designed XMODEM transfers

The most ambitious of the *Windows* communicators, Future Soft's \$295 *DynaComm* is marked by a robust script language that supports DDE and *Windows* screen objects. *DynaComm* also exploits *Windows* by offering tiling

and stacking windows, plus icon-driven front ends for a few on-line services. It's a good deal overall, but a confusing design, limited protocols, and some rough edges keep it from the top slot.

When you load *DynaComm*, an icon-based menu pops up the main program plus 19 utilities and scripts. These include the learn mode, a tutorial, and several games. Unlike with *MicroPhone II*, however, you can't launch on-line services from icons or add icons for your own log-in scripts.

Dialing a number is even more tedious than with *Crosstalk for Windows*—you click on the *DynaComm* icon to open the main screen, head to the File pulldown menu, select the option to open a file, choose the settings file, then go to the Phone menu and click on *Dial*.

The program includes scripts for seven on-line services that let you navigate by clicking on icons at the bottom of the screen. On CompuServe, for instance, you click on an envelope to get to your mail or on a jet to make airline reservations. But the icons only take you so far, and soon you're back to typing in commands. The visual cues make it easier to find what you want, but sometimes the icons can lead you astray, and for

some services icons are blotted out.

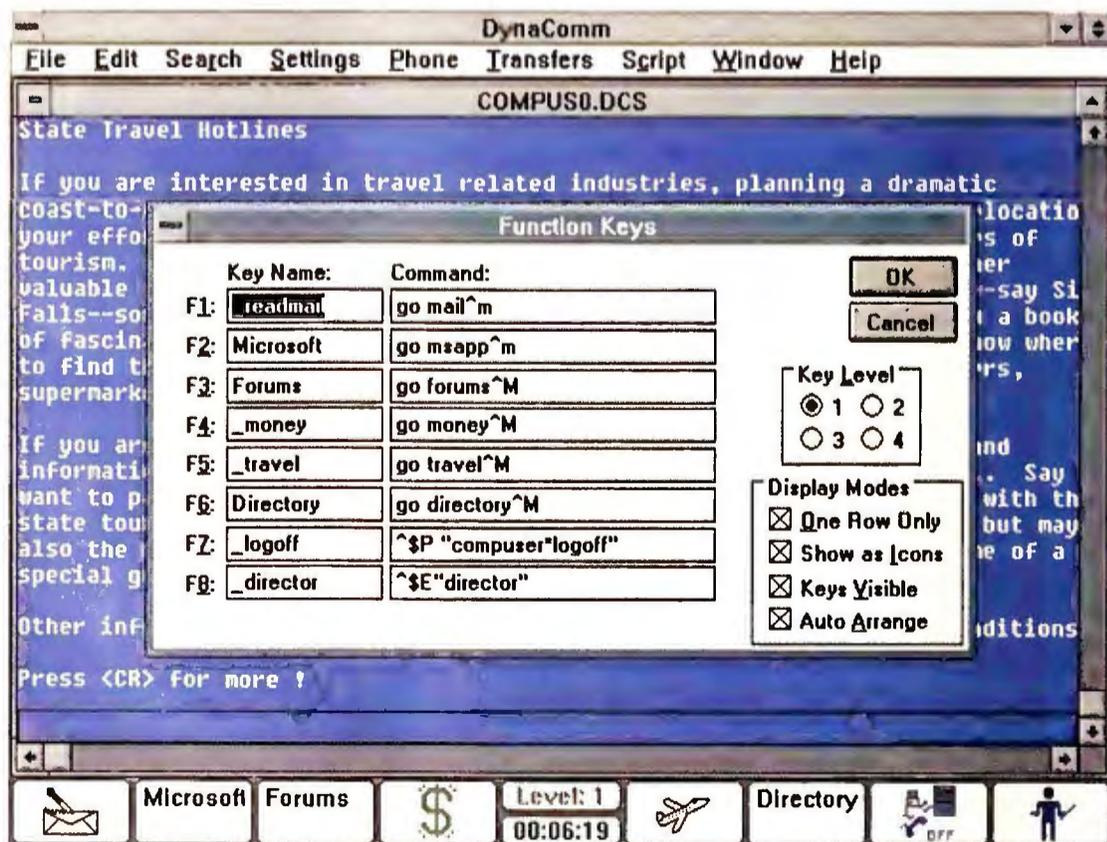
On line, you can access a modest editor; and cut and paste is flexible. Users of high-speed modems will miss ZMODEM and YMODEM-G, but a new version of *DynaComm* that includes these protocols should be out by the time you read this article.

File transfers have other problems—during XMODEM transfers of very large (over 300K) files, we encountered lockups that caused the transfers to be aborted. Also, during transfers, there's scant progress status, and there's no alarm upon completion.

*DynaComm's* sophisticated script language is comparable to that of *Crosstalk for Windows*, but it's better suited for creating *Windows* front ends. For example, you can easily script *Windows* artifacts like icons and dialog boxes.

You get 13 emulations, the most of any *Windows* contender. The remote mode is skimpy, however, lacking menus.

A mighty script language and impressive windowing make *DynaComm* shine, but a bumpy interface gets in the way. It's a good value, especially for developers who want to set up *Windows* front ends, but the program has yet to live up to its potential.



DynaComm provides icon-based front ends for popular services. On CompuServe, for example, you click on the airplane to move to travel services.

## HyperAccess/5 1.1



**PROS:** Easy to use, polished emulations, slick cut and paste, good remote mode

**CONS:** No background transfers, no predefined scripts

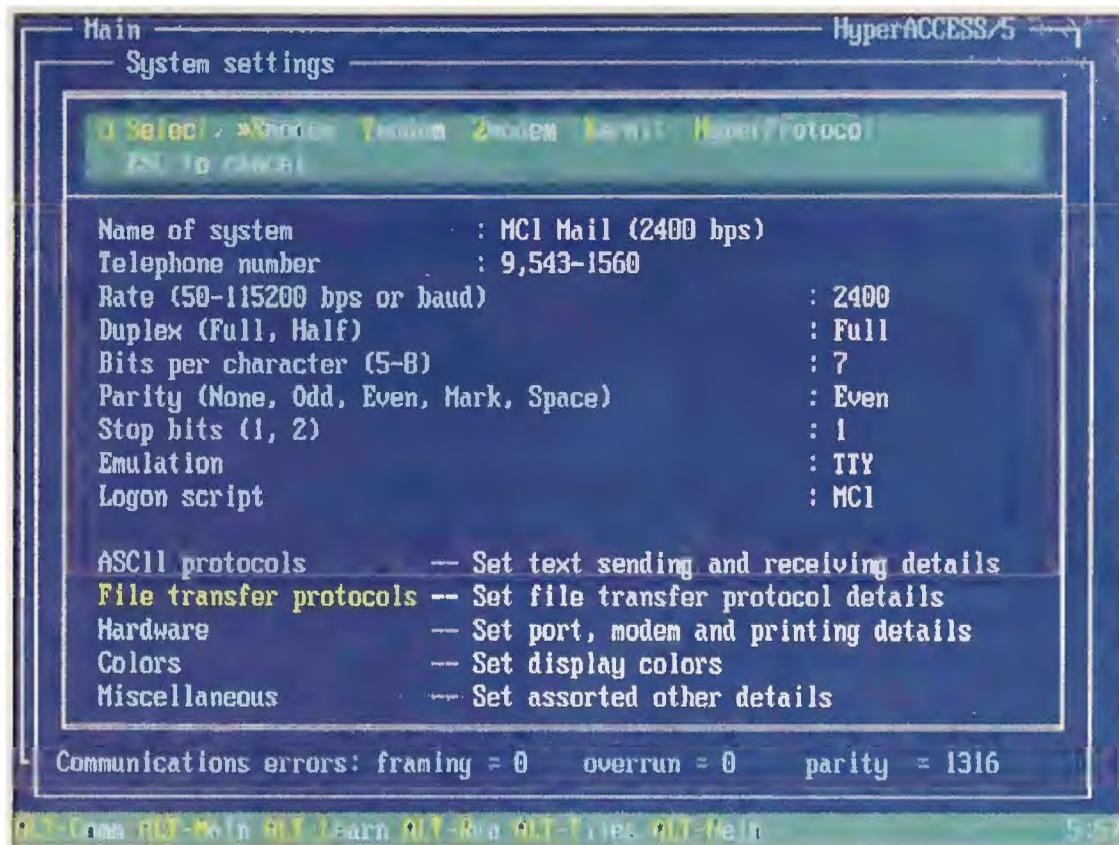
The easiest-to-use package in the roundup, Hilgraeve's \$99.95 *HyperAccess/5* also packs a lot of features. You get a capable script language, numerous quality emulations, and a complete list of protocols, plus extras like data compression and virus detection. If you're a developer you'll probably prefer *Crosstalk Mk.4*, but the typical user will find *HyperAccess/5* the Best Buy.

The program opens with a logical, first-letter menu on top and a dialing directory below. You can choose an entry and dial the modem with just three keystrokes. On line, you can toggle back to the main menu or pop up a 1-2-3-like banner menu. Unlike with *Mk.4*, all <Alt>-key shortcuts are conveniently listed at the bottom of the screen.

*HyperAccess/5*'s cut-and-paste is better even than the *Windows* packages'. You can either use the exemplary editor or shell out to your own word processor. The learn mode is also the easiest in the roundup—a good thing, too, since there aren't any prewritten scripts for major services.

In addition to all the top protocols, you get Hilgraeve's proprietary data compression and a built-in virus scanner that scans downloads for the bit signatures of 68 viruses. It's an ingenious feature, but of negligible use since it won't work on compressed files. You'll find soundly implemented emulations such as those for IBM, Wang, and DEC terminals (including the DEC 220).

The script language is comparable to *Procomm*'s, and it's easier to use. A superb remote mode provides remote printing and a callback feature. By the time you read this, version 2.0 should be shipping, offering an expanded host mode that allows the remote running of text-only applications but still no back-



Setting up a dialing entry is straightforward with Best Buy *HyperAccess/5*. Here, you can select from a complete set of options, including all the top file-transfer protocols.

ground mode or prewritten scripts.

*HyperAccess/5*'s top functionality and easy interface make this a Best Buy for dabblers as well as pros.

### MicroPhone II 1.0

**PROS:** Icons for major services, mini-BBS

**CONS:** Few protocols and emulations, no DDE support

*MicroPhone II* jumps from the Macintosh to *Windows* with its colorful interface nearly intact—it's a festival of icons integrated with simple menus. But with its paucity of protocols and emulations, no support for DDE, and an occasional propensity to misbehave on line, it's only a fair value—especially at \$295.

The program opens promisingly with a menu equipped with icons for CompuServe, BIX, Dow Jones, GENIE, and MCI Mail. Once you've set them up, clicking on any icon launches a script that logs you on to the service. This is how communications was meant to be.

Unfortunately, the scripts don't come plug-and-play. You have to fish around several menus to set them up, and in some cases you have to change parameters. If you forget to save the parame-

ters (oddly enough, you must do so in a separate menu), the script forgets them after logging off. Setting up a new service is even more involved.

*MicroPhone II* lacks *DynaComm*'s on-line icons, but for major services you get on-line text buttons that provide a custom, mousable interface. The buttons are better behaved than *DynaComm*'s but just as shallow. On CompuServe, for example, you can click your way to the billing, games, and news sections, but then you're on your own.

There's no on-line status, not even a clock or a way to know whether you're capturing a file. Cut and paste is easy, but there's no editor aside from *Windows*' Notepad. *MicroPhone II* has the fewest protocols in the roundup—all you get are XMODEM, YMODEM, and YMODEM-G. Terminal emulations are limited to VT-100, VT-52, ANSI, and TTY. A mini-BBS feature includes menu-driven messaging and password protection but no access to DOS.

*MicroPhone*'s limited script language is further hampered by the lack of DDE support, but by the time you read this a new version should include DDE. It also lacks *DynaComm*'s wizardry with *Windows* objects—there's

## EXECUTIVE SUMMARY

### Logging On Gets a Little Easier

Four Best Buy communications packages stress ease of use.

Communications packages are used with a modem to call in to remote on-line services and transfer files between PCs.



For most users, **HyperAccess/5** and **Procomm Plus** are the Best Buys, thanks to easy interfaces and complete features. A potent script language paired with a dapper new interface makes **Crosstalk Mk.4** a Best Buy for the corporate power user who needs to design custom applications. If you're a newcomer to communications and you don't need high-end features like multitasking, Mk.4's cheaper, scaled-down sibling, **Crosstalk Communicator**, wins the honor.

	Crosstalk Mk.4 2.0	Crosstalk Communicator	Crosstalk for Windows 1.1	DynaComm 3.0a	HyperAccess/5 1.1	MicroPhone II 1.0	Mirror III 2.0
Ease of use	Excellent	Excellent	Good	Fair	Excellent	Fair	Poor
Messaging	Excellent	Excellent	Good	Good	Excellent	Good	Good
File transfer	Excellent	Excellent	Good	Fair	Excellent	Poor	Excellent
Multitasking	Excellent	n/a	Excellent	Excellent	n/a	Fair	Fair
Session automation	Excellent	Good	Excellent	Excellent	Good	Fair	Good
Remote mode	Fair	Good	Good	Fair	Poor	Good	Good
Terminal emulations	Excellent	Good	Good	Excellent	Excellent	Fair	Good
Overall value	Excellent	Excellent	Good	Good	Excellent	Fair	Fair
	BEST BUY	BEST BUY			BEST BUY		
Reader service no.	612	613	614	615	616	617	618

	Procomm plus 2.0	Omodem SST 4.2	Relay Gold 4.0	Smartcom III 1.2a	Smartcom Exec 1.0a	Telemate 2.11	Unicom 2.0c
Ease of use	Excellent	Excellent	Poor	Fair	Excellent	Excellent	Excellent
Messaging	Excellent	Excellent	Fair	Good	Good	Excellent	Good
File transfer	Excellent	Fair	Fair	Fair	Good	Excellent	Excellent
Multitasking	n/a	n/o	Good	Fair	Poor	n/a	Fair
Session automation	Good	Good	Good	Good	Good	Excellent	Poor
Remote mode	Excellent	Excellent	Poor	Fair	Fair	n/o	Good
Terminal emulations	Fair	Poor	Good	Fair	Fair	Fair	Fair
Overall value	Excellent	Good	Fair	Fair	Good	Good	Good
	BEST BUY						
Reader service no.	619	620	621	622	623	624	625

**How we rate communications packages**  
We rate these packages based on information in the Features Evaluation combined with our opinions of quality and ease of use.

**Ease of use** To win an Excellent, a program should be easy to install, set up, and use and be free of serious bugs. Extra points are given for unlimited tech support, mouse support, icons or buttons, and preset scripts for popular services.

**Messaging** To earn an Excellent, a program needs an interactive dialing directory, a full list of modem settings, and a capable editor (or the ability to shell out to a word processor). It also

must provide on-line print and capture controls, a scrollable capture buffer, and flexible cut and paste.

**File transfer** To win an Excellent, the program must support XMODEM, YMODEM-G, Kermit, CompuServe B, and ZMODEM.

**Multitasking** To earn an Excellent, a program must offer background transfers. Points are subtracted for unduly large background memory requirements. Points are added for multiple simultaneous modem sessions.

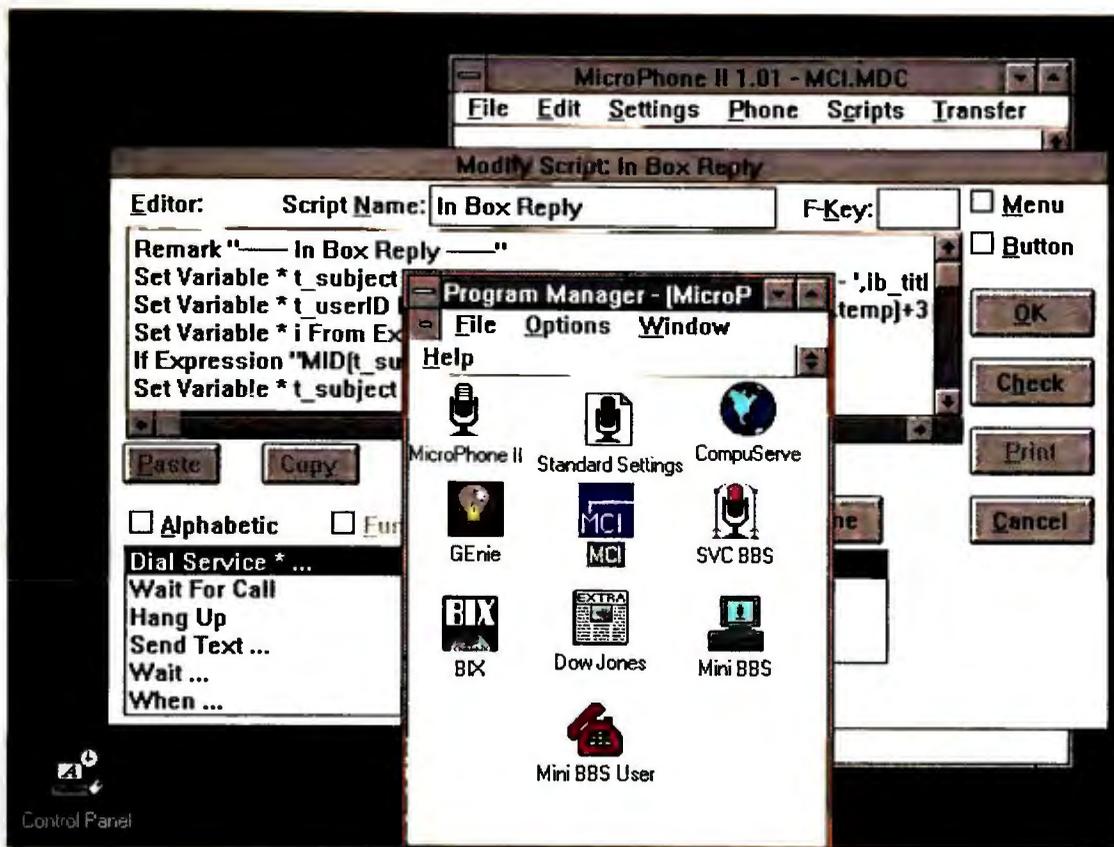
**Session automation** To earn an Excellent, a program must offer a powerful script language, a learn mode, and keystroke macros. Extra points

are added for script-writing tools.

**Remote mode** To win an Excellent, a program must offer remote menus, multilayer password protection, file transfers, access to DOS, and the ability to limit callers by subdirectory.

**Terminal emulations** To win an Excellent, a program must offer the basic emulations (VT-100/102/52, ANSI, TTY, IBM 3101) plus at least six more. Points are subtracted for flaws and bugs.

**Overall value** weighs all the above criteria, with primary emphasis on ease of use and secondary emphasis on messaging and file transfers. It also factors in the price of each package.



Showing the potential of Windows-based communications, MicroPhone II lets you log on by simply clicking on an icon. But first you must struggle with a confusing setup procedure. In the background, MicroPhone II's helpful script editor lets you piece script together from menus.

no support for scrollable lists, and only limited tools for creating dialog boxes. The learn mode doesn't record pauses, so you must enter them manually. One plus: You get a slick script editor that lets you piece scripts together from menus.

*MicroPhone* has a few rough spots. If you pull down menus during a communications session, *MicroPhone II* sometimes misunderstands modem responses—for example, you might see "Modem not responding" if you open a menu while the modem is hanging up.

With its icon interface, *MicroPhone II* is moving in the right direction, and once set up, it's pretty easy to use. But until the basic functionality is boosted, look elsewhere.

## Mirror III 2.0

**PROS:** Good script language, mouse support

**CONS:** Some poorly implemented on-line features, peculiar interface

*Mirror III* began life as a *Crosstalk XVI* clone but has since graduated to become a *Procomm* and a *Crosstalk*

clone. The latest version of this \$149 program boasts features that its mentors lack, including mouse support, background transfers, and a slew of terminal emulations. However, the program's hodgepodge interface and screen glitches make it a so-so value.

*Mirror III's* interface couldn't be more schizophrenic—even *Procomm* and *Crosstalk XVI* users will find it disorienting. A ghost of a *Crosstalk XVI* screen flashes on the screen when you load the program, but in a blink it's gone as *Mirror* dresses itself in a *Procomm*-like dialing directory. You use a *Crosstalk XVI*-style status screen to change global parameters and launch scripts and the dialing directory to get on line. Once on line, you choose between a 1-2-3-issue top-line menu or a *Crosstalk XVI*-style command bar.

The program's screen display is buggy—at times, *Mirror III* blanks the on-line screen. Log off a mainframe after using VT-220 emulation, and the screen blossoms into a confetti of extended ASCII symbols. The mouse support is welcome, but while on line the mouse occasionally freezes up.

Among *Mirror III's* other quirks is

its curious ritual of stalling several seconds to build menus whenever you log off. File and error handling is poor—when accessing alternate drives (such as D:) you can look only at the root.

Support for transfer protocols is complete except that ZMODEM isn't built-in—you must install it from a separate disk (no picnic) and register it as shareware. The background mode works well, but it consumes 470K, leaving scant room for other programs. You can trim it to 185K if you prune key features like the dialing directory.

*Mirror's* capable script language is comparable to that of *Procomm Plus*. A mini-BBS greets remote callers with menus and even lets authorized users shell to DOS, but you can't restrict callers to specified directories.

*Mirror III* offers a wide array of features, but the bumpy interface makes it only a fair value.

## Procomm Plus 2.0



**PROS:** Easy-to-use dialing directory, simple setup, mouse support, good remote mode

**CONS:** No background transfers, faulty DEC emulations, poor documentation

An up-from-shareware best-seller, *Procomm Plus* has recently undergone its first major upgrade in years. Version 2.0 adds ZMODEM, mouse support, an improved editor, 15 terminal emulations (for a total of 32), and a more powerful script language. On the downside, some DEC emulations still don't work properly, and the documentation is a loser. Thanks to its ease of use, however, *Procomm* retains the Best Buy it won in our last roundup a year and a half ago.

Always easy to use, *Procomm* has become even easier. New fields grace *Procomm's* intuitive dialing directory, including date of last call, emulation, and protocol. Also new: You can annotate entries with a pop-up notepad. As always, <Alt>-key combinations let

you quickly access setup parameters, and you can now use function keys to call scripts and external programs. You get prewritten scripts for CompuServe, Dow Jones, and BIX.

Mouse support is a big help—you can use a mouse to dial numbers and scroll and select choices from menus. While *Procomm*'s script language now boasts its own manual, neither it nor the main manual is very thorough, and expanded on-line help doesn't fill the gap. The new *Procomm* is a memory guzzler, requiring 295K (192K if you sacrifice Kermit, CompuServe B+, the editor, and the DOS gateway).

The on-line interface is improved—you can cut and paste file names between *Procomm* and a remote system, and you can now easily mark on-line text and pop it into a vastly improved editor that includes word wrap and a split-screen display. The addition of ZMODEM and CompuServe B+ brings *Procomm*'s list of protocols up to snuff, and the 15 new emulations include DEC VT-220, VT-320, and IBM 3161. A few DEC emulations still retain flaws, exhibiting faulty backspace and function key behavior.

*Procomm*'s enhanced script lan-

guage will be welcomed by developers who want to write their own emulations. Scripts are now compiled for greater speed, and the over 90 new commands include better file and string manipulation, support of floating variables, and a full set of arithmetic operators. However, it lacks the windowing power of top languages like *Mk.4*'s CASL. Also, if your existing *Procomm* scripts are complex, they'll probably need to be modified.

Despite some gaps and blemishes, the \$119 *Procomm Plus* is still a Best Buy—especially if you buy it from one of the many mail-order outfits that offer it for about \$40. It's highly recommended for mainstream users, but if you need to call into the company DEC VAX, choose *HyperAccess/5* instead.

### Qmodem SST 4.2

**PROS:** Good text editor, easy dialing directory, superb remote mode

**CONS:** No background transfers, few emulations and protocols, no predefined scripts

The Forbin Project's shareware *Qmodem SST* is a kissing clone cousin

to *Procomm Plus*. The \$79.95 program offers an outstanding host mode, dialing directory, and editor. Although its list of emulations and protocols is somewhat short, it's a good value for bargain hunters and BBS browsers.

*Qmodem*'s unique setup automatically tests and optimizes many different brands of high-speed modems. Documentation is mediocre, but the on-line help is tops. Unfortunately, the program lacks prewritten scripts, and there's no background mode.

Like *Procomm*, *Qmodem* is built around an interactive dialing directory, complete with queue dialing for polling busy BBS's, and pop-up notecards for each dialing entry. *Qmodem*'s superb *WordStar*-like editor is the best in the roundup, and cut and paste is easy. On-line support is good, but *Qmodem* can't read Kermit or CompuServe B protocols, and its limited list of emulations lacks IBM 3101 support.

The 68-command script language is similar to the one in *Procomm*, adding true windowing ability, a slick debugger, and a facility to execute DOS commands from within scripts. The BBS-like host mode is the best in the roundup—it has everything that *Procomm* has, plus a

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*Qmodem* is a good choice for BBS aficionados, as well as for users who want to set up their own simple, easy-to-maintain bulletin board.

## Relay Gold 4.0

**PROS:** Links to *Relay*-based mainframes, multiple sessions, 3270 support

**CONS:** Confusing interface, poor documentation

Microcom's \$299 *Relay Gold* is aimed at corporate users with links to those IBM 3270 and VM systems that also run versions of *Relay*. Version 4.0 adds emulations, expanded memory support, a pop-up scroll buffer, and script enhancements. Despite the program's 15 multiple sessions, support for 3270 boards, and powerful script language, however, *Relay Gold* drops the ball with its poorly organized interface. Now that *Crosstalk Mk.4* proves that power needn't be intimidating, there's scant reason to buy *Relay Gold* unless you're talking to *Relay* mainframes.

*Relay Gold* is awash in excess menus, and you must often work through a puzzle box of function keys and script commands. The program opens simply enough with a function-key menu, but then things get messy. There's an adequate dialing directory, but you must toggle to another screen to find out, for instance, if an entry is linked to a script.

On line, it gets messier. There are no predefined scripts, so you must rely on *Relay*'s learn mode, which works only with TTY emulation—this double whammy will keep many a novice from creating log-in scripts. To coax *Relay Gold* into printing, you must enter script commands.

Background transfers consume only 256K. They run smoothly when the program is loaded as a non-TSR and later toggled into resident mode, but if you load it in resident mode and then go on line, *Relay* reports that there isn't enough memory and hangs up.

The hefty script language includes

plenty of variables and math functions, but it offers no support for windowing, and only one data type. The menuless remote mode accepts calls only from other *Relay* systems.

*Relay Gold* may be a suitable choice for corporations that link up to mainframes via *Relay*, but for the rest of us, it earns a thumbs-down.

## Smartcom III 1.2a

**PROS:** Good file manager, capable editor, multiple sessions

**CONS:** Difficult to set up, few emulations, no CompuServe B or ZMODEM

Marred by a confusing interface and limited support for emulations and protocols, the \$249 *Smartcom III* probably would not be as widely used as it is if it didn't come bundled with some V-Series Hayes modems. If you want power, check out *Crosstalk Mk.4*. If you're looking for ease of use and want to stay in the *Smartcom* family, try Hayes' new lower-end *Smartcom Exec*.

## Smartcom Exec is superior to Smartcom III and only a tad less powerful.

*Smartcom III* lacks a true dialing directory. Communications settings are broken into two categories: activity settings, which consist of the phone number, emulation, and file transfer particulars, and connection settings, which are parameters like modem speed and COM port. Ideally, you're supposed to mix and match these so you can run multiple activity settings from a single connection setting, but in real life it's a mite confusing, and the limited manual doesn't help. It's also difficult to link a log-in script to a phone number.

Once it's set up, *Smartcom III* gets a little easier. On line, you can open a complete menu of options, including an

excellent capture buffer and editor and the best file manager in the roundup. The lack of hot keys, however, results in too much button pushing, and you can't change parameters—or even protocols—while on line.

*Smartcom III* is oddly out of sync with the modem—it takes 3 to 5 seconds to dial the modem, and a suddenly severed link can leave you temporarily unable to access the main menu.

With two modems, you can run two sessions at once—four sessions if you have two modems linked to an X.25 network. The scantily documented background mode, dubbed "Caveat Emptor," is for "experimental" use only—it's really no different from the DOS shells offered by most of its rivals. If you adjust *Smartcom*'s memory usage, you may be able to run a few small, well-behaved programs during file transfers, but you risk losing the connection.

The script language is comparable to *Procomm*'s. An excellent script editor lets you parse together commands from menus. The limited remote mode offers passwords and a simple menu, but callers can't access DOS.

A nerve-jangling interface, limited emulations, and the lack of ZMODEM make *Smartcom III* a mediocre buy.

## Smartcom Exec 1.0a

**PROS:** Easy to use, mouse support

**CONS:** Few emulations, no prewritten scripts

A scaled-down version of *Smartcom III* designed for novices, the \$129 *Smartcom Exec* is a vast improvement over Hayes' low-end *Smartcom II*, which is being phased out. It's also superior to *Smartcom III* and only a tad less powerful. The only omissions from *Smartcom III*'s feature list are multiple sessions, data compression, and encryption—items not likely to be missed by most. *Exec*'s Caveat Emptor background mode, remote mode, and paltry emulations are identical to *III*'s, and the script

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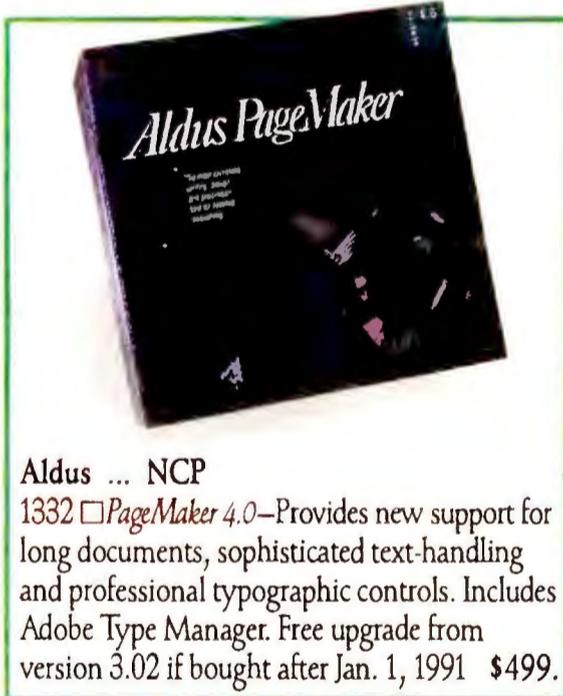
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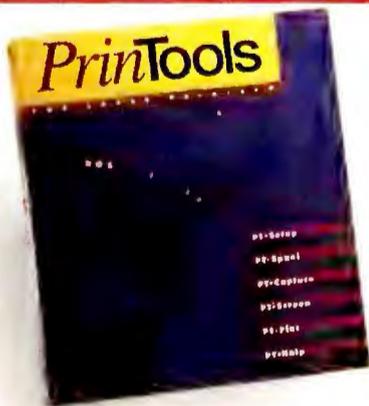
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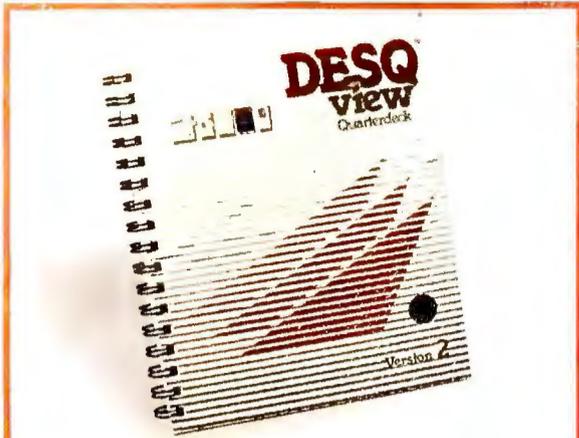
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- 2901  Word 5.0 ..... 209.
- 7387  PowerPoint 2.0 for Windows. .... 329.
- 6195  Word 1.1 for Windows ..... 329.
- 2856  Excel 3.0 for Windows ..... 329.
- 8137  Office for Windows (includes Excel, Word for Windows, and PowerPoint) 659.
- 2853  C Compiler 6.0 ..... 329.

- Multisoft ... NCP**
- 4925  PC-Kwik Power Pak 2.0 ..... 75.
- Nolo Press ... NCP**
- 5122  For The Record 2.0 ..... 35.
- 2982  WillMaker 4.0. .... 39.
- PC Globe ... NCP**
- 5902  PC Globe 4.0. .... 39.
- 5900  PC USA 2.0. .... 39.
- Personics ... NCP**
- 4384  Ultravision 2.0 ..... 79.
- 7048  Monarch 1.0 (Data Mgmt. Tool) . 319.
- PowerUp ... NCP**
- 7860  Calendar Creator Plus 4.0 ..... 45.
- 7861  Address Book Plus 3.0. .... 49.
- 7858  Express Publisher 2.0 ..... 89.
- Precision Software ... NCP**
- 6600  Superbase 4 for Windows 1.2 .. 429.
- Qualitas ... NCP**
- 7539  386MAX 5.1 ..... 75.
- 7967  BlueMAX 5.1 for PS/2 (3 1/2" only) .. 85.
- Quarterdeck ... NCP**
- 6422  QRAM 1.0 ..... 54.
- 3221  Expanded Memory Mgr. 386 5.1 . 65.
- 3220  DESQView 2.3. .... 85.
- 4586  DESQView 386 2.3. .... 145.
- QUE Software ... NCP**
- 4155  RightWriter 4.0. .... 54.
- Reality Technologies ... NCP**
- 7891  WealthStarter 1.0 ..... 39.
- 6572  WealthBuilder 1.1 ..... 145.
- Reference Software ... NCP**
- 4396  Grammatik IV 1.0. .... 59.
- 7483  Grammatik for Windows 1.0. .... 59.
- Revolution Software ... NCP**
- 4480  VGA Dimmer 3.0 (screen saver) .. 29.
- Roykore ... NCP**
- 8162  ABC Flowcharter 1.1 ..... 189.
- Samna ... NCP**
- 5799  Ami Pro 1.2 ..... 309
- Sitka ... NCP**
- 6675  TOPS Network Bundle 3.0 ..... 159.
- 3720  Flashcard 2.1 (AppleTalk ntwrk. card) 155.
- Softlogic Solutions ... NCP**
- 3542  Software Carousel 5.0 ..... 55.

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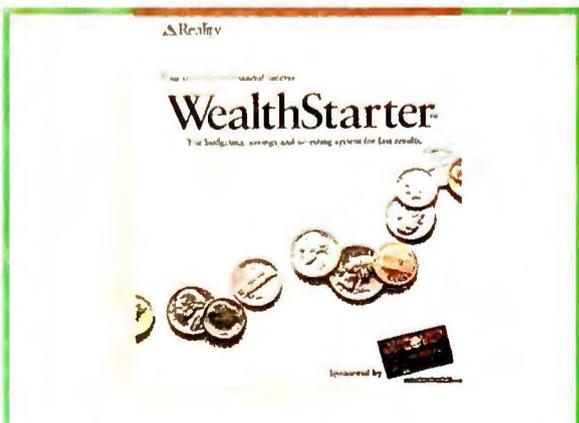
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**Quarterdeck ... NCP**  
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3496  Professional Write 2.2 . . . . . 169.  
3482  Harvard Graphics 2.3 . . . . . 329.
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7977  Brief 3.0 (*Programmer's Editor*) . . . 189.
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3478  PFS:First Choice 3.1 . . . . . 105.  
7604  *PLUS for Windows 1.0* . . . . . 289.
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6397  The Norton Backup 1.2 . . . . . 105.  
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7999  Norton Anti-Virus 1.0 . . . . . 89.
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8215  OutsiderIn 1.0 . . . . . 65.  
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6994  PercentEdge 1.0 . . . . . 69.
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6253  Publish-It! 1.1 . . . . . 139.
- Touchstone Software ... NCP**  
7420  Check It 3.0 . . . . . 89.
- Traveling Software ... NCP**  
5179  LapLink III 3.0 . . . . . 95.
- Ventura Software (Xerox) ... NCP**  
7796  Ventura Publisher for Windows 3.0 569.

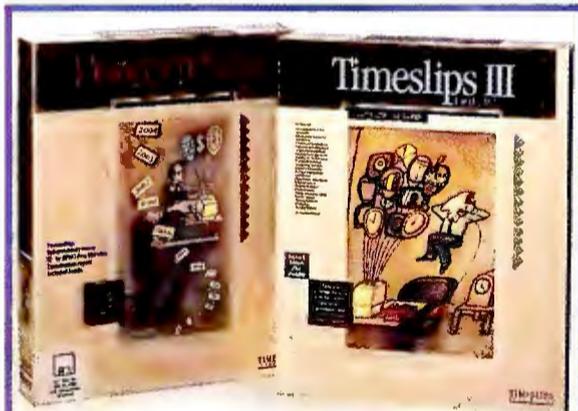


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7891  *WealthStarter 1.0*—Tired of living paycheck to paycheck? Use WealthStarter to create a budgeting, savings and investing system that really makes the most of the money you make . . . . . \$39.

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- WordPerfect Corp. ... NCP**  
7781  LetterPerfect 1.0 . . . . . 129.  
3804  WordPerfect 5.1 . . . . . 265.  
6685  DrawPerfect 1.1 . . . . . 279.
- WordStar International ... NCP**  
6791  WordStar Prof. 6.0 . . . . . 279.
- XTREE ... NCP**  
6161  XTree Gold 2.0 . . . . . 95.

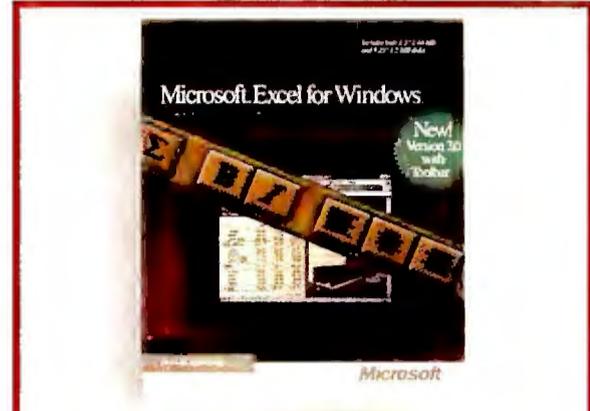
## RECREATIONAL/EDUCATIONAL

- Accolade ... CP**  
8081  Jack Nicklaus' Unlimited Golf . . . . 39.
- Broderbund ... CP**  
8068  Where in the World is Carmen  
San Diego Deluxe Edition . . . . . 52.  
5851  SimCity . . . . . 33.  
8886  SimEarth . . . . . 45.
- Electronic Arts ... NCP**  
4534  Mavis Beacon Teaches Typing (*CP*) 35.  
7865  PGA Golf . . . . . 39.
- Harvard Associates ... NCP**  
2324  PC Logo 3.0 . . . . . 59.



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2858  Flight Simulator 4.0 . . . . . 42.  
8270  Aircraft and Scenery Designer 1.0 29.
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8126 *Running with DOS 4th Edition* . . . . 20.  
8129 *Running Windows (2nd Edition)* . . . 22.  
8136 *Running Microsoft Excel* . . . . . 22.
- Penton Overseas ... NCP**  
 *VocabuLearn/ce Levels I & II* (French, Italian, German, Spanish, Russian, Hebrew and Japanese). . . . . each 35.
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**Microsoft ... NCP**  
2856  *Excel 3.0 for Windows*—Now the best Windows spreadsheet just got better! New features make it even more powerful and easier to use than ever. . . . . \$329.

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7105 Smart UPS 600LS . . . . . 469.  
6811 360SX (*stand-by power source*) . . . 219.  
7106 520ES (*stand-by power source*) . . . 329.
- AST Research ... 5 years**  
1299 SixPakPlus 384k C/S/P . . . . . 179.  
8041 SixPak 286 0k . . . . . 99.
- Boca Research ... 5 years**  
7001 BOCARAM/AT PLUS (0-8 Meg) . . . 119.  
7061 BOCARAM/XT 0K (0-2 Meg, LIM 4.0) 99.  
6998 I/O Board for AT . . . . . 59.  
6999 I/O Board for Microchannel (S/S/P) 109.  
8380 BasicVGA (256K, 640 x 480) . . . . . 69.  
8381 SuperVGA (1 Meg, 1024 x 768) . . . 145.
- Bravo Communications ... 2 years**  
7400 2 Pos. Laser Compatible Switch Box 109.
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8578 Creative Labs Sound Blaster . . . . . 159.
- Canon ... 1 year**  
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9037 BJ-300 Printer (80 column) . . . . . 549.  
9038 BJ-330 Printer (136 column) . . . . . 649.  
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1930 LQ-850 (80 col., 264 cps, 24 pin) . . call  
1917 LQ-1050 (136 col., 264 cps, 24 pin) call  
5184 LX-810 (80 col., 180 cps, 9 pin) . . . 185.



# PC Conservation.

**Our favorite multiuser environment.  
(Or, the greening of Big Blue.)**

It's only natural that you'd find some serious environmental awareness here in the pristine preserve of Marlow, NH (pop. 565). After all, we have some pretty nice environment to be aware of. In fact, 90% of Marlow is undeveloped forest and wetlands. And our headquarters are on the banks of the Ashuelot River, a popular white-water rafting stream. So we're making sure our act is as clean as it can be.

For example, we now recycle all our used four-color magazines and catalogs. They are beaten to a pulp and transformed into 100% recycled paper right here in New Hampshire.

We, in turn, use this very same paper as a packing material *instead of those annoying foam peanuts*. Overall, we've cut our waste by over 75% in just one year. And, inspired by our down-to-earth mascots, we continue looking for ways to do more (with less), and encourage our vendors to do the same.

**The Four Rs: Reduce, Re-use, Recycle, Raccoon.**

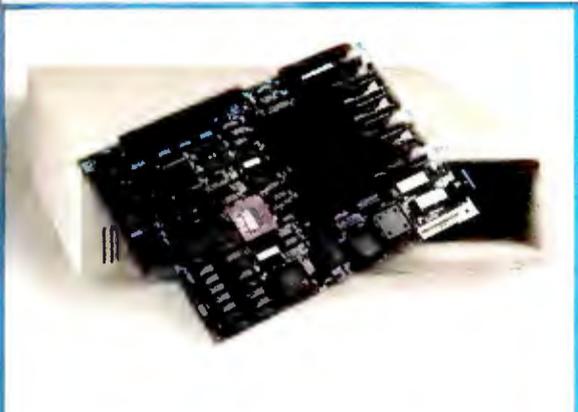
You'll find it easy to stow it, not throw it when carrying your very own PC Connection insulated lunch bag and re-usable string shopping bag. You won't ever want to leave home without them. They're both free when you place an order of \$750 or more between now and June 30.



Save paper by packing it in PC Connection lunch and shopping bags! One per customer.



# to make it zing.



**Hauppauge Computer Works ... 1 year**  
 9032 20 MHz 386 Motherboard for XT—Need 386 power, performance, and compatibility? Easily upgrade your PC, XT, AT or true compatible with the Hauppauge Motherboard.  
 30 day Money Back Guarantee ..... \$995.

**Hauppauge Computer ... 1 year**  
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 9032 20 MHz 386 Motherboard for XT. . 995.  
 9033 20 MHz 386 Motherboard for AT. . 995.  
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**Hayes ... 2 years**  
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 8049 JT Fax 9600B w/Smartmodem 2400 379.  
 7391 Ultra 9600 Modem . . . . . 799.  
 9192 Ethermate 8 (ethernet card). . . . . 199.

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 6582 LaserJet IIP (with toner). . . . . 949.  
 6754 LaserJet III (with toner) . . . . . 1699.

**Intel ... 5 years**  
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 4696 2400B Internal Modem . . . . . 149.  
 5119 2400 Baud External Modem . . . . . 179.  
 6420 2400EX MNP Modem. . . . . 229.  
 7880 9600EX Modem . . . . . 549.

2346 Inboard 386/PC with 1 Meg . . . . . 495.  
 5336 Above Board Plus 8 2 Meg . . . . . 549.  
 5342 Above Board Plus 8 I/O 2 Meg . . . . . 569.  
 7782 SatisFAXtion (fax board) . . . . . 399.  
 8778 SatisFAXtion for Microchannel . . . . . 449.  
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 7385 80287XL (16 MHz 80286 CPU's) . . 199.  
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**Kensington Microware ... 1 year**  
 2582 Master Piece Plus . . . . . 109.  
 7899 Expert Mouse serial 119. 7900 bus 129.

**Key tronic ... 3 years**  
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**Kraft ... 5 years**  
 5800 3 button Thunder Joystick. . . . . 29.  
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 7975 ScanMan 256 . . . . . 319.  
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 7012 Memory Upgrade PS/2 70 - 2 Meg 149.

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 7597 Microsoft Mouse. . . . . 89.  
 2897 Mouse with Paintbrush . . . . . 105.  
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 7271 Inport . . . . . 79. 6330 PS/2 . . . . . 79.

**Mouse Systems ... lifetime**  
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**Intel ... 5 years**  
 7880 9600EX Modem—Provides ultra-fast data communications without sacrificing compatibility. Supports V.32 & V.42bis 9600 bps operation, as well as MNP Level/5 and Hayes compatible 2400/1200/300 bps modes. \$549.

**NEC ... 2 years**  
 4799 Multisync 2A (VGA Monitor) . . . . . 499.  
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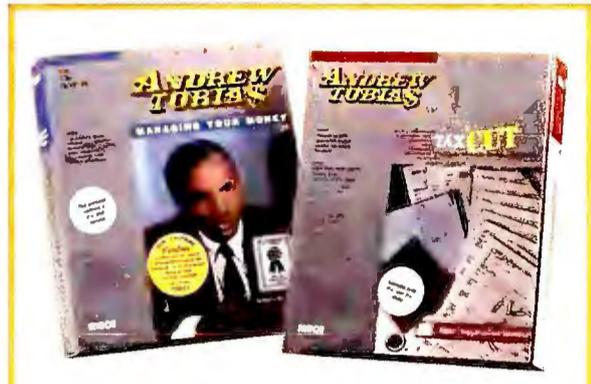
**Orchid Technologies ... 4 years**  
 7863 ProDesigner VGA II with 1 Meg. . . 329.

**PC Power & Cooling ... 1 year**  
**REPLACEMENT POWER SUPPLIES**  
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 3200 Silencer 150 (84% noise reduction) 115.  
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 6779 25 Cartridges in One! (for LJ II, IIP, III) 275.  
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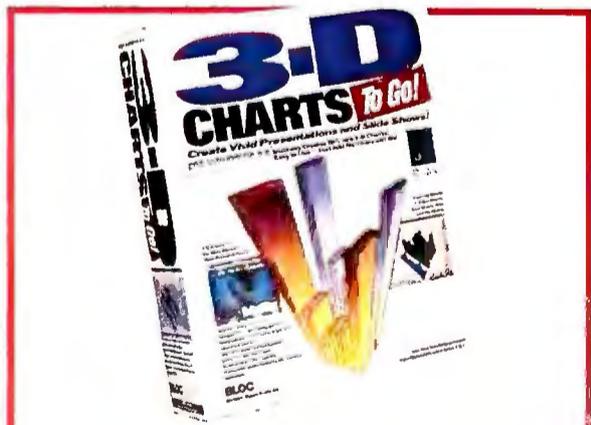


**MECA ... NCP**  
 8884  Managing Your Money 7.0 with Tax Cut-1990 Bundle—Put Andrew Tobias to work for you with the award winning Managing Your Money and Tax Cut in a special bundle. Available while supplies last . . . . . \$129.

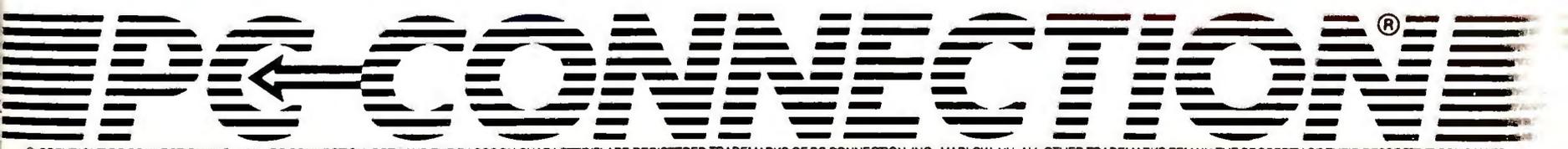
8975 Complete Font Library (for LJIII) . . 275.  
 Memory upgrade for LaserJet IIP/III:  
 7055 2 Meg . . . 169. 7759 4 Meg . . . 279.  
 7158 PacificPage PE 4.0 (for LJ IIP/III) . . 379.  
 6834 PacificPage with free 2 Meg Memory Board (for LaserJet II) . . . 379.

**Practical Peripherals ... 5 years**  
 3100 1200 Baud External Modem . . . . . 75.  
 3103 2400 Baud Internal Modem . . . . . 129.  
 3102 2400 Baud External Modem . . . . . 179.  
 8993 2400 Baud Int. Modem (V.42 bis) . 169.  
 8994 2400 Baud Ext. Modem (V.42 bis). 209.  
 4542 2400 Baud Internal Modem for PS/2 229.  
 8132 PM2400 Pocket Modem . . . . . 109.  
 7934 PM9600SA Modem . . . . . 489.

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 7086 MC600 Mobile Computer . . . . . 2149.  
**Reflection Technology .. 1 year**  
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**SAFE Power Systems ... 2 years**  
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**Bloc Publishing ... NCP**  
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- 5828 TheComplete Communicator . . . . 449.
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- 6200 Isobar 6-6 (6 outlets, 6 ft. cord) . . . . 59.
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- 6624 BC450 (450W Battery Backup) . . . . 269.
- 7889 BC1200 (1200W LAN Backup) . . . . 669.
- 6018 LC1200 (1200W Line Conditioner). 159.
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- 8105 Installation Kit for Standard Bus. . . . 95.
- 8106 Installation Kit for Microchannel . . . 249.



**Practical Peripherals ... 5 years**  
7934 PM9600SA Modem—Practical Peripherals does it again by making communications affordable with their newest modem featuring the data compression & error correction of 9600bps V.32 & V.42bis operation. . . . \$489.

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- 7551 Bernoulli II Transportable 44 Meg . . . 997.
- 5113 44 Meg Cartridge Tripak (5 1/4") . . . 269.
- 2500 PC2B Controller . . . . . 209.
- Mountain Computer ... 2 years**
- 2917 40-60 Meg Internal Tape Drive . . . . 259.
- 5500 83-152M Int. Tape Drive . . . . . 629.
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- 6153 DC2120 Tape Cartridge (5 pack) . . . 149.
- Pacific Rim ... 1 year**
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- Pius Development ... 2 years**
- 6424 Hardcard II 80 Meg (19 ms) . . . . . 599.
- 8304 Hardcard II XL 50 Meg (9 ms) . . . . 399.
- 8287 Hardcard II XL 105 Meg (9 ms) . . . . 689.
- Seagate ... 1 year**
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- 4554 40 Meg Int. HD ST251-1 (28 ms) . . . 269.
- 4624 80 Meg Int. HD 4096 (28 ms) . . . . 619.

- TEAC ... 1 year**
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- 4951 720k Drive for PC/XT (3 1/2") . . . . 69.
- 6951 1.2 Meg Drive for AT (5 1/4") . . . . 89.

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- 2792 3 1/2" DS/DD 720k Diskettes (Qty. 10) . 13.
- 2793 3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10) 21.



**Hayes ... 2 years**  
9129 EtherMate 8—8-bit Ethernet adapter for IBM PC XT/AT, PS/2 Model 25+ 30, and compatibles. Supports Thick Ethernet DB-15 AUI and Thin Ethernet BNC connections \$199.



**Canon ... 1 year**  
These ultra quiet BubbleJet printers offer dazzling print quality to rival lasers at dot-matrix style prices. Advanced paper handling capabilities.  
9037 BJ-300 Printer (80 column) . . . . . \$549.  
9038 BJ-330 Printer (136 column). . . . . 649.

- Sony ... lifetime**
- 3291 5 1/4" DS/DD 360k Disks (Qty. 10) . . . . 9.
- 3297 3 1/2" DS/DD 720k Diskettes (Qty. 10) . . 12.
- 3298 3 1/2" DS/HD 1.44Mb Diskettes (Qty. 10) 19.
- 6148 3 1/2" DS/DD (3 Pack) . . . . . 29.
- 6375 3 1/2" DS/HD (3 Pack) . . . . . 49.
- 8185 QD 2040 Tape Cartridge . . . . . 19.
- 6712 QD 600A Tape Cartridge . . . . . 27.
- 6715 QD 6150 Tape Cartridge . . . . . 27.
- 3M ... lifetime**
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- 6065 DC 2080 Tape Cartridge . . . . . 25.
- 3944 DC 600 Tape Cartridge . . . . . 29.
- 5679 DC 6150 Tape Cartridge . . . . . 29.

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- 6556 256k DRAM (100 ns, set of 9) . . . . . call
- 5510 1 Meg x 9 SIMMs (80 nanosecond) call
- 5746 1 Meg Chips (80 ns, set of 9). . . . . call
- 7813 256k x 4 Chips . . . . . call

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- 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.
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- International orders U.S. \$250 minimum.
- 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 AM to 1:00 AM, or Saturday 9:00 AM to 5:30 PM. You can call our business offices at 603/446-3383 Monday through Friday 9:00 AM to 5:30 PM.



**Microcom ... NCP**  
7649 Virex-PC 1.1—Effective, comprehensive solution to DOS-based computer viruses \$79.

6234 CarbonCopy Plus 5.2—Allows you to access and control a remotely located PC. . . 119.

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- 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 order.
- Alaska and outside Continental US:**
- Call 603/446-7721 for information.

language is similar. Unlike the other package, however, *Smartcom Exec* offers an easy-to-use mousable interface, good documentation, and ZMODEM.

*Exec*'s interface resembles *Smartcom III*'s, but it's far more streamlined and intuitive. Unfortunately, you're lim-

## Telemate puts communications into windows for the non-Windows world.

ited to setting up only one protocol per on-line system. No prewritten scripts are included, but you can download some from Hayes' toll-free BBS.

There's no CompuServe B support, but like *Procomm*, *Exec* includes Interrupted ZMODEM—a new high-speed version of the protocol that enables the modem to resume a file transfer where it left off if line noise intrudes.

*Smartcom Exec* could use a true dialing directory and more emulations, but it's a good deal for beginners.

### Telemate 2.11

**PROS:** Full list of protocols, mousable windowing interface

**CONS:** No background mode, no remote mode, few emulations, requires 500K RAM, no phone support

The innovative *Telemate* is not a *Windows* program, but it offers a character-based windowing interface and a pop-up *Windows*-like clipboard for cut and paste. This shareware prodigy costs only \$40, but you must print the manual yourself. *Telemate* has its problems, including negligible emulations and no remote mode, but thanks to its friendly interface it's still a very good deal.

A sleek setup routine opens *Telemate*. You access all functions, including the dialing directory, via cascading pulldown menus. The outstanding editor, file viewer, and other modules pop up

in windows. You can zoom, move, or resize the windows and shuffle data between them. You can even work in windows during file transfers, but only within the program—there's no background mode.

The Pascal-like script language is well structured and well documented. It lacks trace and debug, but it offers numerous data types and unlimited string and integer variables.

*Telemate* needs to go on a RAM diet—if you have extended or expanded memory, though, you can reduce some of the whopping 500K RAM consumption. It's the only program reviewed that lacks telephone technical support—you must contact the author via E-mail.

*Telemate* puts communications into windows for the non-*Windows* world. Despite its limitations, it is impossible not to recommend this wonder to adventurous users who are hooked on the mouse but not on *Windows*.

### Unicom 2.0c

**PROS:** Easy dialing directory, powerful on-screen buttons

**CONS:** No learn mode, limited script language, no DDE support

The only *Windows* program reviewed that offers a *Procomm*-like dialing directory, the shareware *Unicom* is also the easiest to use. The \$60 *Unicom* is such a pleasure, you may want to ignore its underachieving script language and lack of a learn mode and buy it anyway.

*Unicom* offers the usual pulldown menus, one of which runs such *Windows* utilities as the Calculator, Calendar, and Notepad. Three rows of buttons on the bottom invoke communications chores like dialing, hanging up, uploading, and downloading. You can customize the bottom two rows to launch scripts or external programs. This high level of integration makes the lack of DDE support less onerous. On line, you can shuttle to the clipboard the contents of the capture buffer or the terminal window, but you can't mark and cut the text be-

fore doing so. *Unicom* offers an impressive list of protocols, but emulations are limited to TTY, ANSI, and VT-100.

*Unicom*'s script language is the most limited in the roundup. It's good for writing log-ins, but for little else. You can record keystrokes for later playback, but there's no true learn mode. On the plus side, you can schedule script activation using VCR-like buttons, and the remote mode is capable. Tech support, however, is limited to calling the author during 3 hours in the evening or contacting him on CompuServe.

*Unicom* has its shortcomings, but a friendly design makes communications straightforward. It's a good deal for the casual *Windows* communicator.

### Windows Communications—Not Quite Ready for Prime Time

*Windows* holds the promise of making on-line access easier—icons, buttons, and dialog boxes can smooth the rough edges of on-line life, and multitasking, the Clipboard, and DDE support can better integrate communications with other applications.

If only the reality lived up to the promise! *Windows* communications packages—especially *DynaComm* and *MicroPhone*—have made innovative strides, but their fancy iconic interfaces are even more difficult to set up than a standard communications package.

For now, the easiest, most complete communications solutions are still found in the character-based world. Our Best Buys: *Crosstalk Mk.4* for high-end users, *HyperAccess/5* or *Procomm Plus* for more casual users, and *Crosstalk Communicator* for beginners.

Undoubtedly, the *Windows* packages will mature, and next year they may rise to the top. The potential is great. ☺

*Judy Heim is a contributing editor for PC World. Additional research provided by John Heim.*

**For more information about all products in this article, circle reader service no. 902.**

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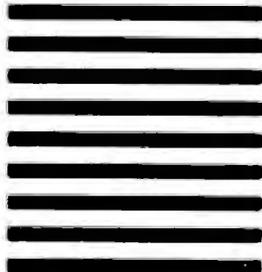
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386 and 486 Windows users:

# DOS Lives. Despite what you may have read.



Insufficient memory to run application;

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Windows 3.0 may have been a big step forward for some programs.

When Windows 3.0 says there's not enough room to run your DOS programs, it's just trying to tell you it needs QEMM 5.1.

But it was a big step backward for DOS. Suddenly, it was 1987 all over again. Not enough room for DOS programs to run because TSRs, utilities, drivers and buffers were taking up room your DOS programs need.

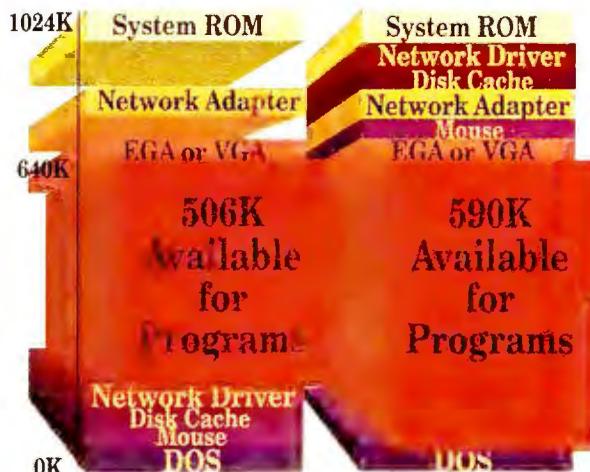
## QEMM 5.1 to the rescue

Now, we've updated QEMM to provide additional memory for DOS programs within Windows 3.0.

QEMM 5.1 works with the built-in capabilities of your 80386 or i486 processor to find and recover unused memory segments. As you can see in the chart, there are gaps in your PC's memory usage above 640K. QEMM 5.1 fills those gaps and provides more room for your DOS programs to run.

And of course, QEMM 5.1 still works with DOS when you're not running

Windows. You get all the same benefits: up to 130K more memory to run the new generation of memory-hungry programs; space for larger spreadsheets and database files.



Before

After

Unused memory is like hidden gold in your PC. QEMM finds it and makes it available.

## Introducing DESQview 2.3 and DESQview 386 2.3

for users of Windows 3.0

They said it couldn't be done, but DESQview 2.3 can run Windows 3.0 programs. Not just in Windows "Real mode" but in "Standard" mode. That means programs can be up to 16MB.

And it can run DOS programs and DOS-extended programs i.e., 1-2-3 Release 3, side-by-side.

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DOS, extended DOS; Windows—whatever standards you set, we will support. We're committed to helping you get the most out of your hardware and software today. And tomorrow.

**QEMM-386 System Requirements:** 80386-based PCs and PS/2s and PCs with 80386 add-in boards. Operating system: PC-DOS 2.0-4.0, MS-DOS 2.0-4.0, Windows 3.0. Conventional memory requirement 1.5K.  
**DESQview System Requirements:** IBM Personal Computer and 100% compatibles (with 8086, 8088, 80286, 80386 or i486 processors) with monochrome or color display; IBM Personal System/2 • Memory: 640K recommended; for DESQview itself 0-155K • Expanded Memory (Optional): expanded memory boards compatible with the Intel AboveBoard; enhanced expanded memory boards compatible with the AST RAMpage; EMS 4.0 expanded memory boards • Disk: two diskette drives or one diskette drive and a hard disk • Graphics Card (Optional): Hercules, IBM Color/Graphics (CGA), IBM Enhanced Graphics (EGA), IBM PS/2 Advanced Graphics (VGA) • Mouse (Optional): Mouse Systems, Microsoft and compatibles • Modem for Auto-Dialer (Optional): Hayes or compatible • Operating System: PC-DOS 2.0-4.0; MS-DOS 2.0-4.0 • Software: Most PC-DOS and MS-DOS programs; programs specific to Microsoft Windows 1.03-3.0, GEM 1.1-3.0, IBM TopView 1.1 • Media: DESQview is available on either 5-1/4" or 3-1/2" floppy diskette.

**Trademarks:** Windows, MS-DOS: Microsoft Corporation; PS/2, Interleaf, TopView: IBM Corporation; 80386, i486, AboveBoard: Intel Corporation; 1-2-3: Lotus Development Corporation, AutoCAD 386: Autodesk, Inc; RAMpage: AST Research; Hercules; Mouse Systems; Hayes; GEM, Digital Research, Inc.

**Yes!** I need increased DOS productivity in Windows!

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	QEMM 386 5.1			\$99.95	
	DESQview 386 2.3 (includes QEMM)			\$219.95	
	DESQview 2.3			\$129.95	

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**WHERE TO BUY**

**Crosstalk Mk.4 2.0**

Digital Communication Associates  
1000 Alderman Dr.  
Alpharetta, GA 30202  
800/241-4762  
LIST PRICE: \$245  
REQUIREMENTS:  
320K RAM, DOS 2.1  
or later version, two  
high-density floppy  
drives or hard disk  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8:30-8  
OTHER SUPPORT:  
company BBS,  
CompuServe forum  
**Reader service no. 612**

**Crosstalk Communicator**

Digital Communication Associates  
LIST PRICE: \$99  
REQUIREMENTS:  
320K RAM, DOS 2.1  
or later version, one  
high-density floppy  
drive or hard disk  
TECHNICAL SUPPORT:  
same as for Crosstalk  
Mk.4  
OTHER SUPPORT:  
same as for Crosstalk  
Mk.4  
**Reader service no. 613**

**Crosstalk for Windows 1.1**

Digital Communication Associates  
LIST PRICE: \$195  
REQUIREMENTS: 150K  
RAM, Windows/286,  
Windows/386 2.0 or  
later version, or  
Windows 3.0; hard  
disk, graphics display;  
mouse recommended  
TECHNICAL SUPPORT:  
same as for Crosstalk  
Mk.4  
OTHER SUPPORT:  
same as for Crosstalk  
Mk.4  
**Reader service no. 614**

**DynaComm 3.0a**

Future Soft  
Engineering, Inc.  
1001 S. Dairy Ashford,  
#101  
Houston, TX 77077  
713/496-9400,  
713/496-1090 (fax)  
LIST PRICE: \$295  
REQUIREMENTS: 150K  
RAM, Windows 2.11 or  
3.0, DOS 3.0 or later  
version (DOS 4.0 not  
recommended),  
graphics display  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8-5  
OTHER SUPPORT:  
CompuServe forum  
**Reader service no. 615**

**HyperAccess/5 1.1**

Hilgraeve Inc.  
Genesis Centre  
111 Conant Ave.,  
Ste. A  
Monroe, MI 48161  
800/826-2760,  
313/243-0645 (fax)  
LIST PRICE: DOS  
version \$99.95, DOS  
and OS/2 versions  
\$199  
REQUIREMENTS:  
350K RAM, DOS 2.0  
or later version, two  
floppy drives; hard  
disk recommended  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8-6  
OTHER SUPPORT:  
company BBS, BIX  
forum  
**Reader service no. 616**

**MicroPhone II 1.0**

Software Ventures  
Corp.  
2907 Claremont Ave.  
Berkeley, CA 94705  
415/644-3232  
LIST PRICE: \$295  
REQUIREMENTS:  
256K RAM, Windows  
2.1 or later version,  
DOS 3.3 or later  
version, hard disk,  
graphics display  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 9-4:30

OTHER SUPPORT:  
company BBS; BIX,  
CompuServe, GENie  
forums  
**Reader service no. 617**

**Mirror III 2.0**

SoftKlone  
327 Office Plaza Dr.  
#100  
Tallahassee, FL 32301  
800/634-8670  
LIST PRICE: \$149  
REQUIREMENTS:  
470K RAM, DOS 2.0  
or later version, two  
floppy drives or hard  
disk  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 9-6  
OTHER SUPPORT:  
company BBS,  
CompuServe forum  
**Reader service no. 618**

**Procomm Plus 2.0**

Datastorm  
Technologies, Inc.  
3212 Lemone Blvd.  
Columbia, MO 65201  
314/443-3282,  
314/875-0595 (fax),  
314/875-0503 (BBS)  
LIST PRICE: \$119  
REQUIREMENTS:  
295K, DOS 2.0 or  
later version, two  
floppy drives or hard  
disk  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 9-5  
OTHER SUPPORT:  
company BBS,  
CompuServe and  
GENie forums  
**Reader service no. 619**

**Qmodem SST 4.2**

The Forbin Project, Inc.  
P.O. Box 702  
Cedar Falls, IA 50613  
319/266-0543,  
319/266-1203 (fax),  
319/266-0540 (BBS)  
LIST PRICE: \$79.95  
with documentation,  
\$30 for shareware  
registration

REQUIREMENTS:  
320K RAM, DOS 3.2  
or later version, two  
floppy drives or hard  
disk  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 1-5  
OTHER SUPPORT:  
company BBS, GENie  
forum  
**Reader service no. 620**

**Relay Gold 4.0**

Microcom, Inc.  
500 River Ridge Dr.  
Norwood, MA 02062  
800/822-8224,  
617/551-1021 (fax)  
LIST PRICE: \$299  
REQUIREMENT: 192K  
RAM minimum, 256K  
suggested, DOS 2.0 or  
later version, two  
floppy drives or hard  
disk  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8:30-7  
OTHER SUPPORT:  
company BBS  
**Reader service no. 621**

**Smartcom III 1.2a**

Hayes Microcomputer  
Products, Inc.  
5835 Peachtree  
Corners E  
Norcross, GA 30092  
404/449-8791,  
800/444-2937 (BBS-  
GA), 800/874-2937  
(BBS-US)  
LIST PRICE: \$249  
REQUIREMENTS: 512K  
RAM, DOS 2.0 or later  
version, two floppy  
drives or hard disk  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 8-6  
OTHER SUPPORT:  
GENie forum, toll-free  
company BBS  
**Reader service no. 622**

**Smartcom Exec 1.0a**

Hayes Microcomputer  
Products, Inc.  
LIST PRICE: \$129  
REQUIREMENTS:  
same as for Smartcom  
III  
TECHNICAL SUPPORT:  
same as for Smartcom  
III  
OTHER SUPPORT:  
same as for Smartcom  
III  
**Reader service no. 623**

**Telemate 2.11**

Tsung Hu  
P.O. Box 938, Unit 105  
St. Catharines,  
Ontario  
L2R 6Z4 Canada  
416/682-2342 (fax)  
LIST PRICE: \$40,  
documentation comes  
on disk  
REQUIREMENTS:  
500K RAM, DOS 3.0  
or later version, two  
floppy drives or hard  
disk  
TECHNICAL SUPPORT:  
support directly from  
author through  
CompuServe, three  
BBS's, and three BBS  
message echos  
including Smartnet,  
Relay Net, and  
FidoNet  
OTHER SUPPORT:  
none  
**Reader service no. 624**

**Unicom 2.0c**

Data Graphics  
P.O. Box 46354  
Seattle, WA 98146  
206/932-8871  
LIST PRICE: \$60 (\$45  
for shareware license,  
\$5 for disk, \$10 for  
manual)  
REQUIREMENTS:  
120K, Windows 3.0,  
graphics display  
TECHNICAL SUPPORT:  
unlimited, toll number,  
M-F 6-9 p.m  
OTHER SUPPORT:  
support directly from  
author through  
CompuServe  
**Reader service no. 625**

# KNOW YOUR



# MARKET!

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**Information isn't just power—in some cases, it's survival. Before you launch a new product or service, discover how other businesses are ensuring success with on-line and CD ROM data bases of key demographic and competitive data.**

P

rimare Incorporated epitomizes what can happen to the American Small Business Dream. Located in La Mirada, California, a town 30 miles east of Los Angeles, the interior design firm started with just two employees in 1983. By 1988 the company had moved to plush offices in Santa Monica and increased its staff to ten. Then came a budget crunch among health care providers—the clients Primare had spent its marketing time and money wooing. At the same time, new jobs were won by rival firms that kept expenses low by hiring designers on a per-job basis.

By 1989 Primare was barely afloat. “We’re still fighting back from doing too little market research too late,” laments Alane West, a principal with the firm.

Primare’s story is not unusual, says Tom Gray, a chief economist with the Small Business Administration (SBA) in Washington, D.C. According to the SBA, 51 percent of all new businesses fail within four years due to poor management and poor market planning. Companies don’t fully research the market before introducing products. They don’t understand who their competitors are. And they don’t anticipate market changes in time to refocus their business plan.

But the tool that could help companies investigate potential customers or get the scoop on competitors is close at hand: the PC.

## **A RARELY USED WEAPON**

Although most small businesses use PCs, few are aware of their potential as marketing tools. In a 1990 SBA survey of 2000 businesses, nearly 75 percent of the respondents had PCs. But none of these companies reported using their PCs for market research. That’s unfortunate, since using electronic resources would put firms on an equal footing with larger competitors, says Gray.

Virtually all the “textbook” market research required to launch a product or service can be done today with just a PC and modem or CD ROM drive, says Jeffry Timmons, professor of entrepreneurial finance at Harvard Business School.

By accessing commercially available data bases, you can get the lowdown on a competitor’s sales, profit and loss history, R&D plans, credit history, contracts and affiliations, organizational structure, intellectual property, and more—all useful information when formulating a business plan for a new venture.

**L A U R A L A N G**

# STEPS TO A SUCCESSFUL SEARCH

## Step 1: Choose your data sources

- Determine information requirements. (Data bases cover financial information, industry/trade news, and demographic data.)
- Look for tools to make your search easier, such as front-end software and training programs.
- Evaluate services based on fixed costs, costs for downloading, frequency of updates, and number and variety of data bases.

## Step 2: Develop a search plan

- Establish broad search criteria when you're entering a new market and want information on all potential competitors.
- Narrow your search criteria when you want to zero in on a few key companies.

## Step 3: Optimize on-line time

- Plan your search off line.
- Download one article at a time.
- Review all material off line.
- If unsure of next step, go off line and reevaluate.



PAM WATTENMAKER

### A TRIED-AND-TRUE METHOD

The ability to search on-line and CD ROM data bases with PCs isn't new. Such data collection and analysis has been going on at companies like Coca-Cola in Atlanta for years. "We wouldn't launch any new product without first researching who will buy it and what other products they buy," says Terry Koch, the company's director of market research.

The switch is that access to the wealth of publicly available data is now within reach of small companies as well, says Julie Scofield, director of education for the Smaller Business Association of New England (SBANE), a private non-profit association of 2000 small companies. She notes that PC prices have decreased and data bases are easier to access, which makes the information accessible to smaller companies that previously couldn't afford to hire an outside marketing firm or set up an in-house staff dedicated to market research. "With PCs, the owner, the secretary, or anybody else can conduct market research," she says.

### ENDING THE PAPER CHASE

Most business executives are familiar with the paper-based reference sources specific to their industries. What they may not know, however, is that many of these same references are available on CD ROM disks or through on-line subscription services.

Data bases range from the industry-specific to those of general business interest. Many popular on-line data bases are available through data banks—on-line "supermarkets" of information, such as BRS, Nexis, Orbit Search Services, and Dialog (see "Strategic Data Sources" in this issue). These business data banks often offer one-stop shopping for the market researcher, since many provide access to hundreds of individual data bases. Dialog, the largest data bank, has 380, many of which are also published on CD ROM.

Usage rates vary considerably from one data base to the next, with some charging fees as high as \$200 or more an hour. Users generally pay for on-line time, telecommunications charges, and products ordered, such as a hard copy

printout of a report.

Since several of the major data bases are available through a variety of sources, it pays to find the best price. The Disclosure data base, for example, which provides detailed financial information on publicly held companies, is available through Dialog, BRS, and Nexis. On Dialog and BRS the data is updated weekly and costs \$45 per hour. On Nexis, the same data base costs \$39 per hour.

In addition to on-line data, about 1000 data bases are published on CD ROM, mostly by government agencies. SilverPlatter Information, in Newton Lower Falls, Massachusetts, is one of the most comprehensive commercial distributors of CD ROM data, with 60 titles in its 1991 catalog. CD ROM disks cost anywhere from \$29 to more than \$10,000 and are sold through computer stores and consultants and by mail order. Some data bases are available only on CD ROM.

The media type you choose will depend on what information you need and how often you'll search, says Bill Perry, director of research at Helgerson Associates, a market research firm in Boulder, Colorado.

When data bases won't be used frequently, it's generally less expensive to use the on-line versions. "On-line data bases are easier to access and have up-to-the-minute information," explains Nancy Herther, editor of the magazine *CD ROM Professional*. When information will be needed more frequently, though, she advises users to compare CD ROM prices. "With CD ROM, you can use the information year-round, keep it running day and night, and look at as much as you want," says Herther. The one disadvantage to using CD ROM data bases is that they are updated much less frequently than their on-line counterparts.

Perry urges consumers to compare CD ROM and on-line data bases by both cost *and* stress factors. "With CD ROM, you won't rush. On-line users are conscious of the ticking clock."

## EVERYTHING YOU NEED TO KNOW—BUT YOU'LL HAVE TO LOOK FOR IT

Most businesses have three key questions when launching a product or expanding their business into new territory: Is there a market for my product or service? Will the necessary suppliers be available? Who are my competitors?

The answer to each of these questions is available through on-line and CD ROM data bases—but finding the information can take some digging.

“The hot information, the true intelligence, has to be sifted for,” says Kirk Tyson, president of Kirk Tyson International, an Oak Brook, Illinois, market

research firm specializing in competitor intelligence. He estimates that 80 percent of the information available through these resources falls into the nice-to-know, but not strategically necessary, category.

Often, in fact, truly strategic information may not exist in the published sources. What you will find, however, are clues about which direction a market is moving, what specific products or services a company will introduce, and what technologies are being developed that will yield new products.

To get a complete picture, Tyson suggests studying multiple sources and talking with lots of people, effectively

“putting together the pieces of a jigsaw puzzle.” Strategic information should be confirmed by two or three sources before you act on it, he cautions.

“It’s amazing how much we can find out using only commercially available data bases,” says Earnest Deadwyler, manager of market research for Texas Instruments in Dallas. He uses on-line data bases to compile detailed corporate information on competitors: how they’re organized, their financial commitments, labor relations information, and product news.

### WHERE TO GO FOR DATA

To research publicly held companies,

## FACING OFF WITH COMPETITORS

**A**nna Maria DiCicco faces formidable competition every day—the faces of celebrities-turned-gourmet-cooks Paul Newman and Frank Sinatra, for starters. The ambitious 26-year-old owns six Italian restaurants in Northern California and markets three sauces (spicy, regular, and marinara) to 680 upscale grocery stores.

We asked Bill Perry, director of research at Helgerson Associates in Falls Church, Virginia, a CD ROM clearinghouse specializing in market research, how DiCicco could use her PC to research new outlets for her sauce. Here’s what he said.

First, using Dun’s Electronic Yellow Pages, DiCicco could locate grocery stores within a defined area. She would then delete the names of stores already selling her products and concentrate on learning more about potential outlets.

The Census Bureau STF would be a good source for researching the demographic makeup of the neighborhoods surrounding each store. Since her sauce sells for about \$3 and is labeled to appeal to a gourmet audience (it usually shares shelf space with Newman’s Own and Clasico), she would need to target stores in middle- to upper-class neighborhoods. With the names and addresses of these stores, she would then use Dun’s Electronic Yellow Pages to get contact names and other information (ownership, financial status) for each store.

Next, DiCicco might want to see how competitive products were selling at these outlets, how competing firms were organized, and what product areas they were researching. To find that information, she’d enter product names into Thomas Register Online, which has 50,000 classes of products made by 140,000 companies. The company names could then be used to look for announcements, promotions, or recent patents, for instance. Full text of any relevant articles about those companies could be accessed through Trade & Industry Index or other news data bases for downloading to her PC.

“Everything [DiCicco] wants is readily available—it’s just a matter of sifting through the data bases to find the information,” says Perry. —L. L.

*On-line data bases have the information Anna Maria DiCicco needs to research the market for her spaghetti sauce.*



you can use Disclosure or Standard & Poor's Register-Corporate. Wasserstein Perella and Company, a 250-person investment banking firm based in New York City, uses Disclosure to "screen" clients and competitors for acquisitions and mergers. Large corporations with net worths of \$500,000 or more are in Dun & Bradstreet's Million Dollar Directory, while both public and privately held businesses of all sizes are listed in Dun's Electronic Yellow Pages. Current articles on products, promotions, and earnings can be found on Moody's Corporate News—U.S., Newsearch, or Newswire ASAP.

You can use these same resources to find information on potential suppliers, including names of key executives, a company's financial status, and current

contracts. Texas Instruments, for example, uses S&P's Register and Disclosure to research suppliers and companies that want to team up with them on a contract. "We use the data to evaluate current work loads and contracts to see if they're overcommitted," explains Deadwyler.

The long arm of on-line electronic data even reaches consumers. Dun & Bradstreet's Donnelly Demographics gives information on age, gender, race, occupation, marital status, household size, education, income level, and so on, down to the ZIP code level. Using address and telephone directory lists, businesses can then get house-by-house addresses and even unlisted telephone numbers for use in direct marketing campaigns.

As the recent storm of controversy surrounding Lotus Development's now-discontinued *Marketplace* products illustrates, however, the widespread availability of detailed consumer information for direct marketing purposes raises serious concerns about individual privacy rights (see *Consumer Watch* in this issue).

This year for the first time, consumer data will be available on CD ROM. The Census Bureau is now releasing its Summary Tape Files (STF) series, based on the 1990 census. The two products most useful for demographic research won't be available for another year or so, however. STF 3 will provide the sample data (gathered from detailed questionnaires given to some houses) down to the block/group level (city

## PUTTING DEMOGRAPHIC DATA ON THE MAP

**M** &T Bank, with 79 branch outlets in western New York state, faces stiff competition in its retail areas, so it relies on demographic data from the National Planning Data Corporation and CACI (both based in Washington, D.C.) to analyze fluctuating business. It has long used such data to locate new offices, understand performance levels, and target a branch's services. But the bank's recent conversion to mapping software to plot the demographic data on maps makes its analysis of population trends more timely, more precise, and just plain easier.

One use for demographic data is in scouting out new branch locations, according to Lew-Jean King, project manager for the bank's delivery systems group. "We look at a neighborhood's loan and savings potential based on the number of households and the area's demographic makeup—particularly income and age," says King. With those figures, his department determines deposit and loan potentials on a neighborhood-by-neighborhood basis. "Without this kind of specific information we couldn't make a case for opening a new branch," he says.

The information is also used to research why existing branches aren't performing as they have in the past. King develops a profile for each branch area based on the competition and on its demographics. "By looking at how an area has changed demographically and projecting how it will change

during the next five years, we tailor our services to attract the area's customers," explains King. The bank is most concerned with income and household growth information for each area. "We want to know if we're being too optimistic about credit card lending in an area with a high percentage of elderly people, or about CD balances in lower-income areas. We'd make adjustments in the expectations of those offices."

The bank also sets up direct-mail programs for its products that should be strong in each area. For instance, a neighborhood with first-time homeowners might receive mailings about the bank's home-loan and refinance plans.

For at least 20 years, researchers gathered this data manu-

*"I'd be blind without up-to-date demographic data," says M&T Bank's Lew-Jean King. He uses mapping software to display and analyze the information.*



blocks covering 800 to 1000 people). It will list averages for income, occupation, education, and more. STF 3B (scheduled for release in early 1993) includes all the same information, plus ZIP code data. Pricing will vary, depending on the size of the geographic area you want to study. Full demographic information on California, for example, will cost approximately \$830 (final pricing has yet to be determined). Information is available on CD ROM and through the federal government.

Census data holds the greatest potential for direct marketers of products or services. Producers of a new gourmet baby food, for example, could target its introduction at high-income areas, with direct mailings sent to families with young children. And when combined



*On-line searches are easy if you know the strategy, says Unisys's Suzanne Swenson.*

ally by sifting through demographic information compiled by the National Planning Data Corporation and CACI. The NPDC provides base maps, which are reference maps of the geography of a city or a block. CACI offers age, population, and race and income data, and projects demographic changes that will happen between the census counts.

But the bank was able to estimate only the relationships between the base map and the demographic information. It had no way to match the demographic information with the geographic data to make a map showing, for instance, decline and growth areas for average household income.

In the mid-1980s, CACI began distributing its resources in 1-2-3-compatible formats, which made it easy for M&T Bank to analyze and manipulate the statistics. The analysis process, however, wasn't fully automated until 1989, when the bank adopted *Atlas-GIS*, a PC-based mapping product from Strategic Mapping. *Atlas-GIS* uses the Census Bureau's computerized street maps of the country to match addresses with latitude/longitude coordinates and then attach data to those points on the map. An internal data base gives the software its analysis capabilities, while drawing and editing features allow you to create and modify the computerized maps. Pop-up menus and on-screen windowing simplify the user interface.

With *Atlas-GIS*, the bank started to analyze its demographic

data on line, combining it with geographic data on specific metropolitan areas like Rochester and Long Island. The mapping software shows bank branches, nearby shopping centers, highways and roads, and outlines of census block groups within the metropolitan area. On-line data, which is updated monthly, is downloaded from either of the two data bases or from the bank's own mainframe data base of customer information. It is then passed directly into *Atlas-GIS* as an ASCII file for mapping and analysis.

Using the mapping software allows the bank to highlight geographic areas for study and view data plotted on a map rather than as columns of numbers. For instance, the software might display concentrations of customers of a specified age or income level, making it easy for an analyst to track and interpret demographic trends at a glance.

King says that M&T plans to make full use of the Census data disks as they become available, since they will be "the most current, realistic data set around." King will use the CD ROM version of the data for his state.

"We're finding that up-to-date demographics make a big difference in how well we are meeting the savings and loan needs of our customers—now and in the future," he says. "I'd be blind without it, with no idea of how to assess an area or how our branches should be doing there," he says. —L. L.

with a desktop mapping package or PC geographic information system, which displays demographic data on maps, the data can be used to highlight new areas of opportunity, based on such information as income levels or household profiles (see the sidebar "Putting Demographic Data on the Map").

### SIMPLIFYING YOUR SEARCH

The sheer volume of data available scares away many small companies, says SBANE's Scofield. Once on line, businesses fear navigating the data bank's user interface and being unable to locate the information they need.

To alleviate those concerns, most resources have "front end" software to help users develop and conduct searches. For example, *Nexis News Plus* (\$50), a front end for Nexis, creates search patterns on keywords such as company names. As keywords are located, data is flagged and downloaded to the user. Front ends such as *Nexis News*

*Plus* are sometimes bundled with the system or may cost from \$50 to more than \$500 as stand-alone packages.

Large data banks also offer software and seminars to teach new users how to formulate productive searches. Dialog, for example, offers Starter Package programs, which include reference manuals, user seminars, and \$100 worth of search time—all for \$150. Tyson says with about a half-day's training, most subscribers are able to conduct effective searches.

Suzanne Swenson, manager of market research at Unisys Defense Systems in McLean, Virginia, attended a local Dialog user seminar to learn the basic search strategy. "Once I learned to conduct on-line searches, I could move easily from one data base to the next," she says, noting that each data base offered through Dialog follows the same format, so searching patterns are uniform.

To make the most of search time, users should establish search plans before accessing either type of data base, says Tyson. Searches should start on a general note and then narrow in focus. "Don't search at a too-specific level," Tyson says. "It's better to use broad industry names or technology types." Broader searches identify existing and new competitors—crossovers from other vertical markets that could escape a narrow search of one technology type. For example, searching for *oil industry/pumps* would update a company on what its suppliers or competitors were doing. Searching for *pumps* would also generate information about a manufacturer in another industry who was going to market a pump to oil companies in the near future.

### WHEN YOU CAN'T DO IT YOURSELF

Companies unwilling or unable to conduct their own market research can still take advantage of these data sources by using information brokers. For a fee, a broker will search relevant data bases and compile strategic reports on com-

petitors, suppliers, or customers.

Because of their familiarity with the variety of sources available, brokers can often provide you with full reports in a few days. This may be the easiest way for small companies to capitalize on the available resources, but expect to pay \$150 to \$350 for a typical project.

Brokers are listed in Houston-based Burwell Enterprises' *Directory of Fee-Based Information Services* (\$49.50 plus \$3 for postage), which is indexed by geographic area and subject.

### GETTING THE WORD OUT

With such a wealth of information available, it's hard to believe that many small companies are still ignoring this valuable resource.

Despite efforts by vendors to simplify the search process, many small business users are scared off by the technology, which could still be easier to use, says SBANE's Scofield. "[Vendors also] need to market themselves to the small-business user."

The time commitment involved in developing and implementing a market research strategy may also deter some small businesses. "Anyone who wants to use these resources has to be willing to invest time to use the system," adds Harvard's Timmons, and for many small businesses, day-to-day operations may take precedence over long-term market research.

Until these data bases become more publicized, small businesses will maintain a healthy skepticism toward them, he adds. "They probably think they're doing a good job right now listening to their customers," he says. "This false security can keep them from seeing warning signs until it's too late—and new products or a market downturn puts them out of business." ☞

*Laura Lang is a freelance writer in San Diego, California.*

**For more information on data bases mentioned in this article, see "Strategic Data Sources" in this issue.**



*Coca-Cola wouldn't launch a new product without first researching the market, says Terry Koch.*

# STRATEGIC DATA SOURCES

**On-line and CD ROM data bases offer a wealth of information to help businesses keep up-to-date and plan for the future.**



LAX SYNTAX

**N**othing remains constant except change. Certainly, all the factors that affect a business—from customer demographics to supplier availability to the overall economic climate—are in a state of continual flux. Data bases available on CD ROM or on line can keep you up-to-date.

Below, we've listed a number of data bases designed to assist the general business user. They include full-text data bases of business publications, data bases of statistical information for and about companies, demographic data based on United States Census information, and business directories. The frequency of updates varies from daily to semiannually.

You can also find hundreds of data bases for more specialized applications—everything from farming to weather to real estate to medicine—which we were unable to list here. One source of information about both general-interest and specialized data bases is *Computer Readable Data Bases: A Directory and Data Sourcebook* from the Gale Research Group in Detroit, Michigan.

Because they tend to be expensive, data bases on CD ROM are best suited to users who need information about a narrow topic on a regular basis. Fees and fee structures vary widely for these data bases. For example, some services will charge a yearly subscription, others

**SUSAN LUSTY AND JOHN WALKENBACH**

a one-time fee with an additional charge for updates. The disks are usually distributed with a software package to search the CD and retrieve the information you need.

If your market intelligence needs aren't sufficient to warrant purchase of a CD ROM drive, a dial-up service offers a more cost-effective approach. You usually pay a one-time charge for access to the data base and additional fees for time spent on the service. Although these services may be more difficult to use, they offer a much broader range of data bases. The listings below indicate which services carry these data bases.

### TEXT DATA BASES

#### Business Dateline

A compilation of the full text of articles from more than 180 U.S. and Canadian business publications, this service is available on CD ROM and on line. It is updated weekly and can be found on Dialog, Dow Jones News/Retrieval, OCLC Epic, Human Resource Information Network, Nexis, and Vu/Text. UMI/Data Courier, 620 S. Third St., Louisville, KY 40202-2475; 800/626-2823, 502/589-5575 (fax). **Reader service no. 658**

#### BusinessWire

This service offers the full text of press releases issued by companies, research institutions, universities, and so on, announcing information such as new products, research findings, and financial results. Updated daily, it is available on line from CompuServe Information

Systems, Delphi, DialCom, Dialog, Dow Jones News/Retrieval, FYI News, NewsNet, Nexis, and Vu/Text. BusinessWire, 44 Montgomery St. #2185, San Francisco, CA 94104; 800/227-0845, 415/986-4422; 415/788-5335 (fax). **Reader service no. 659**

#### Consumer Trends Int'l Competitive Intelligence Tracking Service

A bibliographical reference for citations and abstracts from periodical literature on worldwide consumer trends, the service is updated weekly and is available on line via an SIS subscription. Strategic Intelligence Systems Int'l, 404 Park Ave. S #1301, New York, NY 10016-8403; 212/725-4550, 212/725-5954 (fax). **Reader service no. 660**

#### Dow Jones Business and Finance Report

Offering the full text of published articles from the *National Business and Employment Weekly*, this service is updated weekly. It is available on line from Dialog and Dow Jones News/Retrieval. Dow Jones & Co., Inc., P.O. Box 300, Princeton, NJ 08543-0300; 609/520-4000. **Reader service no. 661**

#### Newsearch

Newsearch is an index of 4000 current news stories, articles, and book reviews on companies, industries, products, economies, and finance. Updated daily, it is available on line from Dialog and BRS Information Technologies. Information Access, 362 Lakeside Dr., Foster City, CA 94404; 800/227-8431, 415/378-5329 (fax). **Reader service no. 662**

#### Trade & Industry Index

An index to 3,800,000 articles on trade, industry, and commerce from more than 1000 trade and industry journals and 60 regional business publications, Travel & Industry Index is updated weekly and is available on CD ROM or on line from Dialog and BRS Information Technologies. Information Access Co., 362 Lakeside Dr., Foster City, CA 94404; 800/227-8431, 415/378-5329 (fax). **Reader service no. 663**

### STATISTICAL BUSINESS INFORMATION

#### BusinessLine

Offering statistical business information on more than 7 million businesses, the service includes two files: BusinessLine Registry lists businesses in geographical areas or custom market areas; BusinessLine Basics lists number of employees, sales volume, and number of businesses in a particular area. It is updated biannually and is available on CD ROM. Donnelley Marketing Information Services (DMIS), 70 Seaview Ave., P.O. Box 10250, Stamford, CT 06904; 800/866-2255. **Reader service no. 664**

#### Cendata

An economic data base of business patterns in foreign trade, manufacturing, construction, and business, Cendata provides information on such topics as monthly retail sales, building permits, and so on. This service is updated daily and is available on line from Dialog and CompuServe. U.S. Bureau of the Census, Data User Services Division, Washington, D.C. 20233; 301/763-4100. **Reader service no. 665**

#### Consumer Spending Forecast

This service provides forecasts of U.S. personal consumption expenditures, retail sales, and consumer credit. Short-term forecasts are updated monthly, long-term forecasts semiannually. The data base is available on line from WEFA on a subscription basis. The



WEFA Group, 401 City Line Ave., Bala Cynwyd, PA 19004; 215/660-6300, 215/660-6477 (fax). **Reader service no. 666**

### Disclosure Database

Disclosure provides approximately 230 financial data items on more than 12,000 publicly owned U.S. companies whose securities are traded on the New York Stock Exchange, the American Stock Exchange, NASDAQ, and the OTC National Market System. Updated monthly, it can be obtained on CD ROM (ask for Compact D/SEC), or on line from BRS Information Technologies, BRS/After Dark, BRS/Colleague, CompuServe, Control Data Corporation Business Information Services, Data-Star, Dow Jones News/Retrieval, Lexis, Quotron Systems, Reuters Historical Information Division, and Warner Computer Systems. Disclosure Inc., 5161 River Rd., Bethesda, MD 20816; 212/581-1414. **Reader service no. 667**

### Economic Bulletin Board

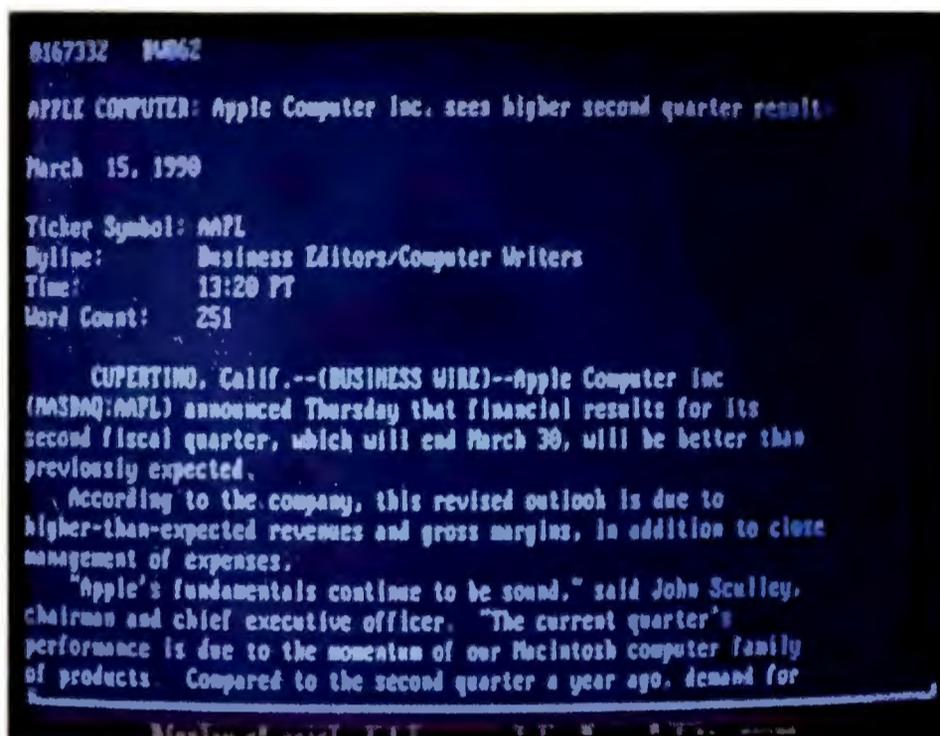
Offering current information on the U.S. economy, such as employment figures, gross national product, personal income, and consumer price index, this service is updated daily. It is available on line on a subscription basis. U.S. Department of Commerce, National Technical Information Service, 5285 Port Royal Rd., Springfield, VA 22161; 202/377-1986. **Reader service no. 668**

### Market Potential

A breakdown of consumer spending patterns at 20 types of retail stores, including furniture, grocery, drug, and variety, Market Potential is updated annually and is available on CD ROM and on line from Dialog. Donnelley Marketing Information Services (DMIS), 70 Seaview Ave., P. O. Box 10250, Stamford, CT 06904; 800/866-2255. **Reader service no. 670**

### Moody's 5000 Plus

Current business news and financial information on 13,000 companies listed on the New York Stock Exchange, the



8 11.3 - March 1, 1990  
TABLE 2. HIGHEST AND LOWEST TEN COUNTIES RANKED BY PER CAPITA INCOME IN 1987  
(Counties or independent cities with July 1, 1988 population of more than 100)

County or independent city	State	Amount (dollars)	Percent change 1979-1987	Ranking 1987	Ranking 1979
Highest					
Falls Church City	Virginia	23,169	79.8	1	2
Alexandria City	Virginia	22,200	82.3	2	2
Arlington	Virginia	22,181	76.6	3	3
Marin	California	21,611	75.2	4	6
Montgomery	Maryland	21,576	74.9	5	5
-more-					

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Buffer

American Stock Exchange, and the OTC National Market System is available on CD ROM and is updated quarterly. Moody's Investors Service, Inc., 99 Church St., New York, NY 10007; 800/342-5647, 212/553-0435, 212/553-4700 (fax). **Reader service no. 671**

### Standard & Poor's News

Standard & Poor's News supplies financial and operational information such as interim earnings, management changes, new issues of securities, acquisitions, buyouts, and so forth, for more than 12,000 companies. The service is updated daily and is available on line from Dialog, Knowledge Index,

Lexis, Nexis, and Mead. Standard & Poor's Corp., 25 Broadway, New York, NY 10004; 212/208-8622. **Reader service no. 672**

### DEMOGRAPHIC DATA

#### Census Projection 1989-1993

This compilation of employment statistics by race and sex for the U.S. as a whole, each state, and Metropolitan Statistical Areas is available on line from Human Resources Information Network. Woods & Poole Economics, Inc., 1794 Columbia Rd. NW, Washington, D.C., 20009; 202/332-7111. **Reader service no. 673**

*Business-Wire, available on line, features press releases covering items like new product information and financial news.*

*Distributed by the U.S. Bureau of the Census, Cendata offers on-line access to economic data on business patterns in the U.S.*

## County and City Statistics

Demographic and statistical data from the U.S. Bureau of the Census, including 1000 data items for each county, state, and city, is available on CD ROM and updated annually. Slater Hall Information Products (SHIP), 1522 K St. NW #522, Washington, D.C. 20005; 202/682-1350. **Reader service no. 674**

## Donnelley Demographics

This statistical data base has five-year projections and current year estimates on population, age, and income, for example, for all U.S. states, counties, etc. Updated annually, it is available on line from Dialog. Donnelley Marketing Information Services, 70 Seaview Ave., P.O. Box 10250, Stamford, CT 06904; 800/866-2255. **Reader service no. 675**



## DRI/NPDC County Business Patterns

This service offers U.S. county employment statistics at the two- and four-digit SIC code levels from the 1975-1984 County Business Patterns census. It includes annual payroll and distribution of firms by number of employees. The service is updated annually, and it is available on line by subscription. DRI/McGraw-Hill, Data Products Division, 24 Hartwell Ave., Lexington, MA 02173; 800/541-9914, 617/860-6385 (fax). **Reader service no. 676**

## FinalFocus

This demographic variable data base is comprised of two files: a geocoding file

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MICROSOFT CORP
MICROSOFT PRESS
16011 NE 36th Way
PO Box 97817
Redmond, WA 98052

TELEPHONE: 206-882-8888
KING COUNTY  SMSA: 544 (SEATTLE, EVERETT, WASH)

BUSINESS:  Operating systems computer software; application computer
           software; computer peripheral equipment; book publishing.

PRIMARY SIC:  7372          PREPACKAGED SOFTWARE
SECONDARY SIC: 3577          COMPUTER PERIPHERAL EQUIPMENT, NEC
SECONDARY SIC: 2731          BOOK PUBLISHING

YEAR STARTED:          1975

SALES:                  $591,000,000
EMPLOYEES HERE:         1,200
EMPLOYEES TOTAL:       2,790
    
```

that includes 1980 census information on various U.S. geographic levels, and a file with 300 demographic variables used to identify and reach target markets. Updated annually, the service is available on line by subscription. LPC, 1200 Roosevelt Rd., Glen Ellyn, IL 60137-6098; 800/624-5377, 708/932-7000, 708/932-0883 (fax). **Reader service no. 677**

## MAX Online Demographic Data Management and Reporting System

This service contains more than 1300 census items. It can perform current estimates and five-year projections on population, income, age, and age by income. The service is updated annually, and it is available on line by subscription. National Planning Data Corp. (NPDC), P.O. Box 610, Ithaca, NY 14851-0610; 800/876-6732, 607/273-1266 (fax). **Reader service no. 678**

## DIRECTORIES

### Dun's Million Dollar Directory

Dun's directory of addresses and financial and marketing information for approximately 160,000 companies with a net worth exceeding \$500,000 is updated bimonthly and can be found on line on Dialog. Dun's Marketing Services, 3 Sylvan Way, Parsippany, NJ 07054-3896; 800/526-9018. **Reader service no. 679**

### Thomas Register

Providing information on what is made in the U.S., where it is made, and who makes it, the Register includes 148,000 U.S. manufacturers, 50,000 classes of products, and 110,000 trade or brand names. It is updated biannually and is available on line from Dialog and on CD ROM. Thomas Online, 1 Penn Plaza, New York, NY 10119; 212/290-7291. **Reader service no. 680**

## How to contact on-line services mentioned in this article.

<b>BRS Information Technologies</b> 8000 Westpark Dr. McLean, VA 22102 800/289-4277	P.O. Box 300 Princeton, NJ 08543-0300 609/520-4000, 609/520-4660 (fax)
<b>CompuServe Information Services</b> 5000 Arlington Centre Blvd. P.O. Box 20212 Columbus, OH 43220 800/848-8199	<b>Mead Data Central Inc.</b> Nexis P.O. Box 933 Dayton, OH 45401 800/277-9597, 800/277-8379 (Ohio), 513/865-6909 (fax)
<b>Dialog Information Services, Inc.</b> 3460 Hillview Ave. Palo Alto, CA 94304-1321 800/334-2564	<b>NewsNet</b> Independent Publications 945 Haverford Rd. Bryn Mawr, PA 19010 800/345-1301, 215/527-0338 (fax)
<b>Dow Jones News/Retrieval Services</b> Dow Jones & Co., Inc.	

*Addresses and financial information about firms whose net worth exceeds \$500,000 is available on Dun's Million Dollar Directory.*

# Why FastData?

A personal computer is a large investment; before you choose, we want you to know what to expect when you purchase a FastData personal computer from FastMicro.

## Superior Design.

You get more out of your FastData personal computer because we put more into it. We've been building PC's longer than most of the competition and we put that

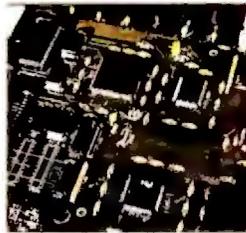


experience to work for you. We use proven designs that pass our stringent performance requirements and compatibility standards so it will be sure to pass yours.



## Better Components.

The whole is only as good as the sum of its parts; and FastData systems use some of the best parts in the industry. For example, each FastData



system ships with a Keytronics keyboard; Keytronics costs a lot more than others, but the quality is worth it.

Our systems use exclusively Toshiba floppy drives, the industry leader. Standard equipment includes other quality components from Western Digital, Phoenix, Chips & Technologies, just to name a few.



## Service.

All FastData personal computers come with a full one year warranty, but that's just the start. In the unlikely



event your computer is down, it is our goal to get back up and working as quickly as possible - and we back it up with action. Call us toll-free and we'll work with you to determine the problem; if a part breaks, we will send you the replacement part through our FastSHIP program - before the broken part is returned to us - and we'll pay the freight both ways. If our phone support or FastSHIP program can't solve



your problem, we will service it on-site to most U.S. locations or replace your computer at no charge. Now that's service.

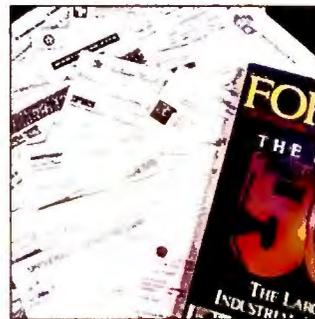
## Selection.

Our face to face retail background has made us never forget that the customer comes first and that a personal computer is just part of a customer's overall needs. That's why FastMicro offers thousands of hardware and software products to enhance your new personal computer. In fact, our competition will probably tell you to call us when you need something to run on their personal computer.



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We pass the test for the choosiest of customers; in fact, FastMicro sells to over half of the Fortune 500 and Universities in 47 states (we're working on the rest). These people buy for a living and rely on us, you can too. You can do more than take our word on it - go ahead and purchase any FastData brand product from FastMicro and if you are not thoroughly satisfied after 30 days, you can return it for a full refund of the purchase price.



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# FastData 386 Systems



## FastData 386/33 **\$2399**

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 100 megabyte 20 millisecond hard disk, 1024 by 768 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 one-year 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 RAM.
- ✓ 100 mb 20ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Full size (shown) chassis with keylock, speed and reset buttons.
- ✓ 387-DX coprocessor socket.
- ✓ 230 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, game port and two serial ports.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$99.
- ✓ FCC Class B approved.

System Price	65mb	80mb	100mb	200mb
Monochrome	\$1,799	\$1,929	\$1,999	\$2,499
VGA Color	\$2,099	\$2,229	\$2,299	\$2,599
VGA 1024	\$2,199	\$2,329	\$2,399	\$2,699

## FastData 386/25 **\$1999**

The optimum combination of features, expandability, and power make the FastData 386/25 an ideal choice for those whose applications demand high speed 32 bit processing and expandability. The value of the 386/25 goes far beyond its price; it comes configured with a full four megabytes of fast RAM, a quick 22 millisecond 65 megabyte hard disk, and maximum VGA displaying 1024 by 768 resolution powered by a high-output 16 bit 512K VGA board. Also, the FastMicro team will configure your FastData 386 exactly the way you want, without sending you shopping elsewhere.

### Standard Features

- ✓ 25mhz Intel 80386-DX.
- ✓ 4 megabytes of zero wait-state RAM.
- ✓ 65 mb 22ms RLL hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. (For both add \$69)
- ✓ Standard chassis (shown on left) with keylock, speed and reset buttons.
- ✓ 80387-DX coprocessor socket.
- ✓ 200 watt power supply
- ✓ 14" Super VGA color monitor, 1024x768 resolution, with 16 bit VGA card with 512K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 101 key keyboard.
- ✓ 8 expansion slots & 5 drive bays.
- ✓ Full Shadow RAM and LIM 4.0 EMS support.
- ✓ Windows & Mouse add \$99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

System Price	65mb	80mb	100mb	200mb
Monochrome	\$1,599	\$1,729	\$1,799	\$2,099
VGA Color	\$1,899	\$2,029	\$2,099	\$2,399
VGA 1024	\$1,999	\$2,129	\$2,199	\$2,499



## FastData 486/25

Call about our hot new 486, just \$3,199 with the same standard features as our 386-33 system. Includes a 128K two-stage cache and is expandable to 64mb of memory.

### All FastData Systems Include:

- 30 day money-back guarantee
- Toll-free technical support for life
- One year warrantee with on-site service available to most U.S. locations

# FastData SX Systems



## \$1599 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 a second floppy drive in addition to the standard VGA color monitor and 16 bit VGA adaptor, Keytronics keyboard and 40 megabyte hard drive. 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 80386-SX processor.
- ✓ 2 megabytes of zero wait-state RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" and 1.44mb 3.5" floppy drives.
- ✓ Standard chassis (shown) with keylock, speed and reset buttons.
- ✓ 200 watt power supply
- ✓ 14" VGA color monitor with 16 bit VGA card with 256K.
- ✓ Clock calendar, parallel port, two serial ports, and game port.
- ✓ Keytronics 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 \$99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	\$1,299	\$1,369	\$1,499	\$1,569
VGA Color	\$1,599	\$1,669	\$1,799	\$1,869
VGA 1024	\$1,699	\$1,769	\$1,899	\$1,969



## \$1399 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 two megabytes of memory, a high performance 40mb hard drive, and 16 bit color 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 80386-SX processor.
- ✓ 2 megabytes of zero wait-state RAM.
- ✓ 40 mb 28ms IDE hard disk, 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive. Both drives add \$69.
- ✓ Standard chassis with keylock, speed and reset buttons (mini desktop shown - add \$50).
- ✓ 200 watt power supply
- ✓ 14" VGA color monitor with 16 bit VGA card with 256K.
- ✓ Clock calendar, parallel port, two serial ports, and a game port.
- ✓ Keytronics 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 \$99.
- ✓ Guaranteed compatible.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	\$1,099	\$1,169	\$1,299	\$1,369
VGA Color	\$1,399	\$1,469	\$1,599	\$1,669
VGA 1024	\$1,499	\$1,569	\$1,699	\$1,769

# FASTMICRO

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- DJ-20 80-240mb Int. Tape ..... 319
- Conner (see IDE controllers below)
- CP3044 40mb IDE 28ms ..... 269
- CP3104 100mb IDE 25ms ..... 499
- CP3208 200mb IDE 25ms ..... 849



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**\$399** IDE performance, big 89 megabyte capacity and Seagate quality make this kit a great buy. A 19ms access time and 5 mbps transfer rate assure great performance. Controller, cables and rails are included to make installation fast and easy.

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- MC1664 340mb ESDI 14ms ..... 1295
- MC1598 1.2gb SCSI 14ms ..... 2895
- NEC CDR-3501 Ext. CD-ROM w/interface ..... 549
- Plus Development
- HardCard IIXL 50 - 52mb 9 ms 16bit ..... 399
- HardCard IIXL 105 - 105mb 9 ms 16bit ..... 679
- Impulse 42mb 12 ms 16bit IDE Kit ..... 399
- Impulse 105mb 9 ms 16bit IDE Kit ..... 599

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- Seagate
- 30MB XT Kit ST238 w/ cont. .... 249
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- 80MB AT ST296N SCSI Drive w/adaptor ..... 349
- 89MB ST1102A 19ms IDE Drive ..... 359
- 125MB ST1144A 19ms IDE Drive ..... 469
- 210MB ST1239A 15ms IDE Drive ..... 799
- 330MB ST2383E 16ms ESDI Drive ..... 1289
- Teac
- 1.2MB 5.25" Floppy ..... 65
- 1.44MB 3.5" Floppy ..... 65

### Toshiba 100mb IDE Kit \$489

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 and cables, 5.25" brackets and rails. Call our experts for all your drive needs. Model MK234FC.



- Toshiba
- 360K 5.25" Floppy (Black) ..... 69
- 1.2MB 5.25" Floppy ..... 69
- 1.44MB 3.5" Floppy ..... 69
- 65mb MK134 22ms RLL drive ..... 279
- 100mb MK234FC IDE 3.5" drive ..... 449
- Western Digital
- WD 16 bit IDE Host - with dual floppy controller ..... 39
- WD93044 40mb IDE 28ms ..... 199
- WDAC280 80mb IDE 28ms ..... 339
- WE1007V-SE2 ESDI AT 1:1 dual controller ..... 149



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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 amber monitor and graphics card, your choice of a high density 1.2mb or 1.44mb floppy drive and a Keytronics 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 hard disk 1:1 interleave.
- ✓ 1.2mb 5.25" or 1.44mb 3.5" floppy drive (2nd drive add \$69)
- ✓ Standard chassis
- ✓ Five drive bays.
- ✓ 200 watt power supply.
- ✓ 287XL coprocessor socket
- ✓ Monochrome monitor with monochrome graphic board.
- ✓ Clock calendar, parallel port, and two serial ports.
- ✓ Keytronics enhanced 101 keyboard.
- ✓ 8 expansion slots, 6 available.
- ✓ Full documentation.
- ✓ FCC Class B approved.

System Price	40mb	65mb	80mb	100mb
Monochrome	\$799	\$869	\$999	\$1,069
VGA Color	\$1,099	\$1,169	\$1,299	\$1,369
VGA 1024	\$1,199	\$1,269	\$1,399	\$1,469

### BOARDS

- Artisoft/Lantastic
- Lantastic 2mbps Starter Kit - Two Station ..... 369
- Lantastic 2mbps Adaptor ..... 169
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- 2400 ETC Internal ..... Call
- 2400 ETC External ..... 187
- 9600/E External MNP V.42bis ..... 479
- VGA Basic 16 ..... 75
- VGA Wonder + 256K ..... 189
- VGA Wonder + 512K ..... 229
- Brown Wagh Sound Blaster ..... 149
- Everex
- 2400B Int Modem ..... 99
- EGA 480 Card ..... 69
- RAM3000 16 bit RAM card ..... 75
- RAM8000 16 bit RAM card ..... 169

- Hayes
- JT FAX 4800B Internal ..... 139
- Personal Modem 2400 w/Prodigy ..... 119
- Hercules Graphic Card + ..... 169

- Intel
- Classic 2400 Modem Int./Ext. .... 137/167
- Satisfaxion Classic - Internal 9600 ..... 379
- 8087-2 ..... 115
- 287XL ..... 199
- 387-DX25 ..... 479
- 387-SX16/20 ..... 319/349

- Logitech
- ScanMan Plus ..... 165
- Scanman 256 ..... 289

- Orchid
- ProDesigner II 512/1mb ..... 279/329
- Tiny Turbo 286 ..... 207
- Tiny Turbo Xtra ..... 267

### Practical Modem 9600SA \$449

This external modem features V.42 and MNP error correction combined with MNP/5 and V.42 bis data compression to provide total high speed throughput. The PM9600SA is also V.32 TCM, V.32, V.22 compliant and comes with a five year guarantee.



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- VGA 1024 256K/512K ..... 175/199

- Practical Peripherals
- 2400B Int Modem ..... 125
- 2400B Int with MNP ..... 169
- PM9600SA Ext. V.32/V.42bis ..... 449

- Prometheus
- Promodem 2400B Internal ..... 98
- Promodem 2400G External ..... 149

- USRobotics
- 2400 Sportster Int/Ext. .... 119/147
- 2400 Sportster Int/Ext. .... 159/199
- Courier HST 14,400 /Int.Ext. .... 539/579
- Courier HST 14,400 Dual Standard Ext. .... 859

- Video 7
- VGA 1024i 256K ..... 179
- VGA 1024i 512K ..... 209
- V-RAM VGA 512K ..... 299

- ZOOM
- HC2400 Internal ..... 79
- 2400 V.42bis External Modem ..... 169
- 9624 Send/Receive Internal Fax Modem ..... 129

### MONITORS

- Mitsubishi
- 1410 EGA ..... 325
- Diamond Scan 1381 ..... 479
- NEC
- Multisync 2a ..... 469
- Multisync GS 2a ..... 199
- Multisync 3d ..... 629
- Multisync 4d ..... Call
- Panasonic C1381 VGA ..... 439
- Princeton ..... Call
- Seiko CM1440/1450 ..... 519/659
- Sony 1304 Multiscan ..... 669
- Zenith 1492 ..... Call

### FastData Products

#### FastData 16 Bit VGA

The FastData 16 bit VGA card features 256K of video memory, does CGA, EGA, & VGA up to 1024x768 and comes with drivers for popular software including Windows 3.0. It's expandable to 512K and has a 30 day money-back guarantee.



- FastData 16bit 1mb VGA ..... 159
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- FastData MGP Card ..... 29



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- Parallel/Dual Serial/Game Card ..... 29
- RLL 16bit 1:1 Hard/Floppy Disk Cont. .... 69
- XT 1.44 Dual Floppy Controller ..... 35

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- 12" Amber Monochrome ..... 79
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- 14" White Monochrome ..... 109
- 14" White VGA Monochrome ..... 129
- 14" CGA Color .52 dot pitch ..... 199
- 14" VGA Color .39 dot pitch ..... 269
- 14" VGA Color .31 dot pitch ..... 319
- 14" Super VGA 1024 x 768i .28 dp. .... 349

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- Canon BJ10E ..... 319
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### Citizen GSX140

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- Citizen
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- GSX140 / GSX145 ..... 285/395
- Fujitsu DL3400 ..... 359

- NEC
- P3200 ..... 269
- P3300 ..... 369
- P6200 ..... 469
- P6300 ..... 629
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- KXP1123 ..... Call
- KXP1624 ..... 429
- KXP4420 Laser ..... 829
- KXP4450/4455 Lasers ..... Call
- Seiko Smart Label Printer ..... 167
- Star
- NX1001 ..... 149
- NX1500 ..... 299
- NX2410 ..... 249
- XB2410 / 2415 ..... 429 / 569
- Texas Instruments Microlaser PS17 ..... 1199
- Microlaser PS35 ..... 1499

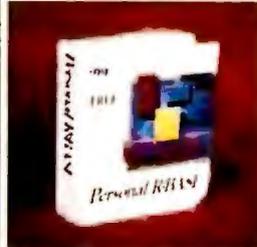
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Avery List & Mail Plus	37
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Clarion Professional Developer	449
Clipper 5.0	489
DataEase	459



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A super value! Includes General Ledger, Accts. Payable, Accts. Receivable/Invoicing, Purchase Order, Payroll, Inventory, Job Cost, Fixed Assets and more. Loaded with over 450 reports, automatic backup and helpful manuals.



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Peachtree with Data Query	209
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Turbo Tax Professional	209
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### Harvard Graphics \$289

The leading business graphics package. Harvard Graphics lets you create superior charts and graphs with ease. Plus, it comes with advanced drawing tools and symbol libraries, imports Lotus spreadsheets, and has advanced 3D features.

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Logitech HiRes C9 Bus	76
Logitech Trackman Serial	75



### Logitech C9 Serial Mouse \$65

Our best-selling mouse is top rated also. Comes with software to adjust the resolution just the way you want it and includes driver software and Pop-Up-Dos to make your computer hum at your fingertips. For PaintShow, add \$15.

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Microsoft Serial or Bus w/ paint	95
Microsoft with Windows 3.0	147
Z-Nix Serial Mouse w/Windows 3.0	99

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Lotus 1-2-3 version 3.1	399

### Lotus 1-2-3 Version 2.2 \$325

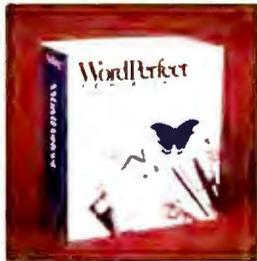
The standard for spreadsheets. Lotus 1-2-3 version 2.2 is faster and more powerful than previous versions that made it famous. Includes add-in manager and more functions for greater flexibility. Also comes with Allways for great presentations made easy.

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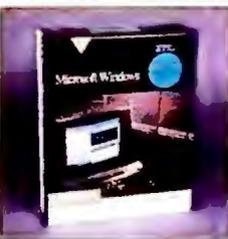
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WordStar Professional	Call

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This high-resolution serial mouse by Z-Nix is ergonomically designed and has adjustable resolution. This bundle includes Microsoft Windows 3.0 (5.25" disks only) and mouse software.

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Tetris	19

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Fastback Plus	109
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Labels Unlimited	37
Laplink III	85
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Mace Vaccine	59
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Norton Commander	90
Norton Utilities 5.0	109
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# CD ROM DRIVES



FRED STIMSON

CD ROM DRIVES ARE FASTER, SLIMMER, AND CHEAPER THAN EVER BEFORE, AND MOST CAN NOW ACCESS A FULL 680MB DISK. CHECK THIS GUIDE TO FIND THE RIGHT DRIVE FOR YOUR BIG MULTIMEDIA AND DATA BASE JOBS.

## ROBERT LUHN



In the world of storage, you can never be too thin or too fast. Today's crop of CD ROM (compact disk read-only memory) drives won't blind you with their speed, but they're twice as swift as their predecessors and small enough to fit in a floppy drive bay—and they break the \$500 street price barrier with amazing regularity.

That's good news if you hanker to get at the commercial data bases distributed on CD ROM disks. No longer a novelty, CD ROMs include everything from sophisticated financial data bases to massive font collections. Multimedia disks, which incorporate video and synchronized sound, are on their way, too, but they may require the next generation of faster CD ROM players (see the sidebar "Is Multimedia in Your Future?").

Another big plus in today's CD ROM drives is standardization. Since the drives are made by a handful of manufacturers that

abide by the same specifications, most units are pretty similar. And since all CD ROM drives support the High Sierra and ISO 9660 standards, which lay out basic rules for storing data, you should be able to play most contemporary disks in almost any CD ROM drive.

Nonetheless, manufacturers are competing by offering lower prices, greater speed, or more sophisticated features—some new drives can read the maximum possible amount of data on a CD ROM (about 680MB) or run on their side; others feature linear transport motors that position the read head much more quickly.

### BEFORE YOU BUY

Since most CD ROM drives are fairly similar, the bottom line here is speed and price. However, don't forget the basics: Make sure the drive comes complete with a mounting kit (if the unit is internal), cables, adapter, a "caddy" for holding disks in the drive, and Microsoft's MS-DOS CD-ROM Extensions version 2.2. And don't take mean time between failure (MTBF) ratings too seriously. MTBF typically applies to motor life, but most drives die from bad power supplies, faulty lens assemblies, and other ailments. A long warranty is your best protection. Finally, consider the following factors.

**Performance** The three most reliable measures of a drive's performance are average access time, throughput, and the size of the drive's buffer. The fastest drives hit 340ms to

360ms, include 32K or 64K buffers, and boast throughput of 150K per second. This is still three times slower than a floppy drive, so the faster the CD ROM drive, the better.

**Capacity** A CD ROM can theoretically hold 680MB of data. Most commercial applications don't go beyond 600MB, but upcoming disks packed with graphics, video, and digital sound may need every byte. Plan for tomorrow—buy a drive that can access as much data as possible.

**Expandability** Adding multiple CD ROM drives to your system is relatively easy. Depending on the manufacturer, you can plug multiple drives directly into one or more adapters or, more commonly, daisy-chain drives off the first installed unit.

Another solution is Pioneer's DRM-600 CD ROM Changer—it has a cartridge that holds up to six disks and treats each like a different logical drive. If LAN access is a must, consider the multidrive units, software, and high-speed controllers offered by Online Computer Systems and Meridian Data that let several users access multiple drives simultaneously.

**Compatibility** Today's CD ROM drives are so standardized that you should be able to connect them to just about any PC, XT, AT, 386, or 486 system. Many vendors also supply interface kits for the PS/2. If Mac access is important, consider purchasing a

*(continues)*

## CD ROM DRIVES

DOS = DOS 2.xx-4.xx  
 DOS3-4 = DOS 3.xx-4.xx  
 DOS2 = DOS 2.xx

DOS3 = DOS 3.xx  
 DOS4 = DOS 4.xx  
 LAN = Lantastic

LANMAN = LAN Manager  
 MAC = Macintosh OS 6.xx  
 NEXT = NeXTstep

NET2 = NetWare 2.15c  
 NET3 = NetWare/386  
 OS/2 = OS/2 1.xx



### STANDARD FEATURES

Vendor	Product	Price <sup>1</sup>	Average access time (ms)	Built-in buffer (K)	Max. throughput (K/sec)	Max. accessible storage (MB)	Supports CD ROM Extensions 2.2	Linear motor head positioning	Internal/external unit	CD audio	Eject button	Emergency eject option	Separate output jacks
CD TECHNOLOGY	CD Porta-Drive	\$1015	350	64	175.3	683	N	Y	E <sup>2</sup>	Y	Y	N	Y
CHINON AMERICA	CDS-431	\$650	350	32	150	680	Y	Y	I	Y	Y	Y	Y
	CDX-431	\$795	350	32	150	680	Y	Y	E	Y	Y	Y	Y
	CDC-431	\$895	350	32	150	680	Y	Y	E <sup>3</sup>	Y	Y	Y	Y
COREL SYSTEMS	Corel Kurata/CD	\$794	380	64	153	680	Y	Y	E	Y	Y	Y	Y
DENON AMERICA	DRD-251	\$799	400	32	153	680	Y	N	I	Y	Y	N	N
	DRD-253	\$1099	400	32	153	680	Y	N	E	Y	Y	N	Y
GENESIS INTEGRATED SYSTEMS	GenStar 2000	\$499	500	32	160	550	N	Y	E	Y	Y	N	Y
HEWLETT-PACKARD	HP CD-ROM Drive	\$1095	500	n/a	176	680	N	N	I	N	N	N	N
IBM	PS/2 CD-ROM Drive	\$1250	380	n/a	150	600	N	Y	I	Y	Y	N	N
	PS/2 External CD-ROM Drive	\$1550	380	n/a	150	600	N	Y	E	Y	Y	N	N
LASER MAGNETIC STORAGE INT'L	CM202	\$590	350	n/a	176	680	Y	N	I	Y	N	N	Y
	CM214	\$755	350	64	176	680	Y	N	I	Y	N	Y	Y
	CM221	\$715	350	n/a	176	680	Y	N	E	Y	N	Y	Y
	CM231	\$995	350	64	176	680	Y	N	E	Y	N	Y	Y
	CM50	\$699	800	n/a	176	680	Y	N	E	Y	Y	Y	N
MICRO DESIGN INT'L	LaserBank 600CI	\$895	400	64	176.4	635	Y	Y	I	Y	Y	N	N
	LaserBank 600CE	\$995	400	64	176.4	635	Y	Y	E	Y	Y	N	N
MULTIMEDIA SYSTEMS	CDR-3600PC	\$895	450	32	153	680	Y	Y	I	Y	Y	Y	Y
	CDR-1700S-PC	\$995	340	32	153	680	Y	Y	E	Y	Y	Y	Y
	CDR-3650	\$865 <sup>5</sup>	450	64	153	680	Y	Y	I	Y	Y	Y	Y
	CDR-1750S	\$965 <sup>5</sup>	340	64	153	680	Y	Y	E	Y	Y	Y	Y
NEC TECHNOLOGIES	Intersect CDR-36 Portable	\$599	<600	64	150	680	Y	Y	E <sup>2</sup>	Y	Y	N	Y
	Intersect CDR-73	\$949	<300	64	150	680	Y	Y	E	Y	Y	N	Y
	Intersect CDR-83	\$849	<300	64	150	680	Y	Y	I	Y	Y	N	Y
PIONEER COMMUNICATIONS OF AMERICA	CD-ROM Mini-changer	\$1295 <sup>5</sup>	600	n/a	153	688	Y	Y	E	Y	Y	N	Y
PLI	PL CD-ROM Drive	\$1099	380	64	150	680	Y	Y	E	Y	Y	Y	Y
PROCOM	MCD-ROM 650/E	\$895	350	n/a	153.6	650	Y	N	E	Y	Y	Y <sup>4</sup>	N
REFERENCE TECHNOLOGY	Series 500:												
	CDU-541	\$835	380	64	150	680	Y	Y	I	Y	Y	Y	N
	CDU-6211	\$1055	380	64	150	680	Y	Y	E	Y	Y	Y	N
	CDU-531	\$695	380	8	150	680	Y	Y	I	Y	Y	Y	Y
	CDU-6201	\$795	380	8	150	680	Y	Y	E	Y	Y	Y	Y
SUN MOON STAR	CD-Set	\$995	450	32	153.6	550	Y	N	E	Y	Y	Y	N
TODD ENTERPRISES	TCDR 6000	\$965	<400	32	153	600	N	Y	E	Y	Y	Y	N
	TCDR 6050	\$995	<400	64	153	600	N	Y	E	Y	Y	Y	N
TOSHIBA AMERICA INFORMATION SYSTEMS	XM-3201B1	\$800	350	64	153.6	683	Y	Y	I	Y	Y	Y	N
	XM-3201A1	\$950	350	64	153.6	683	Y	Y	E	Y	Y	Y	N

<sup>1</sup>Price includes drive and adapter/controller.

<sup>2</sup>Portable drive

<sup>3</sup>Via dealer.

<sup>4</sup>Via MS-DOS CD extensions

SCO = SCO Xenix  
 SUN = Sun OS  
 TOPS = TOPS

CD-I = Compact Disc-Interactive  
 DVI = Digital Video Interactive  
 HFS = Macintosh HFS

HS = High Sierra/ISO 9660  
 XA = Extended Audio

ADAPTER/CONTROLLER								COMPATIBILITY		WARRANTY			
Drive runs on side	Serial	SCSI	Proprietary	Max. number of daisy-chained drives	Max. drives run from single system	MCA version	Operating systems	CD ROM standards	Number of months	Extended warranty	Money-back guarantee	Reader service na.	
Y	N	Y	N	8	32	Y	DOS, MAC, LAN, OS/2	DVI, HFS, HS, XA	12	N	Y	690	
Y	N	Y	N	7	7	Y	DOS, MAC	HFS, HS	12	N	N	691	
Y	N	Y	N	7	7	Y	DOS, MAC	HFS, HS	12	N	N	691	
Y	N	Y	N	7	7	Y	DOS, MAC	HFS, HS	12	N	N	691	
Y	N	Y	N	7	56	Y	DOS3-4, NET3	HFS, HS, XA	12	N	Y	692	
Y	N	Y	N	7	32	Y	DOS3-4, LAN, MAC, OS/2	HFS, HS	12	Y	Y <sup>3</sup>	693	
N	N	Y	N	7	32	Y	DOS3-4, LAN, MAC, OS/2	HFS, HS	12	Y	Y <sup>3</sup>	693	
Y	N	N	Y	8	64	N	DOS, LAN, NET2, NET3	CD-I, DVI, HS, XA	12	Y	Y <sup>3</sup>	694	
Y	Y	N	N	4	7	N	DOS	HS	12	N	Y	695	
Y	N	Y	N	7	7	Y	DOS3-4 <sup>4</sup> , OS/2	HS	12	N	N	696	
Y	N	Y	N	7	7	Y	DOS3-4 <sup>4</sup> , OS/2	HS	12	N	N	696	
Y	Y	N	N	1	4	N	DOS3-4	CD-I, HS, XA	24	N	N	697	
Y	N	Y	N	7	7	Y	DOS3-4, MAC, OS/2, SCO, SUN	CD-I, DVI, HFS, HS, XA	24	N	N	697	
Y	Y	N	N	1	4	N	DOS3-4	CD-I, HS, XA	24	N	N	697	
Y	N	Y	N	7	7	Y	DOS3-4, MAC, OS/2, SCO, SUN	CD-I, DVI, HFS, HS, XA	24	N	N	697	
N	Y	N	N	1	4	N	DOS3-4	CD-I, HS, XA	12	N	N	697	
Y	N	Y	N	7	7	Y	DOS3-4, LAN, NET2, NET3, OS/2, SCO	HFS, HS, XA	12	Y	Y	698	
Y	N	Y	N	7	7	Y	DOS3-4, LAN, NET2, NET3, OS/2, SCO	HFS, HS, XA	12	Y	Y	698	
Y	N	N	Y	8	4	N	DOS, LAN, NET2, NET3	HS	12	Y	N	699	
N	N	N	Y	8	4	Y	DOS, LAN, NET2, NET3	HS	12	Y	N	699	
Y	N	Y	N	7	7	Y	DOS, LAN, MAC, NET2, NET3, OS/2, SCO, SUN	DVI, HFS, HS,	12	Y	N	699	
N	N	Y	N	7	7	Y	DOS, LAN, MAC, NET2, NET3, OS/2, SCO, SUN	DVI, HFS, HS,	12	Y	N	699	
Y	N	Y	N	8	1	N	DOS, MAC, NET2, NET3, SCO	CD-I, DVI, HFS, HS	24	Y <sup>3</sup>	N	700	
Y	N	Y	N	8	8	N	DOS, MAC, NET2, NET3, SCO	CD-I, DVI, HFS, HS	24	Y <sup>3</sup>	N	700	
N	N	Y	N	8	8	N	DOS, NET2, NET3, SCO	CD-I, DVI, HFS, HS	24	Y <sup>3</sup>	N	700	
N	N	Y	N	7	7	Y	DOS3-4, MAC, SCO, SUN, TOPS	CD-I, DVI, HFS, HS	12	N	N	701	
Y	N	Y	N	7	21	Y	DOS3-4, MAC, NEXT, TOPS	CD-I, DVI, HFS, HS, XA	12	Y	Y	702	
Y	N	Y	N	7	42	Y	DOS3-4, MAC	HFS, HS	12	N	N	703	
Y	N	Y	N	7	7	Y	DOS3-4, NET2	HS	3	Y	N	704	
Y	N	Y	N	7	7	Y	DOS3-4, NET2	HS	3	Y	N	704	
Y	Y	N	N	4	4	Y	DOS3-4, NET2	HS, XA	3	Y	N	704	
Y	Y	N	N	4	4	Y	DOS3-4, NET2	HS, XA	3	Y	N	704	
Y	N	N	Y	4	4	Y	DOS, OS/2, SCO, TOPS	CD-I, HS	18	Y	N	705	
Y	N	N	Y	8	48	Y	DOS, MAC	HS	12	N	N	706	
Y	N	Y	N	8	48	Y	DOS, MAC	HS	12	N	N	706	
Y	N	Y	N	8	32	Y	DOS, LAN, MAC, SCO, SUN	DVI, HFS, HS, XA	12	Y	N	707	
Y	N	Y	N	8	32	Y	DOS, LAN, MAC, SCO, SUN	DVI, HFS, HS, XA	12	Y	N	707	

<sup>5</sup>Price includes drive only.

For more information about all products in this table, circle reader service no. 906.

## IS MULTIMEDIA IN YOUR FUTURE?



If you plan to use any of the thousands of text-oriented data bases available on CD ROM, the drives listed in our table will do nicely. But if you're concerned about multimedia, the picture is decidedly fuzzy.

Most experts agree that "compatibility" with video standards such as DVI (full-motion video) and XA (synchronized sound) boils down to speed—raw, continuous throughput. Most surveyed vendors believe their existing drives will be fast enough, but not all multimedia developers are convinced.

Intel has only approved three drives for its DVI standard: the Toshiba XM3201A1 and XM3201B1, and the Sony CDU-541. (Intel's not saying which drives failed.) Savvy buyers should call Intel and

get an updated list before buying a drive for multimedia.

Additionally, Intel, Microsoft, and other multimedia players say that a CD ROM drive for multimedia applications should support version 2.2 of Microsoft's CD-ROM Extensions and come with large buffers and device drivers optimized by the drive supplier for multimedia applications. Also look for units that use faster linear transport head positioning and that can access as much data as possible (up to 680MB).

But if multimedia capability is your key reason for buying a drive, your best strategy may be to wait. Industry insiders and drive vendors admit off the record that much faster drives are expected in late 1991. —R. L.

SCSI drive—you may be able to plug the drive directly into a Mac's SCSI port. However, CD ROM applications designed for the PC usually can't be read by a Mac. Note, too, that operating system support other than for DOS varies wildly, so check carefully.

### A CD ROM IS A CD ROM IS A...

Although *multimedia* is the buzzword of the year, standards are in flux, and heavy-duty applications probably won't appear for a year or two. In the meantime, the drives listed here will let you tap into the many data bases, photo and font galleries, illustrated hypertext encyclopedias, and other applications that will dominate the CD ROM market for the next few years. ☺

*Robert Luhn is a contributing editor for PC World.*

### WHERE TO BUY

#### CD Technology

780 Montague Expy.  
#407  
San Jose, CA 95131  
408/432-8698,  
408/432-0250 (fax)

#### Chinon America

660 Maple Ave.  
Torrance, CA 90503  
800/441-0222,  
213/533-1727 (fax)

#### Corel Systems Corp.

Optical Products  
Division  
1600 Carling Ave.  
Ottawa, Ontario  
Canada K1Z 8R7  
613/728-8200,  
613/761-9177

#### Denon America

222 New Rd.  
Parsippany, NJ 07054  
201/575-7810,  
201/808-1608 (fax)

#### Genesis Integrated Systems

719/593-7900,  
719/593-4597 (fax)

---

1000 Shelard Pkwy.  
#270  
Minneapolis, MN  
55426  
800/325-6582,  
612/544-4347 (fax)

#### Hewlett-Packard

Customer Information  
Center  
19310 Pruneridge Ave.  
Cupertino, CA 95014  
800/752-0900

#### IBM

Old Orchard Rd.  
Armonk, NY 10605  
800/426-2468

#### Intel PCED

5200 N.E. Elam Young  
Pkwy.  
Hillsboro, OR 97124  
800/538-3373

#### Laser Magnetic Storage Int'l

4425 Arrowswest Dr.  
Colorado Springs, CO  
80907

#### Meridian Data

5615 Scotts Valley Dr.  
Scotts Valley, CA  
95066  
408/438-3100,  
408/438-6816 (fax)

#### Micro Design Int'l

6985 University Blvd.  
Winter Park, FL 32792  
407/677-8333,  
407/677-8365 (fax)

#### Multimedia Systems

Division of Hitachi  
Home Electronics  
401 W. Artesia Blvd.  
Compton, CA 90220  
800/369-0422 ext.  
537, 213/515-6223  
(fax)

#### NEC Technologies

1414 Massachusetts  
Ave.  
Boxborough, MA  
01719  
800/632-4636

#### Online Computer Systems

20251 Century Blvd.  
Germantown, MD  
20874  
800/922-9204

#### Peripheral Land Incorporated (PLI)

47421 Bayside Pkwy.  
Fremont, CA 94538  
800/288-8754,  
415/683-9713 (fax)

#### Pioneer

#### Communications of America Inc.

600 E. Crescent Ave.  
Upper Saddle River, NJ  
07458-1827  
800/527-3766,  
201/327-9379 (fax)

#### Procom Technology, Inc.

200 McCormick Ave.  
Costa Mesa, CA  
92626  
714/549-9449,  
714/549-0527 (fax)

#### Reference

#### Technology, Inc.

5775 Flatiron Pkwy.  
#220  
Boulder, CO 80301  
800/345-9569,  
303/449-4157,  
303/442-1816 (fax)

#### Sun Moon Star

1941 Ringwood Ave.  
San Jose, CA 95131  
800/545-4786,  
408/452-7811,  
408/452-1411 (fax)

#### Todd Enterprises

224-49 67th Ave.  
Bayside, NY 11364  
800/445-8633,  
718/343-1040,  
718/343-9180 (fax)

#### Toshiba America Information Systems

Disk Products Division  
9740 Irvine Blvd.  
Irvine, CA 92718  
800/456-3475,  
714/583-3133 (fax)

# Laptop envy.

## And the cure.

You see a notebook-sized laptop with the features you want, but it's too expensive.

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Well, now you can have the features you're looking for. In a laptop you can afford.

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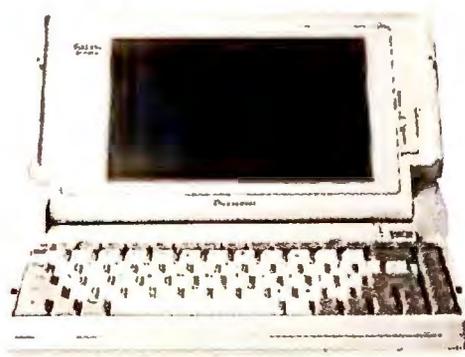
*Computers, Printers, Peripherals, Copiers, Typewriters and Facsimiles.*

**Panasonic**  
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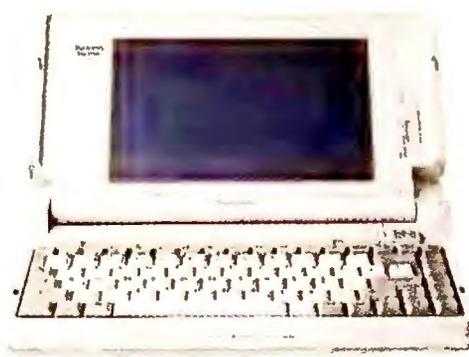
*CF-150B*

- Backlit supertwist LCD display.
- V20 processor running at 8MHz.
- 3.5" 720K floppy drive.
- Weighs about 6 pounds.



*CF-270*

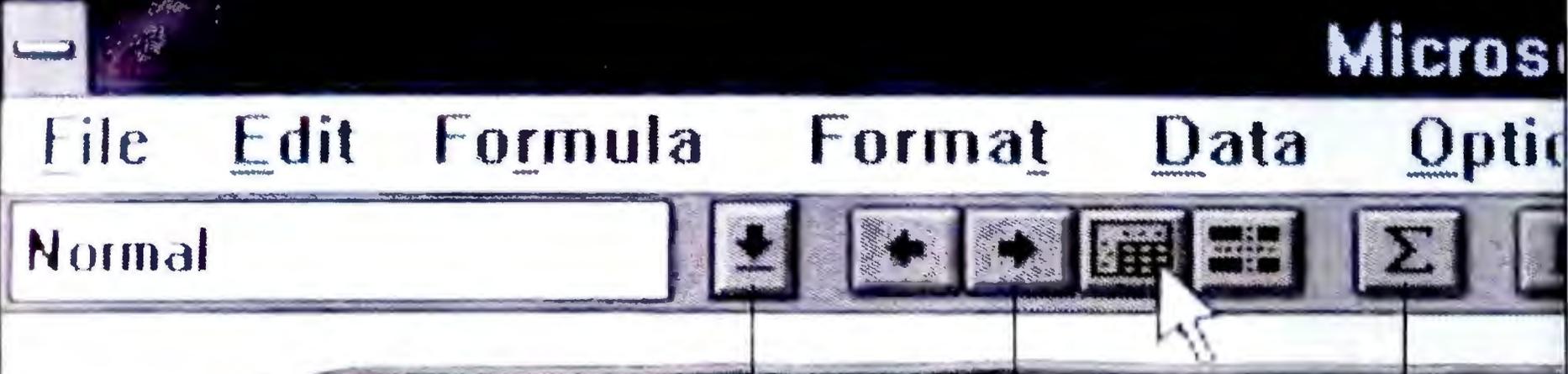
- Triple supertwist VGA display (640 x 480 resolution).
- 80C286 processor running at 16MHz.
- 3.5" 1.44MB floppy drive.
- 20MB hard drive (25ms access time).
- Weighs under 7 pounds.



*CF-170*

- Backlit supertwist LCD display.
- V20 processor running at 10 MHz.
- 3.5" 1.44MB floppy drive.
- 20MB hard drive (25ms access time).
- Weighs under 6 pounds.

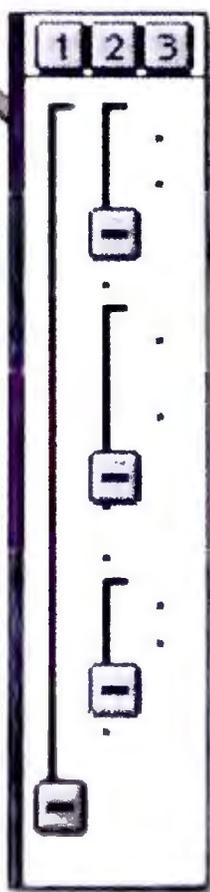
# It took us thousands of steps to get what we wanted. Fortunately, we got it.



One step outlining. Outline worksheets to see only the detail you need.

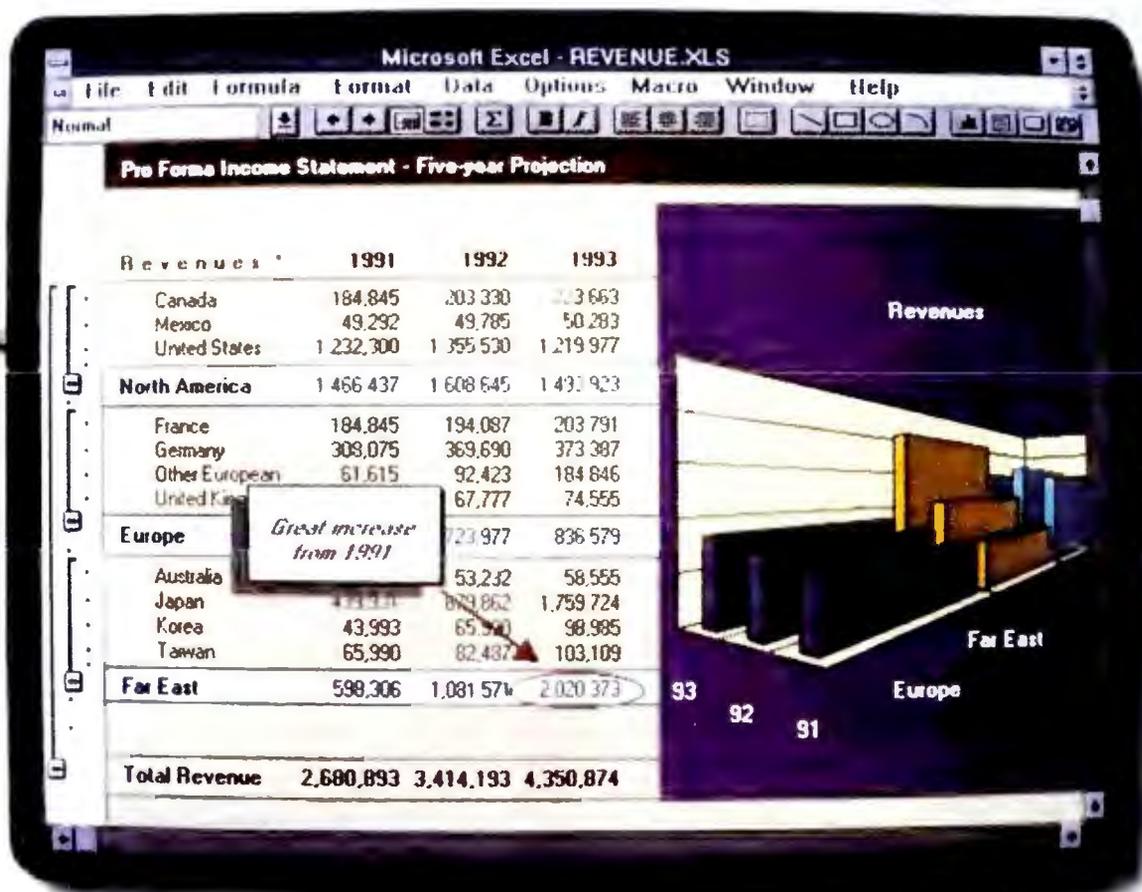
One step styles. Save and apply your own style. Mix up to 256 fonts, 16 of 16 million colors and 18 patterns.

One step formulas. Use Autosum™ to add a range of cells by double clicking.



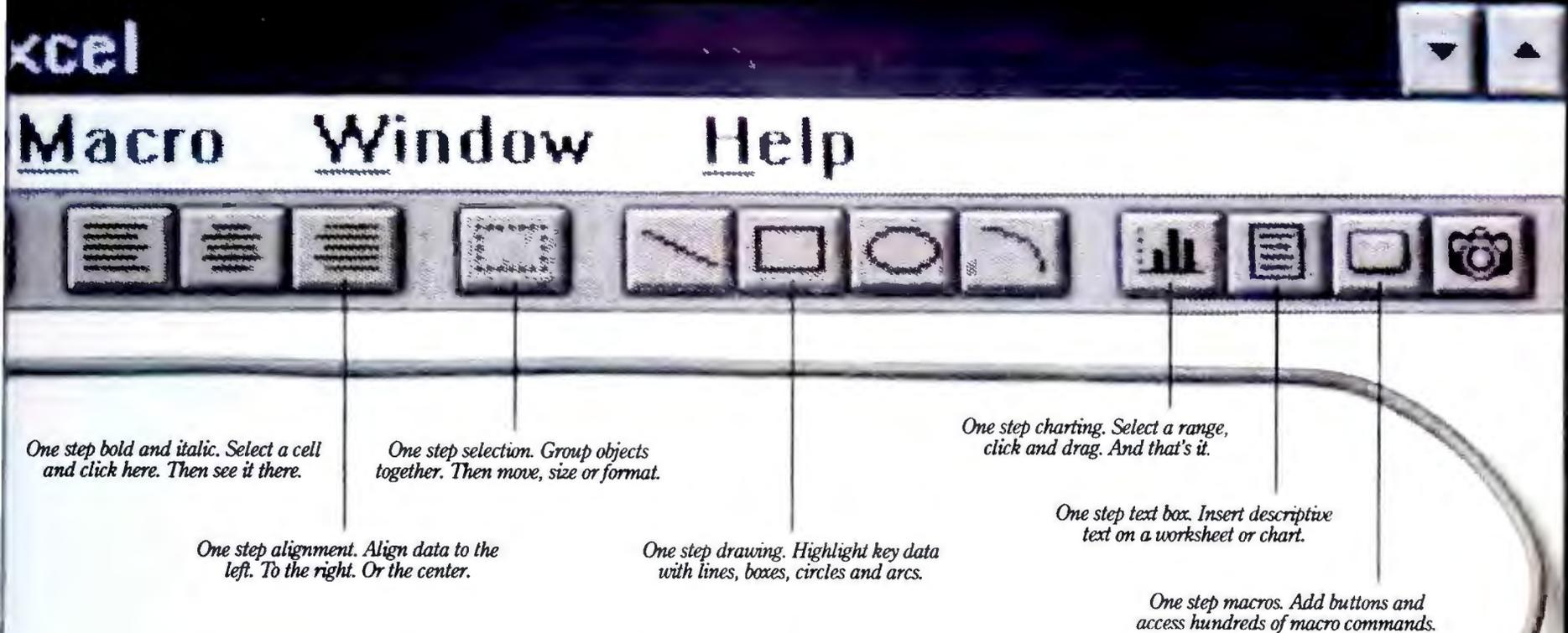
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Select a range of cells and transform them into a chart on a worksheet. With one simple click. Or why not create a 3-D chart. Then rotate it 360°. How's that for a view? With new Microsoft Excel, you can choose from 68 different chart types, 24 of which are 3-D. Or even create your own. And because this is a graphical program, it's easy to combine text, data and graphics on a single page. Of course, it's WYSIWYG too. Which means you can actually see what you're working on.

# o make this spreadsheet do ely it'll only take you one.



## Introducing Microsoft Excel version 3.0.



Out of all the steps it took us to create the new Microsoft® Excel for Windows™, there were two in particular that had the most impact. The first was to listen to our users and to listen carefully. The second was to take that knowledge and implement it intelligently.

The result is outrageous power coupled with ease-of-use. It is this idea that drives all of our efforts. And has since we introduced the first graphical spreadsheet back in 1985.

A recent example of this is the Toolbar™. This addition lets you do everything from formatting, to formulas, to

outlining with one click of a button.

Best of all, it's really easy to make the move. Microsoft Excel comes with online help for 1-2-3® users. So you can learn by simply applying your existing knowledge.

Take the next step, call (800) 541-1261, Dept. P64, for the name of a dealer near you.

“Click”

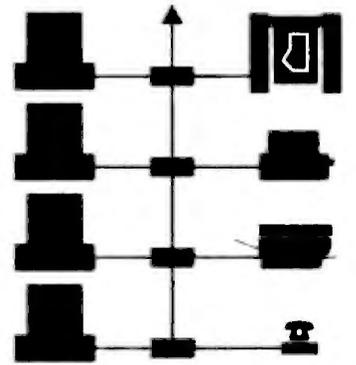
Microsoft

**Microsoft**  
Making it all make sense™

A full-blown server-based network costs a bundle when done right. Add to this the cost of training and ongoing support (sometimes 2 to 3 times the original investment). Undaunted, businesses bite the bullet every day—effectively turning over their entire computer operations to a LAN expert forever. But many, in seeking a less costly alternative, fall into the trap of false economy.

We say “neither is necessary.” Why? How?

# Systemizers<sup>®</sup>



Connectivity and networking solutions abound. And with them come traps of all kinds. Unless you're a teflon-coated decision maker (or a job hopper), the solution you choose today should remain appropriate tomorrow. Let's look at where you can go wrong—and right.

First, consider printer sharing boxes. There are seemingly hundreds of them. They're a fine short-term solution when you have two or three computers occasionally needing access to a single printer. But, when applied to more extensive or demanding applications, they become a bottleneck, impede and frustrate users, and are ultimately a dead-end easily-outgrown solution... simply put: the “F word” (*False economy*).

Wouldn't you call this a bottleneck: a printer sharing box—driven by a *single* microprocessor—receiving print data from *several* computers, while it is simultaneously supposed to send this data to *several* printers? Wouldn't you be an unhappy user if, along with enduring the bottleneck factor, you lose your data when somebody resets or turns off the box? And what happens when the box breaks and *nobody* can print until it's fixed? To add insult to injury, printer sharing boxes are often quickly outgrown because they have a finite assortment of inputs and outputs. Hence the conclusion: false economy.

If not printer sharing boxes, then consider networks (LANs). They're a hot item nowadays. LAN dealers invite you for a free analysis of your networking “needs”. Sure, they'll help you—while they help themselves to your bank account. Good networks are EXPENSIVE, and require expert support forever! You will always be accountable to the LAN, like a state and federal sales tax on every change or addition you make related to your computers.

Not that there aren't inexpensive networks available. Some are downright cheap. But, should you build your business around them? Cheapo networks teach harsh lessons in false economy and, sometimes, false advertising—resulting in NO economy!

You see, some low-cost LANs boast that they occupy very little memory (RAM), yet to realistically accomplish what the LAN is supposed to do, it really uses as much or more RAM as any other LAN. The truth is: all LANs will occupy a substantial amount of RAM, and you will quite likely find yourself either having to add RAM to your PCs (if you can), along with memory management software, or dumping some of your other software overboard.

The lesson in false economy comes later, when you buy a multi-user software package and discover it is only (guaranteed) compatible with a server-based data-sharing LAN, usually Novell's<sup>®</sup>. Oops! Old LAN overboard!

Want to avoid such harsh lessons? Rule number one: if and when your company has some computer users who need a data-sharing network—so they can simultaneously access a shared database—get the best network money can buy. Buy UPSs, tape backups, the works. Make the commitment. It's a big step, but you'll regret anything less.

It's highly unlikely, however, that ALL your computer users need—or will ever need—access to a shared database. Most probably just need to share printers and other peripherals like plotters, modems and fax machines. Perhaps everyone would also like to exchange E-Mail and maybe even pass data files between PCs electronically.

Systemizers<sup>®</sup> are a connectivity solution that will provide these capabilities with none of the traps, drawbacks or excessive costs and commitments previously mentioned. You can apply Systemizers on a global scale, then selectively employ a high-end server-based LAN solution for those users who absolutely need it. All users in the company—whether they're on a LAN, WAN, PBX, mainframe, or are independent—can be Systemized<sup>™</sup>, and they'll all benefit from it greatly. In fact, if users are Systemized, the investment required for any future data-sharing LAN will be significantly less. Plus, because Systemizers will be handling all print “traffic”, the data-sharing LAN will perform better and more reliably.

You owe it to yourself and your company to look further into Systemizing<sup>™</sup>. Find out why almost 100,000 users are now Systemized, most at some of the world's largest companies. With plenty of LANs, WANs, PBXs and mainframes at their disposal, why have so many huge companies made Systemizing their basic connectivity standard? Call or fax us, and we'll show and tell you.



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# Quick Results With Word for Windows

**Word for Windows' fancy fonts and graphical ease of use can be yours in a flash—especially if you already use Word for DOS. Just follow this quick-start guide.**

*George Campbell*

## INSIDE HOW TO

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Basic steps for importing spreadsheet data into your word processor.

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Make 1-2-3 spreadsheet printing trouble-free.

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Strategies for setting up efficient mailing lists.

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How to add pictures to your documents for maximum impact.

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- AutoCAD problem solver
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- Speed Ventura loading



Word Processing

**S**witching from *Word* to *Word for Windows* is a bit like falling in love for the second time. The basic moves are the same, but the details are completely different.

*Word for Windows*, affectionately called *WinWord*, retains Microsoft's "select, then format" approach but is built around a completely new set of commands. This guide to *WinWord* begins by walking you through the editing commands you probably used most in *Word*—selecting text, cutting and pasting, using the glossary, and so on.

Next, you'll meet the Ruler and the Ribbon, *WinWord*'s push-button solutions to formatting. Finally, you'll spend some time with advanced functions like styles, macros, and document conversion and learn where to find more help.

### **Taking Command of WinWord**

*WinWord*'s new menus are far more logical than *Word 5*'s old system. To take full advantage of them, though, you need a mouse. Here's how *WinWord*'s menus are organized: *Word*'s Transfer and Print menu commands are now in its File menu. The Format and Window menus remain about the same. Library selections, like hyphenation, spell checking, and the thesaurus, have moved to the Utilities menu.

You'll use the Insert menu to insert bookmarks, footnotes, page numbering, annotations, graphics, spreadsheet data, mail merge fields, and index and table of contents entries. The View menu controls the document's on-screen appearance, while the Macro menu han-

## A Basic Anatomy of Word for Windows

Word for Windows makes basic editing operations quick and easy. Here are the main commands for selecting text, cutting and pasting, inserting boilerplate, and managing windows.

### Cutting (or Copying) and Pasting

First select the text, then click on *Edit*; choose *Cut* or *Copy*, click on the desired location, then select *Paste*. All scrop is now deleted to ond pasted from the *Windows* Clipboard. You can also use <Shift>-<Delete> and <Shift>-<Insert> to cut and poste from the Clipboard; don't use the <Delete> key alone unless you wont to delete the text forever. The Undo command will reverse your lost oction.

### Headers and Footers

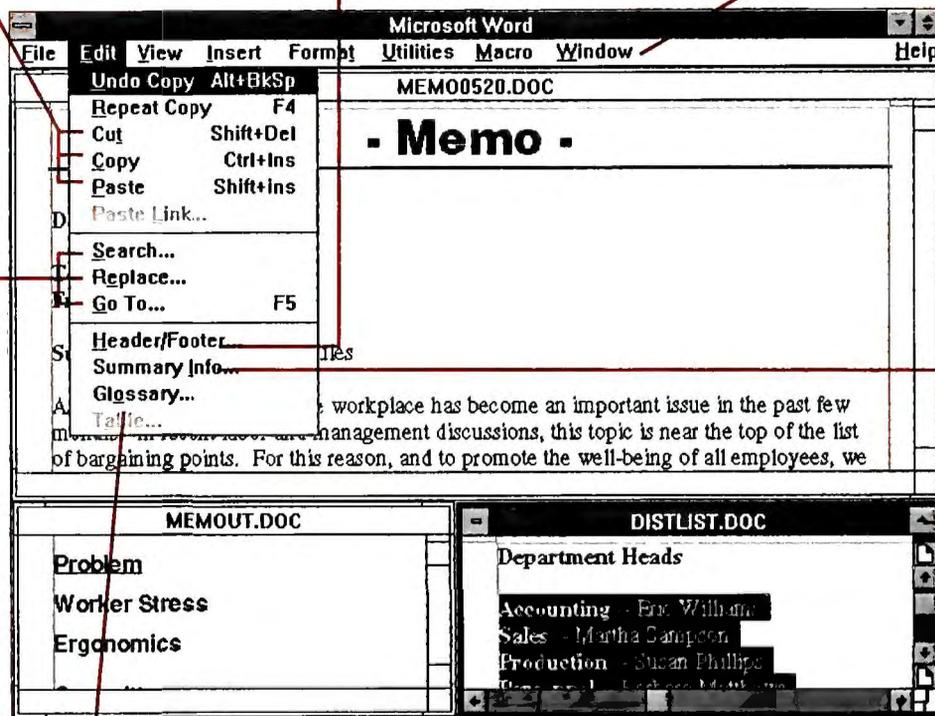
Creoting headers ond footers is slightly different in *WinWord*. Instead of typing in the text, then selecting ond formotting it, you first choose the *Header/Footer* command. Then select *Header* or *Footer*, click on the *Options* button, if desired, to set positioning ond poge numbers, ond click *OK*. A shaded box will appear ot the top or bottom of your file. Type your header or footer text in the box; then click anywhere in your file to resume other work.

### Using Multiple Windows

To create different windows on the some file, use *Window New window*. If you need multiple windows containing different files, use *File New* or *File Open*. *Window Arrange all* will outomottically size ond position the windows.

### Search, Replace, and Go To

*WinWord*'s Search ond Reploce commonds pop up dialog boxes; just enter the some search information you would use in *Word*. The Go To command octs like *Word*'s Jump command, allowing you to jump to a specified poge or to a bookmark. To create a bookmark, select *Insert Bookmark*, type in a nome, ond click *OK*. Now you can type the nome of the bookmark anywhere in your file ond use <F5> to get there anytime.



### Document Summaries

This *WinWord* command lets you create, view, or alter the summary of any time, unlike in *Word*. Click on the *Statistics* button in the Summary dialog box for even more information, including a full word count ond doto on how long you've been working in the file.

### Zooming Windows

Click here to instantly expand the current window to full size.

### Glossary Text

Give this command to create or insert stondord boilerplate text. *WinWord*'s glossory for boilerplate is similar to *Word*'s; but you can't use it to create or run macros. For those procedures, use the Macro menu instead.

### Selecting Text

To select a block using a mouse, simply click ond drag, just as in *Word*. If you prefer to use the keyboard, hold down <Shift>, then use the cursor keys.

### Sizing Windows

Size a window by clicking on a side or corner of its border or on the corner icon and then dragging the window to the desired size. Move a window by clicking in its title bar ond dragging the frame.

dles *WinWord*'s powerful macros. Finally, *WinWord*'s Help menu has the answers to many questions; or you can press <F1> for context-sensitive help.

### WinWord's Ribbon and Ruler:

#### Shortcuts to Productivity

*WinWord*'s real claim to fame is its new Ribbon and Ruler. These features allow you to perform common formatting chores merely by clicking on a "button." If neither feature appears on screen, click on the *View* menu, then click on the appropriate entry.

The Ribbon, which appears near the top of your screen, controls basic text formatting; you'll need the Format menu only for complex changes. Here's how to use the Ribbon:

First, select the text you want to format. Then, to choose a font, click on the arrow to the right of the box displaying the current font's name, and select a new font from the list box. You can alter the size of the text by clicking on the arrow next to the 'Pts:' (points) box and selecting a size. If you need a font size not shown in the list box, click inside the

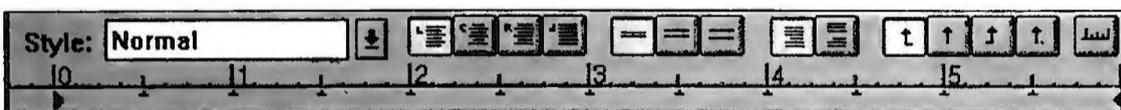
size window and type a new value.

The buttons on the right half of the Ribbon control character appearance. Click on the button marked *B* for bold-facing. The remaining buttons control italics, small caps, underlining (with options for continuous, word-by-word, and double underlining), superscript (+), and subscript (=) formats. The button marked with an asterisk toggles the display of text boundaries and special characters, like spaces and tabs, that are not checked in the View Preferences dialog box.

Clicking a button applies its style to selected text. Click on it again, and you remove the formatting. If you double-click on any blank area on the Ribbon, the full character-formatting dialog box pops up.



You can use these handy buttons on the Ribbon instead of consulting a menu to perform common formatting chores.



The buttons on the Ruler control paragraph formatting and access to styles.

The Ruler, which appears at the top of each document, controls paragraph formatting and styles. To attach a style to selected text, click on the Style arrow, then click on your choice.

With the first four buttons to the right of the Style arrow, you can align selected text flush left, center it, move it flush right, or make it fully justified on the page. Set line spacing with the three buttons in the center of the Ruler, which allow for single-, one-and-a-half-line, and double-spacing. The next two buttons control single- and double-spacing between paragraphs.

The four buttons marked with arrows are tab selectors, representing flush-left, center, flush-right, and decimal tabs. To set a tab, simply click one of the tab selector buttons to highlight it, and then click on the Ruler at the desired tab position. Setting a tab clears the default tabs to the left of the tab you set (the default tabs are represented by inverted *T*s just below the Ruler). To clear a tab that you've set, simply click on it and drag it off the Ruler.

Below the Ruler you'll find two triangular icons, the left one split in two. You control the right margin of the paragraph containing the cursor (or of highlighted paragraphs) by dragging the right triangle. The lower half of the left triangle does the same for the left margin of the paragraph(s). The upper half of the left triangle sets first-line indent or outdent.

To control the document's margin and multiple-column-width settings, first click the tiny ruler icon that's on the right side of the Ribbon to toggle the Ruler's mode. The tab indicators disappear, and *WinWord* displays square-

bracket icons that indicate document margins, which you can drag to reposition. For more complex chores, you can pop up the paragraph-formatting dialog box by double-clicking on any blank area of the Ruler.

### Working With Styles

If you're like most people, you probably never used style sheets in *Word*. In *WinWord*, many of the style sheet functions have been simplified and collected in pulldown style menus specific to each document.

When you click the Style arrow on the Ruler, you can choose Normal, which is 10-point Times Roman, or one of three heading styles. All text appears in Normal by default.

To apply another style, say Heading 1, put your cursor in the line or paragraph you want to change, click on the Style arrow, and select *Heading 1*. The entire paragraph will change style.

To apply the style to the entire document, select the document by holding down <Ctrl> and pressing 5 on the numeric keypad; then apply the style.

You can easily create your own styles. Just choose whatever enhancements you want to make—underlining, indentation, a new font, and so on. Then place your cursor anywhere on the paragraph, click on the Style arrow, type a new style name right in the list box, press <Enter>, and click on *Yes* to confirm the new style.

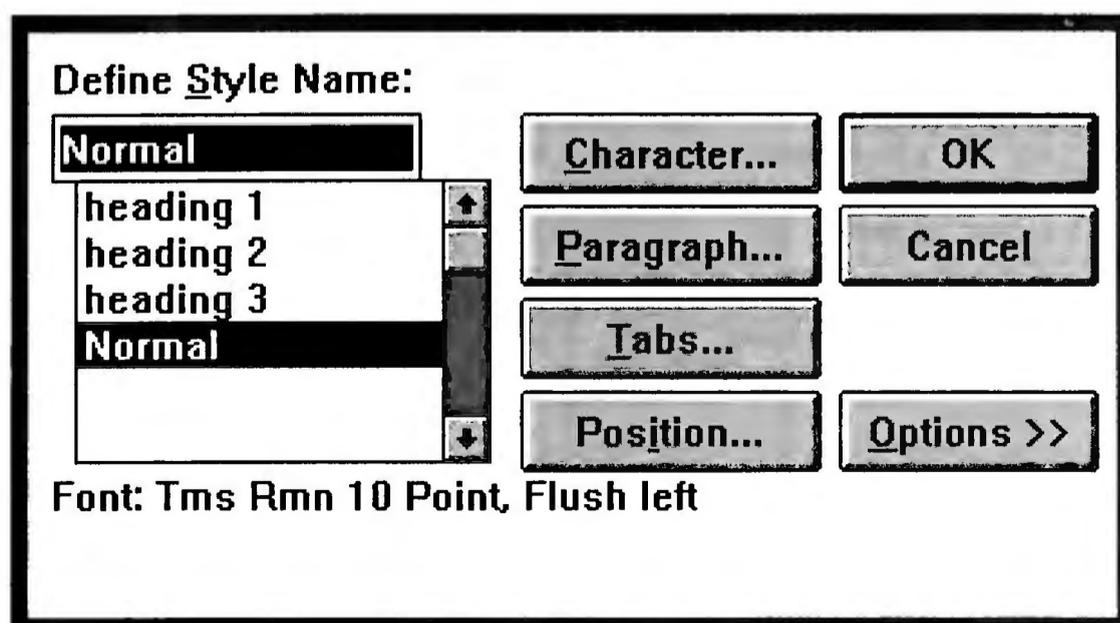
All in all, you'll find *WinWord* styles more sophisticated yet simpler to use than *Word*'s.

### WinWord's Way With Macros

There's one painful consequence of making the switch to *WinWord*. Your *Word* macros become history, and you must start over from scratch.

It's easy to record macros in *WinWord* though, and the improved *Word Basic* macro language lets you create more complex macros. Even better, you can attach *WinWord* macros to keystrokes or even place favorite macros on any *WinWord* menu.

To record a macro, click on *Macro*



To change *WinWord*'s default font, you load *NORMAL.DOT* from the \WINWORD directory, select *Format Define styles*, click the *Character* button, and choose your desired font and point size.

*Record*, type in a name and a description, press <Enter>, and issue the keystrokes and mouse clicks you want to record. When you're done, click on *Macro Stop recorder*.

You can run a macro by selecting *Macro Run* and double-clicking on the macro's name in the list box. But a macro is easier to run if you assign it to a keystroke or add it to a menu.

To do this, select the *Macro Assign to key* or *Macro Assign to menu* command. Choose the appropriate macro, specify a keystroke or select the menu where you want the macro to appear, click *Assign*, select *OK*, and you're in business.

## SHORTCUTTING WORD FOR WINDOWS

Many *Word for Windows* keystroke shortcuts are similar to those in *Word*. To perform most character and paragraph formatting shortcuts, for example, substitute <Ctrl> for <Alt>. <Ctrl>-B instead of <Alt>-B will make your text bold. Here's a quick guide to 25 useful shortcuts.

Action	Word	Word for Windows
Load file	<Ctrl>-<F7>	<Ctrl>-<F12>
Save file	<Ctrl>-<F10>	<Shift>-<F12>
Print document	<Ctrl>-<F8>	<Ctrl>-<Shift>-<F12>
Context-sensitive help	<Alt>-H	<F1>
Toggle overtype/insert	<F5>	<Insert>
Cut to scrap	<Delete>	<Shift>-<Delete>
Paste from scrap	<Insert>	<Shift>-<Insert>
Undo last action	<Esc>-U	<Alt>-<Backspace>
Select previous word	<F7>	<Ctrl>-<Shift>-<Cursor Left>
Select next word	<F8>	<Ctrl>-<Shift>-<Cursor Right>
Select previous paragraph	<F9>	<Ctrl>-<Shift>-<Cursor Up>
Select next paragraph	<F10>	<Ctrl>-<Shift>-<Cursor Down>
Extend selection	<F6>	<F8>
Select whole document	<Shift>-<F10>	<Ctrl>-<Num-pad 5>
Boldface text	<Alt>-B	<Ctrl>-B
Italicize text	<Alt>-I	<Ctrl>-I
Underline text	<Alt>-U	<Ctrl>-U
Format hidden text	<Alt>-E	<Ctrl>-H
Remove formatting	<Alt>-<Space>	<Ctrl>-<Space>
Center text	<Alt>-C	<Ctrl>-C
Left-justify text	<Alt>-L	<Ctrl>-L
Right-justify text	<Alt>-R	<Ctrl>-R
Fully justify text	<Alt>-J	<Ctrl>-J
Insert page break	<Ctrl>-<Shift>-<Enter>	<Ctrl>-<Enter>
Use thesaurus	<Ctrl>-<F6>	<Shift>-<F7>

### From WinWord to Word—and Back Again

While you're learning *Word for Windows*, you'll probably feel more at ease if you know how to convert documents to and from *Word*. Converting old *Word* documents is simple: Just load the document with *File Open*, click on *Word for DOS* in the conversion dialog box, and the process will occur automatically.

Most document features convert perfectly; however, margins set in more than one division in the old document will not convert. Also, if you used fonts in *Word for DOS* that are named differently in *Word for Windows*, you'll have to rename the fonts.

To save the file permanently as a *WinWord* file, use the *File Save as* command and accept the Normal style. To convert a *Word for Windows* document to *Word* format, select *File Save as*, type in a different document name, select *Options*, click on the File Format arrow, and then scroll down to *MS Word* and select it.

### Where to Get More Help Learning Word for Windows

While this brief guide should get you started on making the switch, plenty of other help is available.

Start with Microsoft's excellent tutorial lessons, accessed with the Help Tutorial command. The Other Word Processors entry in the Help Index is another rich source for *Word* users. Finally, the user manual *Getting Right to Word* has a chapter designed to help *Word for DOS* users. With these tools at your disposal, switching to *Word for Windows* should be relatively easy. ☺

*George Campbell is a contributing editor for PC World.*

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# Words Into Print



Word Processing

## Tips for getting the most out of your word processor

This month: Import spreadsheet data into your documents, print blocks of text in WordPerfect, and center documents vertically with a Word 5.0 macro.

George Campbell

**W**hether you're creating a sales letter, a memo, or an annual report, a table of spreadsheet data can back up your argument and add impact. Fortunately, word processors like *WordPerfect* and *Word* make spreadsheet imports easy. You can even update the data whenever the original worksheet changes.

You'll typically include spreadsheet data in a table format. For letters and memos, try a simple text table set off with white space. In formal documents, like annual reports, surround data with a box or add captions and shading.

Table updates can be helpful when you're assembling a document over a period of time or when the document is revised on a regular basis. When you

update the data, the entire worksheet or range is reimported. That usually results in the loss of at least some formatting, so it's usually best to format the table just before printing.

The memo in **SCREEN 1** shows an example of a *WordPerfect* table that incorporates sales data from *Excel*. To create this memo, you would type the text, and then use your word processor's spreadsheet linking commands to import the entire spreadsheet or just a range of cells. After a little minor formatting to realign the tabular material, you're done.

Every word processor handles spreadsheet imports differently. Here are some tips for *WordPerfect 5.1* and *Word 5.0*.

### Linking Up With WordPerfect

*WordPerfect 5.1* documents can include data from *1-2-3*, *Excel 2.x*, and *PlanPerfect* versions 3.0 through 5.0. *1-2-3* re-

lease 3 users must save spreadsheets in WK1 format.

To create an updatable link, position the cursor within a document, then press <Ctrl>-<F5>*sc* or, if you won't need to update, <Ctrl>-<F5>*si*. Next, press *f*, type the path and file name for the spreadsheet, and press <Enter>.

If you need only a range of spreadsheet cells, press *r*, and enter the range in any of three formats: A1:H15, A1.H15, or A1..H15. If the spreadsheet contains named blocks or ranges, just type the range name, or press <F5> to pick from a list. Then press <Enter>.

To import the data in text format, press *t*, then *e*. If you have *WordPerfect 5.1*, you can type *a* instead of *e* to import the data into the table editor instead. Still, it's usually easier to use the text option for simple links where you don't need lines, boxes, or shading. If you import the spreadsheet into a table, every cell, including each empty cell, becomes

MEMO

To: All Sales Personnel  
From: Alan Campbell, Sales Director  
Date: April 6, 1991  
Subject: First Quarter Sales

As you can see by the sales figures below, we've had an excellent first quarter. Let's keep up the outstanding work. Our top salesperson for the first quarter is Frieda Davengart, who receives the quarterly sales bonus.

With a continued effort from everyone, it looks like 1991 is going to be the year that breaks every sales record in Amalgamated Industries' history. If the current rate of growth continues throughout the year, recession will be a word with no meaning here.

Thanks to everyone!

Alan

Amalgamated Industries Total Sales - First Quarter, 1991 Thousands of Units				
	January	February	March	Total
Norm Adelman	428	465	489	1377
Shirley Campbell	327	315	412	1044
Frieda Davengart	729	834	1025	2588
Eric Johnson	136	654	528	1412
Melissa Lynch	543	535	547	1625
Robert Morrison	682	676	735	2093
Total	2945	3277	3396	9618

1 100% 2 200% 3 Full Page 4 Facing Pages: 1 Doc 1 Pg 1

**SCREEN 1:** Once you import spreadsheet data into a document, you can format it like normal text. Most word processors either update the data from the original worksheet automatically every time you load the file, or let you do it manually.

a cell in the table, which can sometimes make editing difficult. The table editor is a big help, however, for advanced table formatting. For example, you can draw boxes, shade selected cells, and wrap text within cells, handy for long text labels.

To perform the link, press **p**. You'll see the data, with comment boxes above and below. If you import the data as text, tabs separate the cells, with hard returns at the end of each line. Since empty cells are imported too, you may need to delete excess tabs. To view the tab markers, press **<Alt>-<F3>**, which opens the Reveal Codes window.

If you choose *WordPerfect's* table option, move the cursor inside the table, then press **<Alt>-<F7>**. You can use normal table editing tools to control lines and cell dimensions and to delete unwanted rows and columns. For example, to delete a column, move the cursor to a cell within the column, press **<Delete>**, and then press **c**. To control lines and shading, press **<Alt>-<F7>**, block a group of cells, then press **l** to use the Lines menu.

You can use *WordPerfect* formatting tools to add fonts or alter imported data in either text or table format, but if you update the link, the formatting is lost. To update the data, move to the top of

## WORDPERFECT SHORTCUT

### Print a Block

A little-used *WordPerfect* command lets you print a block of text. Just follow these steps:

1. Use the **<Alt>-<F4>** block command or your mouse to mark the text you want to print.
  2. Press **<Shift>-<F7>y** to send the block to the printer.
- G. C.

## WORD SHORTCUT

### Vertical Centering

Many short documents, like letters, look better if they're centered vertically on the page.

This *Word 5.0* macro does that job with one keystroke. On a blank *Word* screen, follow these steps:

1. Press **<Shift>-<F3>** to begin recording.
2. Press **<Shift>-<F10><Esc>fo<Cursor Down>**.
3. Type **centered**, then press **<Enter><Cursor Up>**.
4. Press **<Shift>-<F3>** and type **VCenter.Mac**, but don't press **<Enter>**. (If you want to assign this macro to a hot key, such as

**<Ctrl>-C**, type a caret (^) and then press **<Ctrl>-C**.)

5. Now press **<Enter>**. Press **<Esc>tgs<Enter>** to save the macro.

To use the macro, create a document, then press **<Ctrl>-C**, or if you didn't assign it to a hot key, press **<Esc>i<F1>**, then select *VCenter.Mac* from the menu. The normal editing screen won't show the difference, but if you press **<Ctrl>-<F9>**, you'll see the text centered between the top and bottom of the page. —G. C.

the document by pressing **<Home><Home><Cursor Up>**, and then press **<Ctrl>-<F5>sl**. To update the table's contents manually, press **u**, and to update automatically each time you retrieve the document, press **r**. If you update automatically, just remember to check the figures so your text references to the table stay up-to-date. In the same menu, press **s** to view or hide the link's comment boxes.

### Word's Way With Links

Creating spreadsheet links in *Microsoft Word 5.0* is similar. *Word* can handle 1-2-3 WKS and WK1 files, plus files from *Excel* and *Multiplan*.

To establish a link, position the cursor, then press **<Esc>lls**. At the prompt, type the data file's path and name. To import the entire spreadsheet, press **<Enter>**. To import a range of cells, press **<Tab>**, then specify the range desired—for example, **A1..H15** in 1-2-3, **A1..H15** in *Excel*, or **R1C1:R15C15** in *Multiplan*. You can also press **<F1>** to select

from a list of the worksheet's current range names. Press **<Enter>** to complete the link. *Word* marks links with hidden text codes. To view them, press **<Esc>o<Cursor Right>y<Enter>**.

*Word* imports spreadsheet data into a single paragraph, with new line characters between lines. Tabs separate the cells. Empty cells in the original spreadsheet also appear as tabs. To view the tab markers, press **<Esc>o<Cursor Right><Cursor Down>a<Enter>**. To display the tab-setting ruler, place the cursor anywhere in the paragraph, then press **<Alt>-<F1>**. As with *WordPerfect*, you can format the data using ordinary formatting commands.

*Word* offers no automatic updating, but manual updates are easy—with the document loaded, just press **<Shift>-<F10><Esc>lls<Enter>y**. As with *WordPerfect*, all linked data is reimported, forcing you to reformat the text. ☹

*George Campbell is a contributing editor for PC World.*

# HIGHLY RECOMMENDED

When Accounting Today (May 1990) asked accountants which accounting software package they recommended to their small business clients, an overwhelming 29% said they recommend Peachtree Accounting— that's almost double the next largest competitor.

Reseller Management (March 14, 1990) asked resellers which accounting package they recommend and Peachtree came out on top again with 25% of resellers recommending it.

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*"If you could find a definition for Peachtree in the dictionary, it might be 'value for your money.'"*—PC Magazine 4/10/90

*"It is, I believe, the best accounting package available for the price."*—E.J. Bosmeny, CPA, Naperville, IL

*"Complete III rivals packages costing 10 times as much."*—PC Resource, July 1990

If there's one thing people agree on, it's what a great value Peachtree's Double Bonus Bundle is. That's because it includes two first-rate software packages for one low price—Peachtree Complete III, a full-featured accounting system, and Peachtree Data Query III, a reporting and analysis tool.

Peachtree Complete III includes nine high-powered modules to meet all your business accounting needs.

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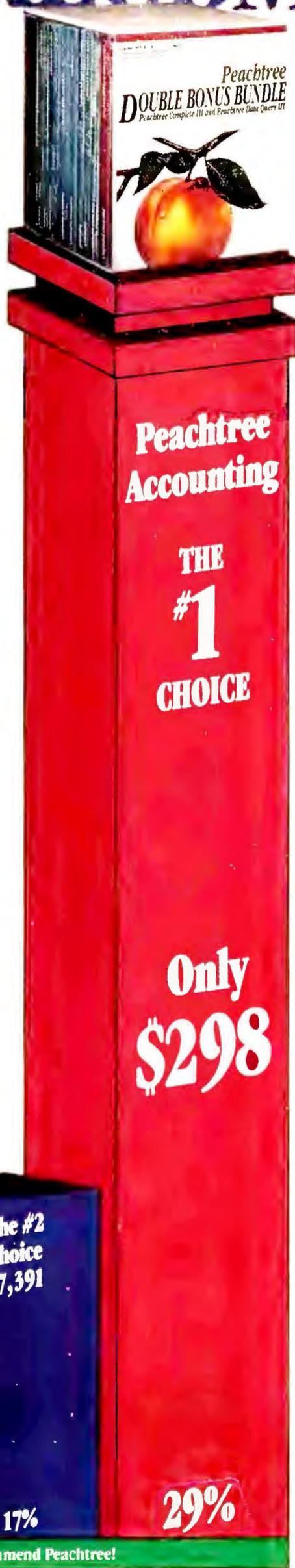
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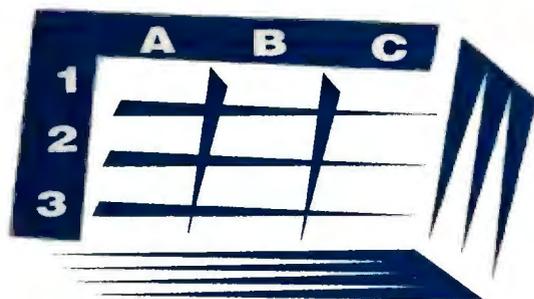
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# Spreadsheets (A..Z)



Spreadsheets

## Practical tips for building better worksheets

This month: a printing primer

Richard Scoville

**W**ith spreadsheets, the big “Aha!” often comes right after you plug in the latest numbers. But committing your cellular masterpiece to print for others is equally important—and often frustrating. In this month’s column, we’ll discuss some techniques for trouble-free printing.

Printing 1-2-3 release 2.x worksheets is simple—as long as all your rows and columns fit on one page. Select */Print Printer* to access the print menu, choose *Range*, move the cell pointer to one corner of the range, press **<Period>**, paint the range, and press **<Enter>**. Then select *Align* to indicate the beginning of a new report, *Go* to begin printing, and finally, *Page* to eject the page. Don’t neglect the *Align* command: It tells 1-2-3 that you’re beginning a new report, and leaving it out will result in misaligned page breaks in your second printout.

### Small Is Beautiful

This procedure works well as long as your print range fits within the screen width. With standard top and bottom margins and page length, 1-2-3 prints up to 56 rows on one sheet; additional rows go on an additional page.

The 1-2-3 screen is 72 characters wide—exactly the same as a page with standard margin settings at 4 and 76. This setup is just right for 8½-inch pages at 10 characters per inch. If you center something on the screen, it will be centered on the page.

### Getting Bigger? Squeeze It!

But what if the range you want to print is wider than 72 characters? You have

several alternatives: The simplest is to use a wide-carriage printer. On 14-inch-wide paper, each line can hold up to 140 characters. Use */Print Printer Options Margins Right* to set the right margin to about 132. With the left margin at 4, you’ll be able to print a range up to 128 characters wide.

If you can’t make the page bigger, make the print smaller. Let’s say your printer’s compressed mode yields 17 characters per inch with a maximum line length of 137 characters. Use */Print Printer Options Margins* to set the left and right margins to, say, 10 and 134.

If your printer is equipped with font selection buttons, use them to select the compressed font; if not, use */Print*

## SPREADSHEET TOOLBOX

### What WAS in Your Last Worksheet?

*WAS: The Worksheet Archive System* fills an important niche for companies that rely on large 1-2-3 worksheets for mission-critical record keeping. It lets you maintain an audit trail of changes in a worksheet, without wasting disk space by saving successive generations of the worksheet.

A WAS archive stores a map of the current worksheet; after editing and resaving the worksheet, you append the new version to the archive. WAS records just the changes, along with the date of the changes and notes, such as who made them. At any point, you can quickly compare the current worksheet with the previous version, or even recon-

struct any of the successive versions in a new WK1 file.

WAS is a stand-alone program with a simple, 1-2-3-like interface. It’s most valuable for large, static worksheets; if your worksheets change their structure frequently, the significant changes will soon become lost in a swarm of irrelevant ones. But if accuracy and accountability are critical, using WAS could become an important step in your organization’s procedures.  
—Richard Scoville

**WAS: The Worksheet Archive System** \$79.95; TRM Computers, 2106 Arborview Blvd., Ann Arbor, MI 48103; 313/994-6289

Reader service no. 606

*Printer Options Setup* and enter the appropriate printer command string. For most dot matrix printers, try \015; for LaserJet printers, use \027E\027

(s16.66H. For information on command strings used for landscape printing, see *PC World's Instant Reference Card* for 1-2-3, August 1990.

### Managing Multipage Reports

Some print ranges can't be squeezed onto one page but must be arranged into a multipage report. As **FIGURE 1** shows, if the print range is wider than the current margin settings will allow, 1-2-3 "slices" the worksheet into pages. So far, so good, but some pages will inevitably lack the labels needed to identify their contents.

With the *Borders* command, you can duplicate the labels in designated rows and columns at the top and left of each page of the report. To set the border row(s), place the cell pointer in the top row of labels and select */Print Printer Options Borders Row*. Use a similar procedure to set the border column(s); select */Print Printer Options Borders Columns*. Next, set the print range so that it doesn't include the border rows and columns (see **FIGURE 1**).

On a multipage report, you'll also want to include a header and/or footer to indicate the page number and to present other information. Select */Print Printer Options Header (or Footer)* and enter the header text. Use the vertical bar character (|) to split the header text into flush-left, centered, and/or flush-right parts; use # to include the page number and @ to include the current date. For example, the header line **PCW, Inc. | | page #** produces the header shown in **FIGURE 1**.

Finally, you can control the report's page length using page breaks. To make a row in the print range appear at the top of a new page, place the cell pointer in that row in the leftmost column of the print range, and then select */Worksheet Page. 1-2-3* inserts a row and places a special page break character in the cell (|:). The new row doesn't appear on the printed report.

As bewildering as 1-2-3's print commands can seem to novices, they are really quite logical and consistent, once you understand the basics. ●

*Richard Scoville and Ralph Soucie are contributing editors for PC World.*

## EXCEL SHORTCUT

### Create Cell Names Quickly in Excel

Ralph Soucie

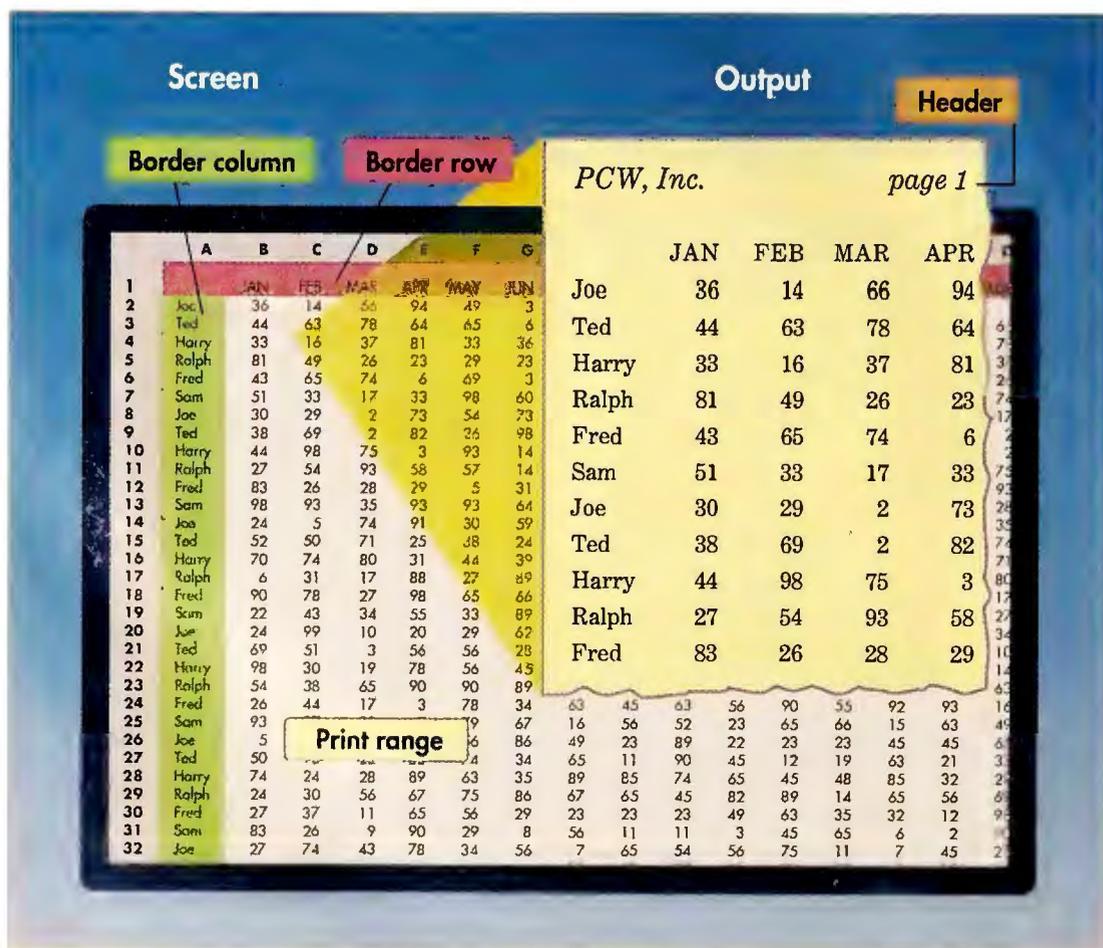
Excel's *Formula Create names* command is a handy way to assign meaningful names to a range of cells en masse. It's especially useful when you have a rectangular range with text labels at the left and at the top.

Let's say you've got a worksheet that breaks down sales figures by month and state for the Midwest region in the range A1:K10, with text labels for the states in column A and for the

months in row 1. Simply select the entire range A1:K10, select *Formula Create names*, select the *Top row* and *Left column* options in the dialog box, and click *OK*. That's all it takes.

This makes building formulas much easier. If row 9 is labeled *Minnesota* and column J is labeled *October*, formulas can refer to cell J9 as simply *Minnesota October*.

## Using 1-2-3's Borders Command



**FIGURE 1:** Using the *Print Printer Options Borders* command, you can retain row and column labels on each page. Make sure the print range does not overlap the border rows and columns.

# Data Basics



Data Management

## Tips and techniques for managing your data

This month: structuring an efficient mailing list

Steve Cummings

**W**hether you run a corporate marketing campaign or a seat-of-the-pants mail-order business from your home, your direct-mail program is a key element in the enterprise's overall success. You'll get a lot more mileage from the software—and avoid time-consuming design overhauls down the road—if you plan your mailing list data base carefully at the outset.

Start by thinking through your overall mailing strategy. It's not wise to send every ad or newsletter to everyone on your list—you'll save money by targeting mailings to specific groups. To do this, you'll need additional information about the people and companies on your list, such as their income level and previous purchase patterns.

Once you know what you want, write down the specific fields your data base should contain and how large each field should be. Divide distinct items into

separate fields—even if you won't use them right away. Here are some more tips for designing a mailing list data base:

- Create separate fields for the first and last name. Your data base program can't sort the names *Charles M. Jones* and *Fred Avery* by last name, and you'll alienate customers with letters that begin *Dear Mr. Freleng, Fritz*. Allow 25 characters for the last name and 15 for the first name and middle initial. A 4-character field will suffice for the title (Mr., Ms., and so on).
- Add a field for the recipient's formal title, and another for his or her company, university, or other affiliation. Assign 40 characters for each.

- You'll need more than one field for the street address, as some require additional lines for building numbers, department names, and other details. As a rule of thumb, two 40-character fields will do for a data base of home addresses, three for business destinations.

- For full sorting and selecting flexibility, use separate fields for city, state, and ZIP code. Allow 25 characters for the city field to avoid trouble with names like *Bellefontaine Neighbors*.

- A comments field lets you keep notes on your customers. Many data base programs offer variable-length memo fields for this purpose, giving you plenty of room to write. If your data manager lacks memo support, use a text

## PARADOX SHORTCUT

### Please Squeeze the Field

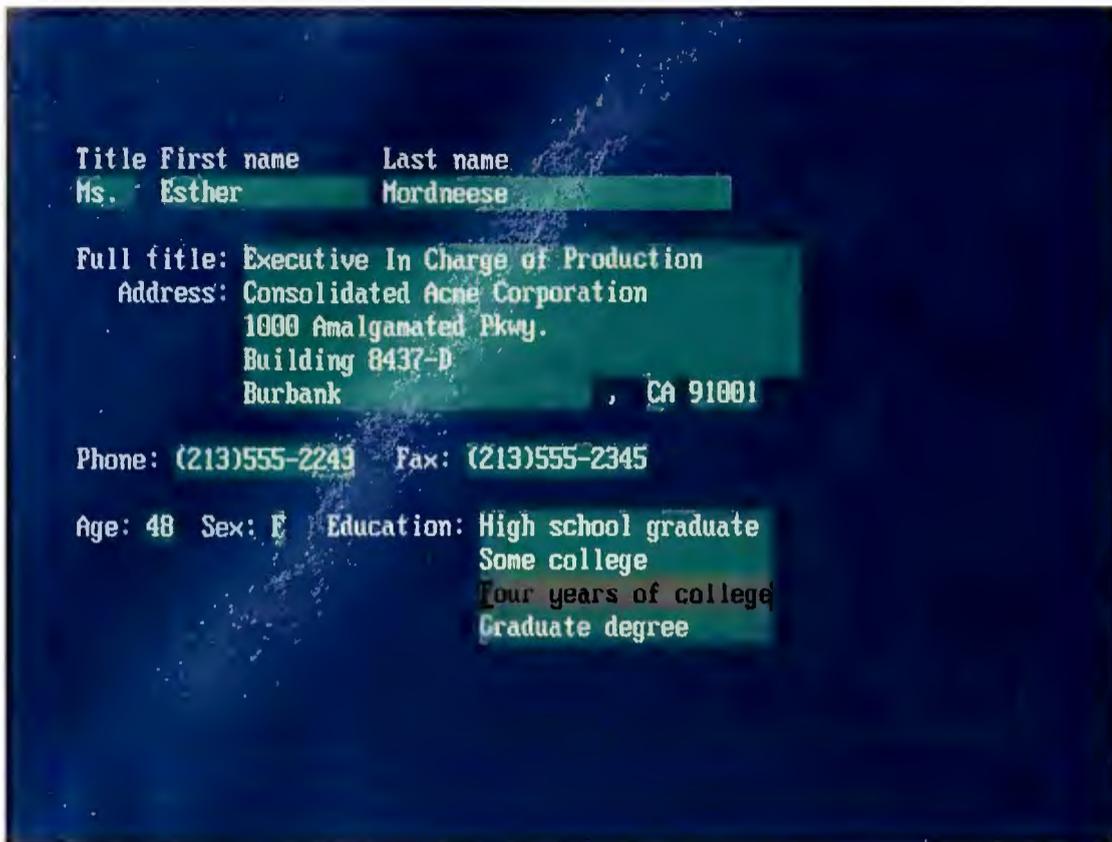
*Celeste Robinson*

How do you strip out the excess blank spaces when printing *Paradox* reports? You don't want reports with names like:  
Eva        Howard-Simpson

The easiest way is with the FieldSqueeze option. Place the First Name and Last Name fields side by side in a report form, with one blank space between them. With the cursor on the First Name field, press <F10>, and select *Setting RemoveBlanks FieldSqueeze Yes*. From then on, there will always be one space—and only one—between the names.

If you're short on space, FieldSqueeze has drawbacks.

For instance, if you must print names in a 35-character box, you won't have room for a 15-character First Name, a space, and a 25-character Last Name. Making the two report fields shorter than their table fields will result in truncated names whenever a first or last name is long, even when the combined name fits in 35 characters. The solution? Use a calculated field in place of the other two. To create this field, press <F10>, select *Field Place Calculated*, type **[First Name]** + " " + **[Last Name]**, and press <Enter>. Only combined names longer than 35 characters will be truncated.



SCREEN 1: During data entry, a demographic data field like Education should be restricted to a few choices. Most data base programs offer a way to do this; some let you create pop-up menus.

field of about 200 to 300 characters.

- Any chance you'll be calling the people on your list? If so, you'll want one or more telephone fields (you may also need one for a fax number). The area code should go with the number, bringing the minimum length for the field to 10 characters.

### Getting the Demographics

For selective mailings, you'll need to know more than names, addresses, and telephone numbers. Demographic data that describes your customers' age, sex, income, and education can help you decide whom to mail to. If you're selling to a corporate or institutional client, consider fields for the customer's primary business, number of employees, and sales volume.

Consistency is important with demographic data. It won't do to list one customer's education as *Four years of college* and another's as *Bachelor's degree*. Almost all data managers offer some way to restrict a field's contents to a set of choices, and most let you pop up multiple-choice pick lists so users can merely select from a menu (see SCREEN 1). Find out how to do this in your program,

and set up your fields accordingly.

Information on recipients' past dealings with your organization is even more critical. Which products or services have they purchased from you?

How much have they spent? Have they responded to previous mailings?

When you move to this level of complexity, a relational data base proves its worth over a flat filer. Because each customer can make any number of purchases, customer and sales information must be kept in separate tables. Only a system that can *relate* one table to another can look up a customer and his or her past purchases in a separate table.

Don't worry too much about having to change your mailing list design later. You can always add, delete, or reformat fields if you need to. Still, careful planning will help you avoid any wholesale restructuring and ensure that your data base contains all the information you need for effective direct mail. ●

*Steve Cummings is the author of Mastering Quicken (Sybex, Alameda, California, 1990). Celeste Robinson is the author of The Best Book of Paradox (Howard W. Sams and Company, Carmel, Indiana, 1990). Lincoln Spector is an assistant editor for PC World.*

## DBASE SHORTCUT

### The Two-Name Game

*Lincoln Spector*

When using separate fields for first and last names on your mailing list, the dBASE TRIM() function removes the unwanted blanks from the end of text fields. For instance, if you have a 15-space FName field, using the statement `FName + LName` for a report column's contents will print out this way:

Carla Stevenson

That's not the way to win new customers. If you use `TRIM(FName) + ' ' + LName`, however, all those unwanted spaces

will disappear. (The " + ' ' + " is needed to make sure one space remains between the names.)

When indexing, you'll want the last name first. Here, TRIM() isn't needed, since you're not concerned with the look of the index key, and the extra spaces don't affect the order of your sort—a simple `INDEX ON LName + FName TO Cu_name` will suffice. But if you're printing a list of names, last name first, use TRIM(), as in `TRIM(LName) + ' ' + FName`.

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Circle 33 on reader service card

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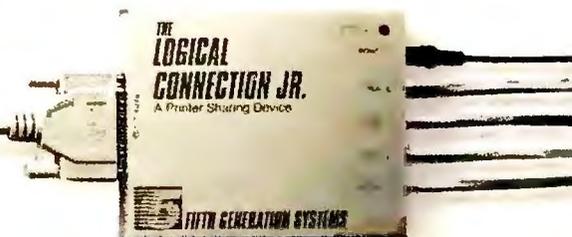
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# The Art of Persuasion



Publishing & Graphics

## Expert advice for creating high-impact documents and presentations

This month: making your documents picture perfect, and printing edge-of-the-page graphics with PageMaker

Richard Jantz

Sometimes, the easiest way to help employees or clients get the picture is to give them one. *Pictorial graphics* add life to text-heavy pages and help reinforce your document's message. Whether you're adding employee mug shots to an office newsletter or simple diagrams to a technical manual, the pictures you use play a big part in your document's success.

There are plenty of ways to get pictures into your documents and onto the page. You can create your own with programs like *Corel Draw* or *Publisher's Paintbrush*, or import ready-made images via a scanner or clip-art collection. You can print the images on the office laser or take them to a print shop for manual pasteup. No matter what meth-

ods you use, you'll need to choose an effective strategy for placing pictures on the page.

First, consider how readers will actually view your document. If your pages are bound and printed on both sides, treat each *spread* (opposing left and right pages) as a single unit, and lay out your pictures accordingly. Select pictures appropriate to your company's identity and the document's style and content. And finally, don't lard your document with images; if they don't help make your point, leave them out.

Here are some tips for placing and manipulating pictures.

- Formal business documents like training manuals demand a conservative tone. Keep pictures inside the page

margins and align them consistently throughout.

- With less formal documents like newsletters, you can be more creative. Occasionally, positioning a picture to overlap the margins and gutters (spaces between columns) helps grab the reader's attention. For a three-dimensional effect, add a *drop shadow* (shaded box) under the picture.

- For dramatic impact, you can *bleed*, or extend, an image to the edge of the page, or tilt it at an angle. However, both effects may require manual paste-up, since laser printers can't print to the edge of a page and DTP programs can't tilt imported graphics.

- With multicolumn documents, picture width should correspond to col-

## You Oughta Be in Pictures

**FEATURE: Demystifying Snakes**

(Continued from page 3)

As a child growing up in southern Louisiana, I disliked snakes with a passion. But my discomfort in seeing them slither across a neighborhood field never stopped me from seeking out their caged bababats whenever I went to the local zoo. I was particularly curious, and not just a little bit anxious, about the manner in which snakes devoured their meals.

around me and pulverizing each of my bones with chiropractic precision before swallowing me within minutes. It's also doubtful that I would have ever set foot in a zoo again.




If anyone had told me back then that I would someday learn how to handle an adult boa constrictor—*Constrictor constrictor*, a member of the largest snake family in the world—I would have imagined the beast coiling itself

It wasn't until I began to study biology in college that I heard a herpetologist explain that much of what I thought I knew about snake behavior was, in fact, nothing more than a lot of fanciful lore gathered over the centuries. Since

then, I have come to regard the 2,700 species of snakes known to exist in the world today with much more appreciation and respect. But for most people, snakes are still a misunderstood species.

**THREE MYTHS DISPELLED:** Boa constrictors (above) are not poisonous. The most poisonous snakes in the world are found not in Africa or the Americas but in Australia. Although most people abhor the sight of a dangling snake, few snakes will attack humans unless provoked.



**The Snake Families**

The four principal snake families are the *Boidae*, the *Colubridae*, the *Elapidae*, and the *Viperidae*. The *Boidae* family contains the largest and the most primitive of all snakes.

The Natural News

**FIGURE 1: Pictures make your documents both livelier and more informative. This newsletter employs an asymmetrical layout, with pictures of different shapes and sizes, for greater visual impact. The headline is actually a Corel Draw graphic that's been bled to the top of the page (see "Nuts & Bolts" for a tip on how to achieve this effect).**

## NUTS & BOLTS

### Taking PageMaker Graphics to the Edge

A good way to add pizzazz to a pedestrian layout is by *bleeding*, or extending, a graphic to a page's outside edge. Bleeds can be used for simple design enhancement or for practical purposes, such as creating margin tabs to guide readers through a document.

But printing a bleed isn't easy. Even if you set the page margins at 0.00 inches, a laser printer automatically surrounds the page with a thin blank border. However, *PageMaker* users can employ a simple trick to create customized bleeds on the top

and bottom of letter-sized pages (though not the sides or the corners). Here's how.

Set up your *PageMaker* document for a letter-sized page, and place the graphic so it overlaps the top or bottom edge. When you're ready to print, change the page setup to legal-sized, print the final copy on 8½-by-14-inch paper, and use a paper cutter to trim the excess. To make the job even easier, you can add dotted lines as a guide for trimming the page. —R. J.

## DESKTOP PUBLISHING TOOLBOX

### An Image Manager With a View

You know how tough it is to find the right illustration, scanned image, or other graphics file on a deadline. Now you can reach for Image-In's \$99 *Panorama* and organize your image library into an on-line catalog.

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file format, and print out catalog text (but not images). To import a graphic, simply use the *Edit* menu to copy the file name to the Clipboard, then paste it into your document.

*Panorama* supports many popular graphics file formats, but not CGM or EPS. Unless you need to print a lot of PostScript graphics, *Panorama* gives you the big picture on your image library. —R. J.

**Panorama** \$99; Image-In, 406 E. 79th St., Minneapolis, MN 55420; 800/345-3540, 612/888-3665.

**Reader service no. 601**

umn width. In other words, pictures in a three-column newsletter should be one, two, or three columns wide.

- In a single-column document, place horizontal (wide) pictures at the top or bottom of a page, and vertical (tall) ones flush with the left or right margin. If a picture is less than half a column wide, wrap text around it or place a caption next to it. If the picture is wider than half a column, leave the area next to it empty. Avoid centering a picture with white space or text on both sides—a single block of space or text works better.

- When using several pictures on a page, make the most important image the largest. An exception to this rule: photos of speakers or employees of equal status.

- Symmetry is essential for designing airplanes, but it gets boring fast when you design documents. Instead of using the same size, shape, and placement for all your pictures, use asymmetrical layouts with contrasting shapes and sizes, as shown in **FIGURE 1**.

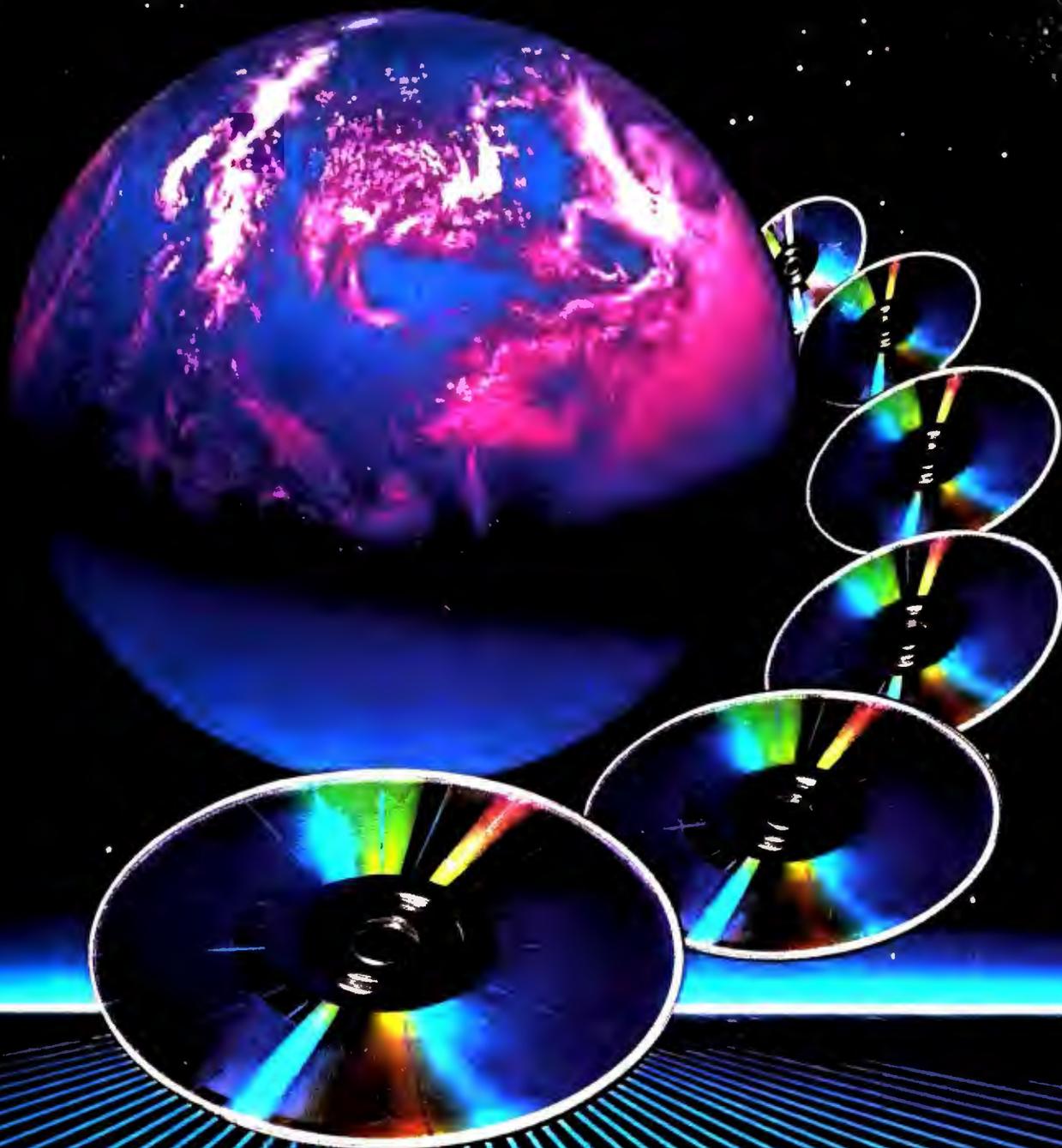
- Always consider the content of a picture when deciding its location. If a picture features a person facing toward the right, place it on the left side of the page to direct the reader's eyes toward the relevant text on its right.

- Pictures are usually more effective after they've been *cropped*, or trimmed to emphasize their most important details. For example, if your publication includes a series of photo portraits, cropping or resizing them so the faces match in size and eye level will produce a more balanced layout.

Finally, proofread your publication to ensure that each image is placed near related text and the captions match the pictures. And don't hesitate to drag out that old precomputer tool, the hand ruler, to check a picture's position and alignment. ☺

PC World contributing editor Richard Jantz is the author of *Ventura for Windows 3.0* (John Wiley & Sons, New York, 1991).

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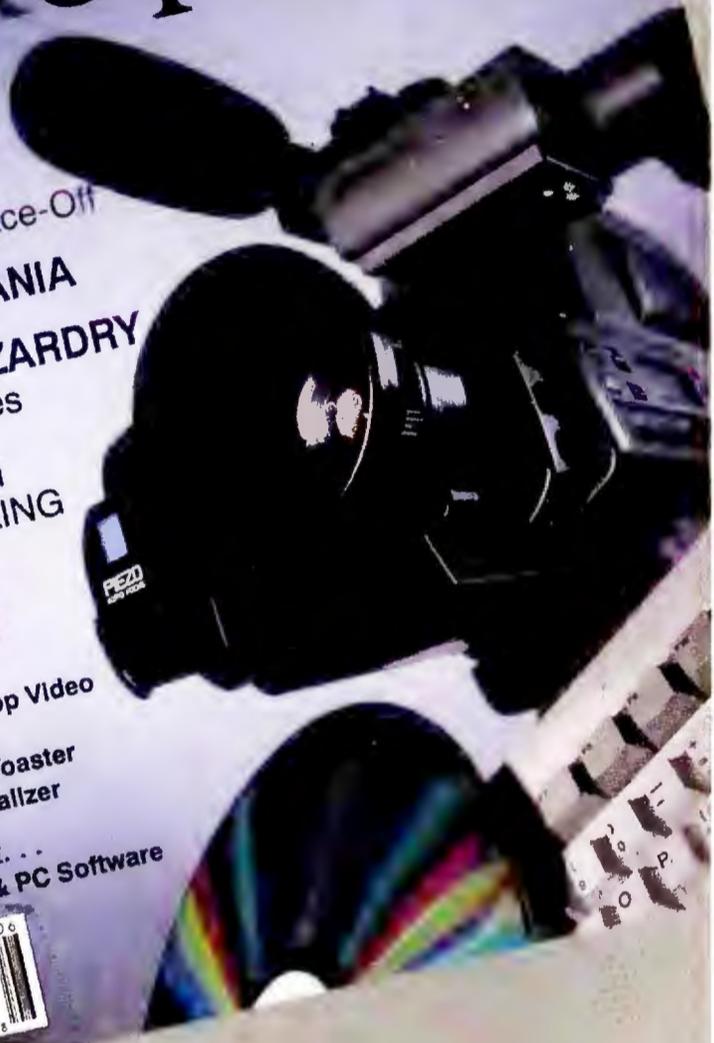
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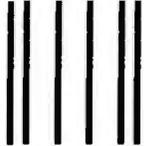
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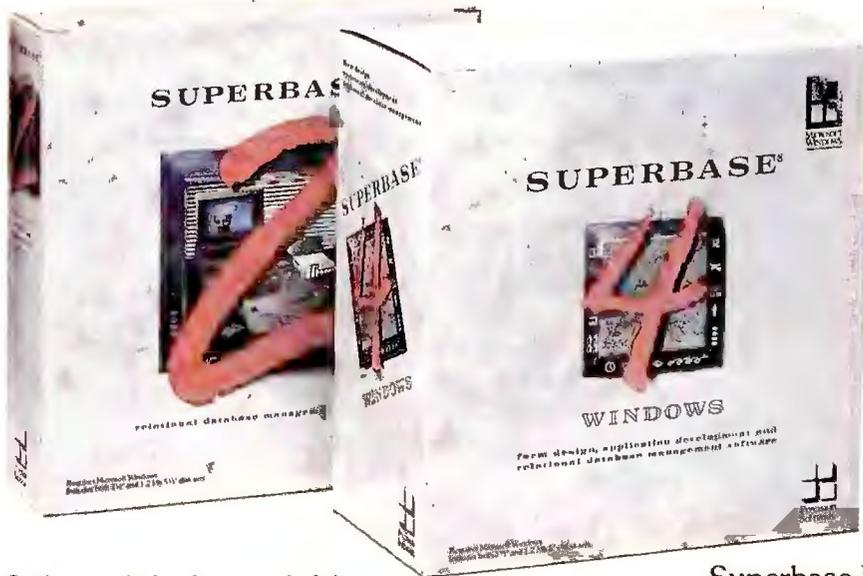
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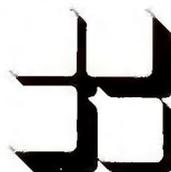
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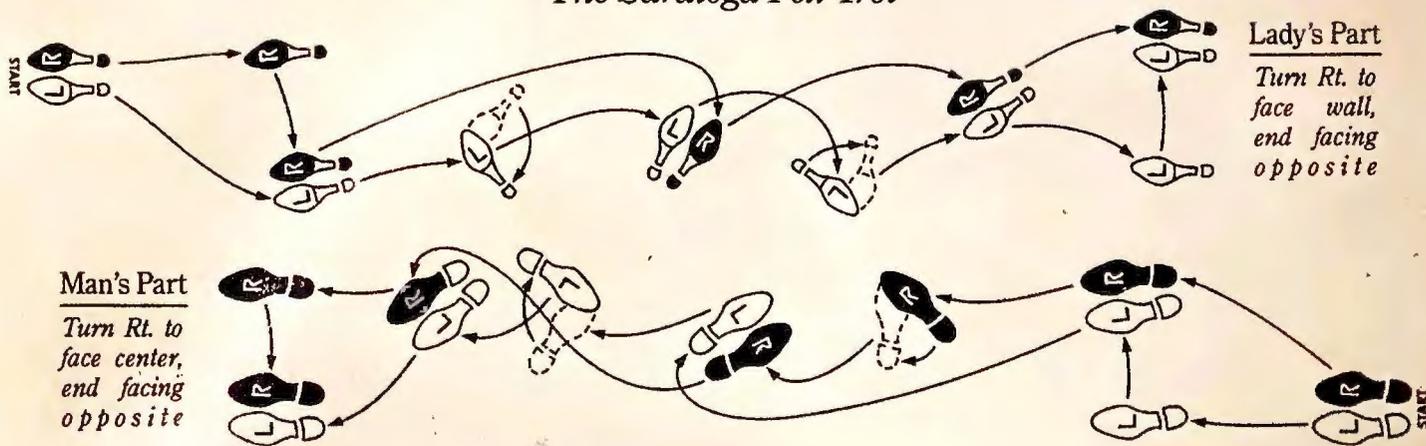
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COMFRO	VAX Mail	47	10-24-90 10:11a
CREATIVE	Downloads to the CS Mac System	7	10-24-90 1:15p
CSEERVE	CompuServe	38	10-24-90 3:01p
DENVER	Denver Accounting Dept.	13	10-23-90 2:33p
DOWJONES	Dow Jones News/Retrieval	27	10-23-90 11:45a
HOME	Home PC	16	TODAY 8:28a
IBM	PROFS E-mail	36	10-24-90 8:18a
LEXIS	Lexis/Mexis via Headnet	36	TODAY 1:17p
NORMAL	Default settings for new entries		
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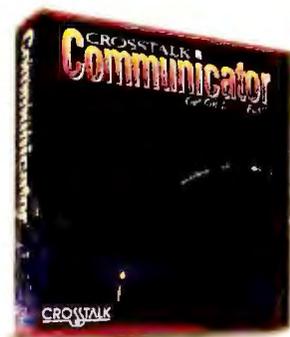


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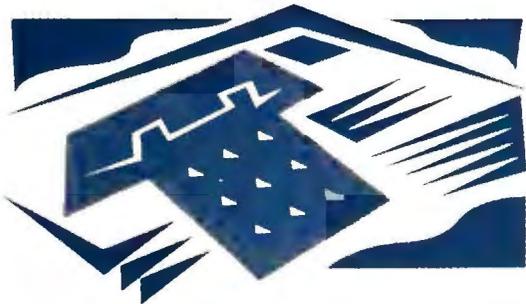
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# The Information Edge



Communications

## On-line resources for business and professional users

This month: Join in a freewheeling global town square with Usenet, the largest network in the world, and polish your financial portfolio with Telescan.

*Judy Heim*

If Big Brother exists, he must spend many a sleepless night worrying about Usenet. This anarchic global information network is a celebration of free speech, unmuzzled information flow, and everything else that would curl the toes of a totalitarian.

No central organization owns or governs Usenet, yet the network grows and grows of its own momentum, linking universities, corporations, research centers, nonprofit groups, government agencies, hospitals, and public-access BBS's. No one knows for sure, but it has been estimated that Usenet has 33,000 nodes and more than 6 million users, making it the largest computer network in the world.

Few countries are safe from Usenet,

not even the Soviet Union, although several governments attempt to censor its content. Its corpulent bit stream snakes around the world and swells with each passing month, causing nodes to crash from overload and fueling speculation that the network itself is on the verge of tumbling.

### A Focus on Computing

Usenet began a decade ago as a forum for academic UNIX hackers and evolved into a more general conferencing system. It's chatty and clamorous, and its users don't suffer from lack of contentiousness. Over 650 public conferences are available, but the exact number ebbs and flows according to the whims of the users. Conferences are created or dissolved with a haphazard democracy—sometimes users vote, sometimes they lobby, occasionally someone just barges in and creates a new one.

Usenet's primary focus is still computers, with conferences for every programming language, computer, and popular application in existence. UNIX is still the chief topic, but more and more of the conferences focus on *Windows*, personal computers, and public domain software. Software libraries are also available.

Next to computers, science is the main draw, with many international debates devoted to hot topics like scientific ethics. Usenet is also a hotbed of debate on social and political issues, such as Middle Eastern politics, and there's the usual mix of hobbyist groups devoted to travel, cars, science fiction, and other such topics. Currently there are few business-specific conferences, but the one containing job listings is extremely popular.

Although Usenet per se does not offer the ability to send private E-mail, many Usenet nodes offer links to the interna-

tional E-mail network Internet, which lets you send mail to just about any E-mail address in the world, including to MCI Mail addresses and Compu-Serve users.

So how do you tap in? If you lack access to a business or academic computer that's already tied into Usenet, you'll need to seek out one of the roughly 100 public-access Usenet systems that have cropped up across the United States over the last few years. These systems range from casually run BBS's that offer a sprinkling of Usenet conferences to commercial on-line services like Portal that provide close to the full deck.

Most of the services are blighted by Usenet's own menuless UNIX interface, but Usenet's excellent built-in help makes navigation reasonably easy. A typical service is the Milwaukee Information Exchange, which offers the com-

## ON-LINE SHORTCUT

### Don't Compress Compressed Files

If you own a modem with built-in data compression (MNP-5 or V.42bis), be sure to turn off the compression when downloading files that have already been compressed with utilities, such as ARC and ZIP. Sending or receiving a previously compacted file with a data-compressing modem takes more time than transmitting that file without the compression. Check your modem manual for instructions on how to turn off your modem's compression. —J. H.

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Joel Tepp

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Downloading a single chart of data will run you about \$3—that includes a \$2 search surcharge, a 10 cent per-graph surcharge, and on-line costs that run \$36 per hour during prime time and \$18 per hour in the evening. That's a good deal compared to a quote vendor like Warner Data, where a two-year price history on a single issue runs \$3 to \$5. Telescan's only other charges are a \$25 annual fee and a \$1 to \$2 surcharge if you use the stock screening feature. For \$45 a month, you get

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plete gallery of Usenet conferences for \$5 a month. For \$10 a month plus Telenet access fees, Portal offers a menu front end, but it's not much of an improvement over UNIX.

If you represent a business or institution that wants to acquire a direct Usenet feed, contact UUNET Technologies in Falls Church, Virginia, at 703/876-5050 (voice). Individuals should

check local PC or UNIX user groups to find the closest Usenet system. Here are a few: Chinet, Chicago, 312/283-0559 (data); Magpie, New York, 212/420-0527 (data); Ozdaltx, Dallas, 214/247-2367 (data); People-NET, Minneapolis, 612/473-2295 (data); Polari, Seattle, 206/367-3837 (data); Portal, Cupertino, California, 408/973-9111 (voice), 408/725-0561 (data); The Milwaukee Infor-

mation Exchange, 414/241-5469 (data).

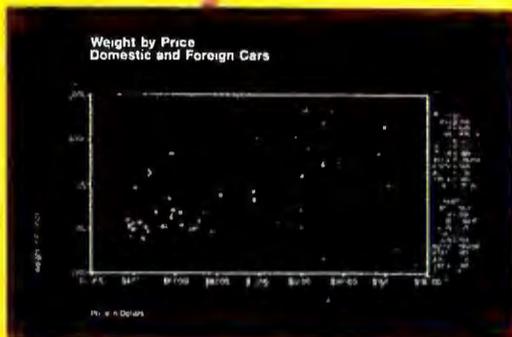
Computers? Science? Politics? You name it. If you want to know what's *really* happening around the world, Usenet is highly recommended. ☺

*Judy Heim is a contributing editor for PC World. Joel Tepp is a broker with Bateman Eichler, Hill Richards in Seattle, Washington.*

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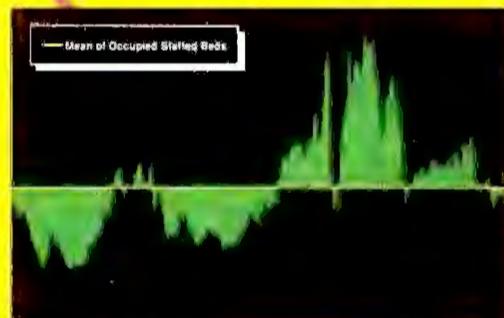
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**Circle 3 on reader service card**

# User Group Tips

## Helpful hints from members of the nation's user groups

### SHARE Clears Up Problems When AutoCAD Runs Under DOS 4.xx

I recently upgraded from a PC running DOS 3.3 matched with a 30MB hard disk to a machine using DOS 4.01 and an 80MB hard drive. On my old machine, *AutoCAD 10* was heavily customized to incorporate symbol insertion through my tablet menu. Problems cropped up as soon as I moved my *AutoCAD* system to the single 80MB partition. For instance, the INSERT command would produce a 'cannot open file' message when I tried to access a symbol located outside the current directory. I consulted with other experienced *AutoCAD* users without success, and all my experimentation was fruitless until I heeded the system boot-up message warning that SHARE must be loaded for large partitions. Like a lot of people who aren't on a network, I'd always ignored the message because I didn't want to give up a piece of conventional RAM to another memory-resident program. But as soon as I placed the line `install=c:\dos\share.exe` in my AUTOEXEC.BAT file and rebooted my computer, my *AutoCAD* problems disappeared. So the common wisdom that SHARE is just for networks isn't so wise when using *AutoCAD 10* in a large partition under DOS 4.01. *AutoCAD* uses a lot of temporary files, so to avoid further eventual problems, place the line `fcbs=48,8` in your CONFIG.SYS file. This instruction allows *AutoCAD* to access up to 48 temporary files and requires DOS to keep 8 of them open.

Ranjit S. Sahai

Capitol PC User Group

### A Little Bit More

"MORE Automation" in October's *User Group Tips* can be improved. The suggested command `type filename | more` is a slow, inefficient way to use MORE to present a text file a screenful at a time. It runs two commands and requires the creation of a pipe, causing disk writes and holding up the MORE invocation until the TYPE command is finished. The process is further slowed if you include this command in a batch file. It's more efficient in terms of keystrokes and time simply to type `more > filename`. This way, you achieve the same effect and run only one command without having to create a pipe.

Bob Weissman

Mountain View, California

### An Easy First Choice With Paradox

If you ask for a list of tables while you're viewing a *Paradox* table, that table will be listed first, and any action you request will happen to that table unless you specify otherwise. This "automatic first choice" arrangement can be useful. After a query, I often want to rename the Answer table to protect it from deletion when I exit *Paradox*. To do this the quick way, I press <F10> to bring up the menu, ↑ to select Tools, <Enter> twice to select Rename and Table, <Enter> again to display the list of tables, and <Enter> once more to select Answer, the automatic first choice. This sequence delivers me to the prompt to type in the new name for the table.

Brian J. Smith

Southern California Paradox Users Group

### Speed Loading in Ventura Publisher

If you're using a 286 or slower machine to work on several large chapters in *Ventura Publisher 2.0*, you can speed loading by saving each chapter in a separate

subdirectory along with its own VP.INF file. By default, *Ventura* saves VP.INF in the Ventura subdirectory, and each time a new chapter is loaded, *Ventura* overwrites the existing VP.INF, thereby slowing the process. But you can save VP.INF in any subdirectory you wish by using a command line switch.

You'll need to alter the line in VP.BAT that contains the DRV MRGR command to include the variable %1, which will represent the path of the subdirectory containing the chapter you wish to load, and the variable %2, which will represent the chapter you wish to load. Then your DRV MRGR line will begin with `DRV MRGR VP %1\%2 (DRV MRGR VPPROF %1\%2` with the Professional Extension) and be followed by the switches for your screen driver and mouse. At the end of the line, place the switch `/I=%1`, which will force *Ventura* to save the INF file in the subdirectory containing your chapter file. When you load *Ventura*, begin the command with `vp` (or `vpprof`, depending on your version), followed by the path, a space, and the file name of the chapter you want to work on. *Ventura* Software recommends that you always work from your hard disk, and unfortunately this speed-loading technique won't work with chapter and INF files created on a floppy disk.

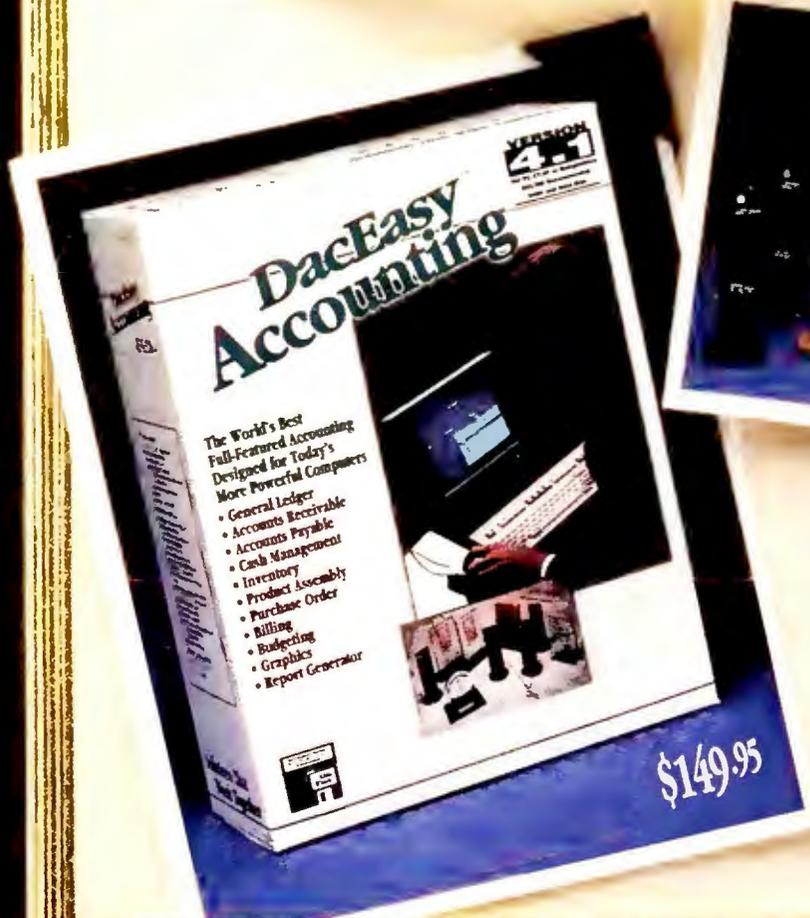
Paul Stephen

Newsletter Editor

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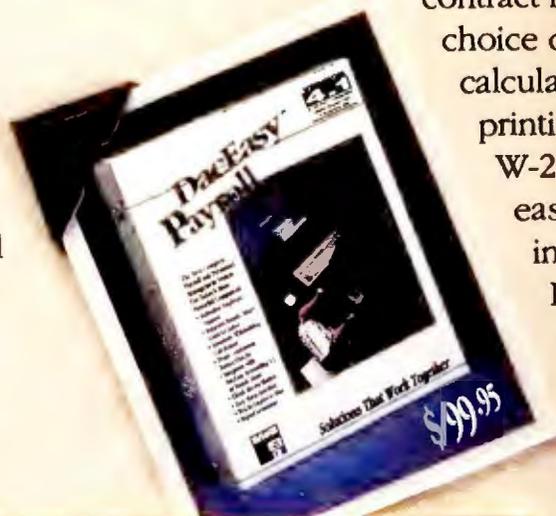
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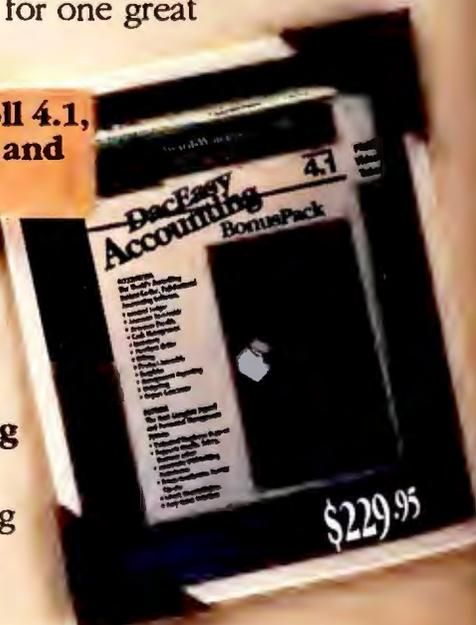


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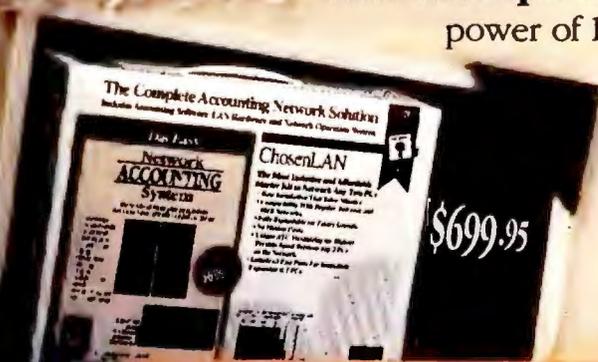


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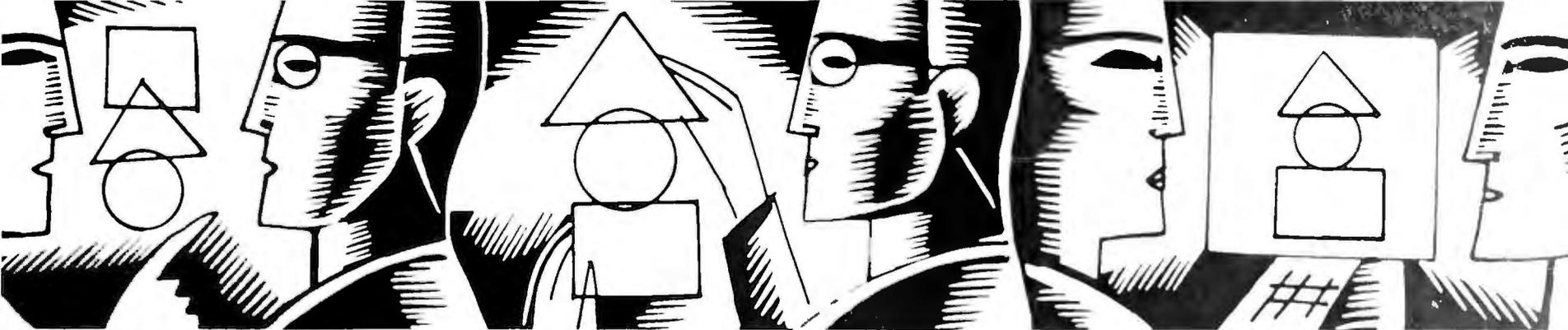
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Use Turbo Pascal to create a one-shot DOS prompt for Windows, profile BASIC code for faster performance, read key presses in batch files, and check out a macro that adds check boxes to WordPerfect documents.

*Edited by Tom Swan*

#### One-Shot DOS Prompt for Windows

I'm a *Windows* fan, but I miss having a DOS prompt immediately available. When I need to type an ASCII file or list a directory, I use a *Turbo Pascal* program, ONESHOT.PAS [see LISTING 1]. The program works like Program Manager's and File Manager's RUN options but is easier to use and recognizes built-in DOS commands like DIR and COPY.

*C. D. Pirkey*

*St. Louis, Missouri*

*commands, that window will stay open until you close it. ONESHOT is ideal for any once-and-done DOS command.*

*I added several extensions to Mr. Pirkey's original submission. Like COMMAND.COM and the PROMPT \$P\$G command, ONESHOT displays*

*the current directory within the command prompt. A double greater-than symbol (>>) reminds you that this is not the usual DOS prompt. After you type a response, ONESHOT executes built-in DOS commands directly. For other commands, ONESHOT searches* (continues)

```

($M $2000,0,0 )
program OneShot;
uses crt, dos;
const
  DOSCMDS =
    'BREAK CHDIR CD CLS COPY CTTY DATE DEL DIR EXIT ' +
    'MKDIR MD PATH PROMPT RENAME REN RMDIR RD SET ' +
    'TIME TYPE VER VERIFY VOL';
var
  i : integer;
  command, name, options : string;
begin
  getdir(0, command);
  write(command, '>>');
  readln(command);
  for i := 1 to length(command) do
    command[i] := upcase(command[i]);
  i := pos(' ', command);
  if i = 0 then i := length(command) + 1;
  name := copy(command, 1, i - 1);
  options := copy(command, i + 1, 255);
  if pos(name, DOSCMDS) = 0 then
    begin (- Not a DOS command. Search PATH. )
      command := name;
      name := fsearch(command, getenv('PATH'));
      if length(name) = 0 then
        name := fsearch(command + '.COM', getenv('PATH'));
      if length(name) = 0 then
        name := fsearch(command + '.EXE', getenv('PATH'));
      if length(name) = 0 then
        name := fsearch(command + '.BAT', getenv('PATH'))
    end;
  swapvectors;
  exec(getenv('COMSPEC'), '/C ' + name + ' ' + options);
  swapvectors;
  gotoxy(0, 24);
  write(#13#10'DOS error = ', doserror, ', exit code = ');
  write(dosexitcode, '. Press <Enter>...');
  readln
end.

```

LISTING 1: Compile ONESHOT.PAS using Turbo Pascal 5.5 or 6.0 to create a one-shot DOS prompt for Windows.

*Editor's note: Although you can open a DOS Prompt window to issue DOS*

the current PATH for a COM file, an EXE file, or a BAT file, in that order. You can override this search order by including the file name's extension—MYPROG.EXE, for example.

After compiling ONESHOT with Turbo Pascal 5.5 or 6.0, open File Manager, locate ONESHOT.EXE, and drag it to a Program Manager group window. To use ONESHOT, select its icon and type any DOS command or program name at the resulting prompt. After the command finishes, ONESHOT reports the current DOS error- and exit-code values, or '0' if no problems were detected. Press <Enter> to return to Windows.

If ONESHOT's window stays visible, press <Alt>-<F4> to close it, start the Windows PIF Editor, open \_DEFAULT.PIF, and then check the box labeled 'Close Window on Exit'. After you have made this change, ONESHOT's window will disappear automatically.

**BASIC Profiles**

To time BASIC routines, I wrote PROFILE.BAS [see LISTING 2]. The program runs a profiling subroutine that times up to 100 elapsed repeats of any instruction.

To profile a program, copy the subroutine (lines 9000 through 9250) to your own code. (Lines 1100-1999 are included here only to demonstrate the profiler.) Near the beginning of your program, dimension an array PFACCUM!(100), set PFPOINT% to 0, and execute GOSUB 9000 as PROFILE.BAS does at lines 1100 through 1200. Then, at strategic locations, set PFPOINT% to a number between 1 and 99, and execute GOSUB 9000. (See lines 1250 through 1600 for examples of these steps.) The profile numbers do not have to be in sequence.

To display results for profiled points, set PFPOINT% to 100 or higher, and execute GOSUB 9000 as in line 1900. Once you have done that, any future

calls to the profiler subroutine will be ignored.

Precision is limited to the smallest fractions of seconds that TIMER provides. Short sequences may run so fast that they won't show in the report. Therefore, to profile a single statement, you may have to insert it into a FOR loop that cycles at least 1000 times.

Gil Gagnon  
Mississauga, Ontario, Canada

*Editor's note: Use the profiler's report to find where your code spends the bulk of its time. By optimizing the most heavily traveled sections, you'll gain the greatest speed advantage with the least amount of work.*

*Because PC clocks are imprecise, you may receive different results for the same program profiled twice in succession. For better accuracy, profile your code three or more times and average the reported values.*  
(continues)

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```

1100 DIM PFACCUM!(100)
1200 PFPOINT% = 0: GOSUB 9000
1250 PRINT "Test loop #1"
1300 FOR N = 1 TO 10000 : NEXT N
1400 PFPOINT% = 1: GOSUB 9000
1450 PRINT "Test loop #2"
1500 FOR N = 1 TO 5000 : NEXT N
1600 PFPOINT% = 2: GOSUB 9000
1900 PFPOINT% = 100: GOSUB 9000
1999 END
9000 IF PFFIRST% = 1 THEN GOTO 9050
9010 PFFIRST% = 1
9020 PFEND% = 0
9030 PFTIMELAST! = TIMER
9040 PFLBL$ = "Elapsed time for point"
9050 IF PFEND% <> 0 THEN GOTO 9250
9060 PFTIME! = TIMER
9070 IF PFPOINT% > 99 THEN PFPOINT% = 99
9080 PFACCUM!(PFPOINT%)=PFACCUM!(PFPOINT%)+PFTIME!-PFTIMELAST!
9090 PFTIMELAST! = PFTIME!
9100 IF PFPOINT% <> 99 THEN GOTO 9250
9110 PFEND% = 1
9120 FOR PFPOINT% = 1 TO 100
9130 IF PFACCUM!(PFPOINT%) = 0 THEN GOTO 9140
9135 PRINT PFLBL$; PFPOINT%; " "; PFACCUM!(PFPOINT%)
9140 NEXT PFPOINT%
9250 RETURN
    
```

LISTING 2: PROFILE.BAS tests the profiler subroutine at lines 9000 through 9250.

**Skeleton Key**

DOS lacks a batch-file command for reading key presses, so I wrote my own. KEY.COM is like a skeleton key that can unlock the keyboard for any batch file.

In a batch file, feed KEY a set of characters in commands like **key ynq** or **key 01234**. If you type just **key**, the characters default to YN.

KEY waits for you to type a character. The program sets ERRORLEVEL to 0 for the first character, 1 for the second character, and so on. For the command KEY YNQ, pressing Y, N, or Q sets ERRORLEVEL to 0, 1, or 2, respectively.

*Wong Choong Sheong  
Selango, West Malaysia*

*Editor's note: At the end of X-MAKER2.BAS (LISTING 3), add the DATA statements from LISTING 4. Run the result in BASIC to create KEY.COM, which you can copy to a (continues)*

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ASSETS

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TOTAL PROPERTY AND EQUIPMENT

OTHER ASSETS:

- Utility deposits
- TOTAL OTHER ASSETS
- TOTAL ASSETS

SALES

Sales discounts

TOTAL SALES

COST OF SALES:

BEGINNING INVENTORY

Purchases

ENDING INVENTORY

TOTAL COST OF SALES

GROSS PROFIT

SELLING EXPENSES:

- Salaries & wages - Sales
- Advertising
- Auto expenses
- Brochures & catalogs
- Freight & delivery
- Travel & entertainment

TOTAL SELLING EXPENSES

GENERAL & ADMINISTRATIVE:

- Salaries - Administration
- Bad debts expense
- Bank service charges
- Contribution expense
- Depreciation
- Dues & subscriptions
- Insurance - group health
- Insurance - general
- Legal & accounting
- Miscellaneous expense
- Office expense
- Postage expense
- Repairs & maintenance
- Supplies expense
- Taxes - payroll
- Taxes - real estate
- Telephone expense
- Utilities

TOTAL GENERAL & ADMINISTRATION

CUSTOMER INVOICE

INVOICE #

DUE

CURRENT

ACRD BALANCE

31 - 60

61 - 90

91 - 120

121 - 150

151 - 180

181 - 210

211 - 240

241 - 270

271 - 300

301 - 330

331 - 360

361 - 390

391 - 420

421 - 450

451 - 480

481 - 510

511 - 540

541 - 570

571 - 600

601 - 630

631 - 660

661 - 690

691 - 720

721 - 750

751 - 780

781 - 810

811 - 840

841 - 870

871 - 900

901 - 930

931 - 960

961 - 990

991 - 1020

1021 - 1050

1051 - 1080

1081 - 1110

1111 - 1140

1141 - 1170

1171 - 1200

1201 - 1230

1231 - 1260

1261 - 1290

1291 - 1320

1321 - 1350

1351 - 1380

1381 - 1410

1411 - 1440

1441 - 1470

1471 - 1500

1501 - 1530

1531 - 1560

1561 - 1590

1591 - 1620

1621 - 1650

1651 - 1680

1681 - 1710

1711 - 1740

1741 - 1770

1771 - 1800

1801 - 1830

1831 - 1860

1861 - 1890

1891 - 1920

1921 - 1950

1951 - 1980

1981 - 2010

2011 - 2040

2041 - 2070

2071 - 2100

2101 - 2130

2131 - 2160

2161 - 2190

2191 - 2220

2221 - 2250

2251 - 2280

2281 - 2310

2311 - 2340

2341 - 2370

2371 - 2400

2401 - 2430

2431 - 2460

2461 - 2490

2491 - 2520

2521 - 2550

2551 - 2580

2581 - 2610

2611 - 2640

2641 - 2670

2671 - 2700

2701 - 2730

2731 - 2760

2761 - 2790

2791 - 2820

2821 - 2850

2851 - 2880

2881 - 2910

2911 - 2940

2941 - 2970

2971 - 3000

3001 - 3030

3031 - 3060

3061 - 3090

3091 - 3120

3121 - 3150

3151 - 3180

3181 - 3210

3211 - 3240

3241 - 3270

3271 - 3300

3301 - 3330

3331 - 3360

3361 - 3390

3391 - 3420

3421 - 3450

3451 - 3480

3481 - 3510

3511 - 3540

3541 - 3570

3571 - 3600

3601 - 3630

3631 - 3660

3661 - 3690

3691 - 3720

3721 - 3750

3751 - 3780

3781 - 3810

3811 - 3840

3841 - 3870

3871 - 3900

3901 - 3930

3931 - 3960

3961 - 3990

3991 - 4020

4021 - 4050

4051 - 4080

4081 - 4110

4111 - 4140

4141 - 4170

4171 - 4200

4201 - 4230

4231 - 4260

4261 - 4290

4291 - 4320

4321 - 4350

4351 - 4380

4381 - 4410

4411 - 4440

4441 - 4470

4471 - 4500

4501 - 4530

4531 - 4560

4561 - 4590

4591 - 4620

4621 - 4650

4651 - 4680

4681 - 4710

4711 - 4740

4741 - 4770

4771 - 4800

4801 - 4830

4831 - 4860

4861 - 4890

4891 - 4920

4921 - 4950

4951 - 4980

4981 - 5010

5011 - 5040

5041 - 5070

5071 - 5100

5101 - 5130

5131 - 5160

5161 - 5190

5191 - 5220

5221 - 5250

5251 - 5280

5281 - 5310

5311 - 5340

5341 - 5370

5371 - 5400

5401 - 5430

5431 - 5460

5461 - 5490

5491 - 5520

5521 - 5550

5551 - 5580

5581 - 5610

5611 - 5640

5641 - 5670

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5821 - 5850

5851 - 5880

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5911 - 5940

5941 - 5970

5971 - 6000

6001 - 6030

6031 - 6060

6061 - 6090

6091 - 6120

6121 - 6150

6151 - 6180

6181 - 6210

6211 - 6240

6241 - 6270

6271 - 6300

6301 - 6330

6331 - 6360

6361 - 6390

6391 - 6420

6421 - 6450

6451 - 6480

6481 - 6510

6511 - 6540

6541 - 6570

6571 - 6600

6601 - 6630

6631 - 6660

6661 - 6690

6691 - 6720

6721 - 6750

6751 - 6780

6781 - 6810

6811 - 6840

6841 - 6870

6871 - 6900

6901 - 6930

6931 - 6960

6961 - 6990

6991 - 7020

7021 - 7050

7051 - 7080

7081 - 7110

7111 - 7140

7141 - 7170

7171 - 7200

7201 - 7230

7231 - 7260

7261 - 7290

7291 - 7320

7321 - 7350

7351 - 7380

7381 - 7410

7411 - 7440

7441 - 7470

7471 - 7500

7501 - 7530

7531 - 7560

7561 - 7590

7591 - 7620

7621 - 7650

7651 - 7680

7681 - 7710

7711 - 7740

7741 - 7770

7771 - 7800

7801 - 7830

7831 - 7860

7861 - 7890

7891 - 7920

7921 - 7950

7951 - 7980

7981 - 8010

8011 - 8040

8041 - 8070

8071 - 8100

8101 - 8130

8131 - 8160

8161 - 8190

8191 - 8220

8221 - 8250

8251 - 8280

8281 - 8310

8311 - 8340

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8401 - 8430

8431 - 8460

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8491 - 8520

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10/15/90	ELECTRIC CO. 2 REPT	344	45.64		
FOR Dragon Paper					
10/17/90	ACRE KITE PAPER 123 WINDY STREET SUITE 508 KITTYHAWK, USA 90000	345	1,090.00	1,090.00	

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```

10 DEFINT A-Z:CLS:KEY OFF:DEF FNHEX(X$)=VAL("&h"+X$)
20 MSG$="Now testing for data errors...please wait" : GOSUB 190
30 SUM=0:READ LN:IF LN<0 THEN 80
40 READ H$:IF VAL(H$)<0 THEN 70
50 IF LEFT$(H$,1)="*" THEN GOSUB 210 : GOTO 40
60 SUM=(SUM+FNHEX(H$))*2:SUM=(SUM\256)+(SUM MOD 256):GOTO 40
70 READ CKSUM$:IF (SUM MOD 256)=FNHEX(CKSUM$) THEN 30 ELSE GOTO 170
80 MSG$="Press any key except ESC to create "+F$+" : "
90 GOSUB 190 : A$=INPUT$(1) : PRINT : IF A$=CHR$(27) THEN END
100 LOCATE 6,1:PRINT "Working...";
110 OPEN F$ AS #1 LEN=1 : FIELD #1,1 AS BX$
120 READ LN:IF LN<0 THEN 160
130 READ H$:IF VAL(H$)<0 THEN READ CKSUM$:GOTO 120
140 IF LEFT$(H$,1)="*" THEN GOSUB 240 : GOTO 130
150 LSET BX$=CHR$(FNHEX(H$)) : PUT #1 : GOTO 130
160 CLOSE:PRINT:PRINT F$;" has now been created.":END
170 PRINT:PRINT "Error in DATA line";STR$(LN);".";
175 PRINT:PRINT "SUM=";SUM
180 PRINT "Check your work.":BEEP:END
190 CLS : LOCATE 3,1 : PRINT "X-Maker II" : RESTORE : READ F$
200 LOCATE 5,1,1 : PRINT MSG$; : RETURN
210 ZZ=VAL(MID$(H$,2)) : FOR I=1 TO ZZ
220 SUM=SUM*2 : SUM=(SUM\256)+(SUM MOD 256)
230 NEXT : RETURN
240 ZZ=VAL(MID$(H$,2)) : FOR I=1 TO ZZ
250 LSET BX$=CHR$(0) : PUT #1 : NEXT : RETURN

```

LISTING 3: X-MAKER2.BAS, \*.\*'s program-making program.

```

1000 DATA "key.com"
1010 DATA 1,33,C9,BB,80,00,8A,0F,43,E3,07,80,3F,20,75,0A,E2,-1,39
1020 DATA 2,F6,B2,02,C7,07,59,4E,EB,15,8A,D1,8B,FB,8A,05,3C,-1,F6
1030 DATA 3,61,72,08,3C,7A,77,04,24,5F,88,05,47,E2,EF,B4,07,-1,3C
1040 DATA 4,CD,21,3C,61,72,06,3C,7A,77,02,24,5F,8B,FB,8A,CA,-1,9C
1050 DATA 5,F2,AE,75,EA,4F,8B,C7,2B,C3,B4,4C,CD,21,-1,19,-1

```

LISTING 4: Merge these DATA lines with X-MAKER2.BAS (LISTING 3) to create KEY.COM using BASIC.

```

echo off
echo Press Y, N, or Q.
key ynq
if errorlevel 2 goto QUIT
if errorlevel 1 goto NO
rem -- errorlevel is 0
echo "Yes"
goto END
:NO
echo "No"
goto END
:QUIT
echo "Quit"
:END

```

LISTING 5: TESTKEY.BAT demonstrates how to use KEY.COM. It will ask you to press Y, N, or Q; then it will confirm that the batch file read your keystroke correctly.

*directory listed in the current PATH.*

*KEY ignores case. The commands key AbC and KEY aBc are functionally identical. For a sample of how to use KEY, run TESTKEY.BAT (see LISTING 5). Press y, n, or q, and the program will display 'Yes', 'No', or 'Quit', proving that KEY returned the correct values to the batch file.*

### Checkers Anyone?

My wife creates checklists in *WordPerfect 5.1* documents, but creating the check-mark boxes one at a time is tedious. To speed the process, I wrote a macro that automatically adds boxes to optionally numbered paragraphs.  
*(continues)*

## BASICS: CROSSTALK MK.4

### SETUP AND OTHER BASICS

**What to do:** The following are the most frequently used commands in *Crosstalk Mk.4* version 2.0. They are accessible at almost any point in the program. You can also opt to enter CASL commands directly on the command line, load on optional *Crosstalk XVI* interface, or load the original version 1.x menuing system. This guide, however, concentrates on version 2.0's <Alt>-key interface.

Many of these commands help you set up *Crosstalk* to work with your computer, modem, and remote service. The default settings will work fine for most users.

Function	Keystrokes
Help	<Alt>-H
Help Index	<Alt>-H<Ctrl>-<Page Up>
Access macro/script menu	<Alt>-M
Edit a text file	<Alt>-E, enter file name to edit
Browse/view files on disk	<Alt>-M, use cursor keys to select Browser, <Enter>
	<Enter>, type a file name to view, or <Page Up> to select file from directory
Issue a DOS command	<Alt>-M, use cursor keys to select DOS menu, <Enter>

### DIALING (continued)

Delete on entry  
Change dialing directory display

Move to entry, <Delete>  
<Alt>-Y, cursor to BackMade field, press <Space> until screen displays desired fields (name, number, etc.), <Ctrl>-<Enter>

**Note:** Before you create an entry, you should have the following information ready: the telephone number, modem speed in per bits per second (bps), and the user ID and password. You'll also need to know the terminal emulation—if in doubt, try ANSI, used on CompuServe, MCI Mail, and most BBS's. If that's not it, try TTY or DEC VT-100. Finally, you'll need to know the WordFormat—the data bits, parity, and stop bits used by the two modems. It's usually seven data bits, even parity, and one stop bit (7-E-1) or eight data bits, no parity, and one stop bit (8-N-1).

**Tip:** The Outnumber and LDnumber (long distance number) settings on the Setup screen (<Alt>-Y) contain useful dialing prefix settings. You can use the Outnumber to store a 9 (or another number) to break out of a PBX system and get on outside line. You can use LDnumber to store the 1 that's used to dial long distance. You'll probably want to place a comma after the 9 and after the 1—each comma tells the modem to wait 3 seconds before dialing the next number.

Quit the program	<Alt>-Q
Set part, speed, or another parameter	<Alt>-S<Tab>, cursor to desired fields
Enter or edit function-key definitions	Cursor to desired dialing directory entry, <Esc><Alt>-K
Select a terminal emulation	Cursor to dialing directory entry, <Esc><Alt>-T
Define or change the parameters for uploading text files	<Esc><Alt>-U
Set user preference (such as color)	<Alt>-Y

**Tip:** During installation, *Crosstalk* will ask what COM port your modem is attached to. If you don't know, just guess. In most cases, it's either 1 or 2, but you may have three or four ports. If you select the wrong port, the error message 'Modem not responding' will display when you attempt to make a call.

### DIALING

**What to do:** Use these commands to create or modify entries in the dialing directory. Select the Eosycoll entry to create a directory entry, and either modify one of the prewritten setup files for major on-line services or, if no setup file is included for the system, step through the process of making the call.

Function	Keystrokes
Make a call	Cursor to desired entry, <Enter>
Create a new entry	Cursor to Eosycoll, <Enter>; or press <Insert>
Move to next entry	<Cursor Down>
Move to previous entry	<Cursor Up>
Move to first entry	<Home>
Move to last entry	<End>
Move to next page of entries	<Page Down>
Move to previous page of entries	<Page Up>
Jump to an entry	Enter first letter of entry name
Modify an entry	Move to entry, <Alt>-S

### ON LINE

**What to do:** This section covers the <Alt>-key shortcuts for common tasks used during a communications session. If you prefer, you can always use the on-line menu (<Alt>-<F10>) instead and simply follow the prompts.

**Tip:** To save on connection charges, don't edit, create, and read messages while on line; create files while off line, and capture messages to disk (<Alt>-C) so you can read them at your leisure when you are no longer connected.

Function	Keystrokes
Access the on-line menu	<Alt>-<F10>
Capture text to printer, or stop capture	<Alt>-S<Tab>
Capture text to file, or stop capture	<Alt>-C<Space><Ctrl>-<Enter>
Pause File Capture	<Alt>-CP<Ctrl>-<Enter>
Review received information (capture buffer)	<Alt>-R
Issue a command to <i>Crosstalk</i>	<Alt>-A, type command
Upload an ASCII file	<Alt>-U, enter a file name
Download an ASCII file	<Alt>-CT<Enter>, enter a file name
Receive a binary file	<Alt>-P, select Receive, <Enter>, enter a file name
Send a binary file	<Alt>-P, select Send, <Enter>, enter a file name
Abort file transfer	<Ctrl>-<Break>
Send a break signal	<Ctrl>-B
Transfer a file in background	Initiate file transfer, press <Alt>-<Esc>, perform DOS functions or open and run another application; to return to session, press <Alt>-<Esc> again
Toggle between status and terminal screens	<Alt>-X
Disconnect and hang up	<Alt>-O

Fold Here

Fold Here

## ADVANCED: CROSSTALK MK.4

### SCRIPT FILES

**What to do:** The Crosstalk Application Script Language (CASL) lets you create *script* files that can automate both routine and complex communications tasks, automating unattended communications sessions, creating custom front ends, and more.

Record actions in a script file      **<Alt>-M**, select *LEARN*, **<Enter>**  
 Edit a script file                      **<Alt>-E**, enter a file name  
 Execute a script file                   **<Alt>-M**, use cursor keys to select entry  
 Cancel a script                           **<Ctrl>-<Break>**  
 Compile a script                         **compile filename**

**Tip:** Use the *DO LEARN* command to create your first scripts. This script-making script automatically produces an editable XTS source code file containing the CASL commands *Crosstalk* uses to execute tasks.

**Tip:** Every time you modify a script, you need to compile it for top performance. If you don't, *Crosstalk* will automatically run the previously compiled version.

### BUILT-IN SCRIPTS

**What to do:** Even if you never write a script, you can take advantage of CASL's power—there are numerous script files that ship with the program. To get to them, press **<Alt>-M**, highlight a file name, and press **<Enter>**, or type *DO filename* from the command line. Here are a few of the scripts.

Script name	Description
Answer	Changes the Answer setup entry
Browser	Browses (views) text files
Colors	Changes the screen colors
Config	Changes the system configuration
Convert	Converts <i>Crosstalk XVI</i> command and script files to <i>Mk.4</i> format
DOSMenu	Displays a menu of DOS functions
Eosycoll	Creates new directory entries
Fixbook	Makes global changes to all directory entries
Learn	Records keystroke actions in a script file
Menus	Turns off-line and on-line menus on/off
Newcoll	Creates dialing directory entries
Whereis	Locates files on disk
Xdir	Sorts directory of files and displays estimated transfer times

**Tip:** You can add any script file you create to the script menu. Press **<Alt>-M** to activate the menu, press **<Insert>** to view scripts, cursor to the target script, and press **<Enter>**.

### SCRIPT COMMANDS

**What to do:** These are some of the commands used frequently in CASL scripts. In many cases, you can issue them independently on the command line. To see a complete list, type **list commands**.

Command	Function	Example
ALARM	Plays a tone	ALARM 6
ANSWER	Puts the modem in auto-answer mode and waits a certain number of minutes for a call	ANSWER 15

### SCRIPT COMMANDS (continued)

Command	Function	Example
BROWSE	Displays text files	BROWSE "C:\xtalk\somple.doc"
BYE	Disconnects current call	BYE
CALL	Calls a dialing directory entry and executes its script	CALL entryname
CAPTURE	Starts/stops capturing text to a file	CAPTURE TO filename
DIAL	Dials a telephone number	DIAL 9,1,213-555-1212
END	Marks end of a script	END
FKEY	Assigns text or commands to a function key	FKEY 5"@CAPTURE /"
INCLUDE	Includes the contents of an external script file in the current script file	INCLUDE filename
KCLEAR	Clears function-key definitions	KCLEAR
KLOAD	Loads a set of definitions for the function keys	KLOAD filename
KSAVE	Saves the current function-key definitions to a file	KSAVE filename
LOAD	Loads a directory entry	LOAD entryname
LPRINT	Sends text to the printer	LPRINT "This is a test"
OFF	Disconnects the current session	OFF
PRINTER	Turns printer on or off	PRINTER ON

QUIT	Stops current session (if it's the last active session, also exits <i>Mk.4</i> )	QUIT
RECEIVE	Receives a binary file	RECEIVE filename
REPLY	Sends a string of text to the other computer	REPLY "Hello"
REQUEST	Requests a file or group of files from another computer	REQUEST filename
SEND	Sends a file or group of files to another computer	SEND filename
STARTUP	Contains name of a script that runs automatically when <i>Crosstalk</i> is first loaded (or a new session is started)	STARTUP filename
UPLOAD	Uploads a text file	UPLOAD filename
WAIT	Waits for a string of text from the other computer	WAIT 10 SECONDS FOR "Hello"

### TROUBLESHOOTING

**What to do:** Here are solutions for some common on-line problems.

Problem	Probable cause	Solution
Modem does not dial	Modem turned off or not connected	Turn modem on or connect modem
Modem hangs up before connection	"Wait for answer" period is not long enough	<b>&lt;Alt&gt;-S&lt;Page Down&gt;</b> , enter longer time on the <i>Patience</i> entry
<i>Crosstalk</i> disconnects after connection	Wrong setup parameters	<b>&lt;Alt&gt;-S</b> , adjust the <i>Speed</i> and/or <i>WordFormat</i> settings
Garbled transmission	Wrong setup parameters	<b>&lt;Alt&gt;-S</b> , adjust the <i>Speed</i> and/or <i>WordFormat</i> settings
Characters are doubled or don't appear	Wrong duplex setting	<b>&lt;Alt&gt;-S&lt;Page Down&gt;</b> , change <i>Echo</i>
Modem does not answer a call	Answer mode not turned on	<b>&lt;Alt&gt;-S&lt;Page Down&gt;</b> , change <i>Mode</i> to <i>Answer</i>

**Tip:** When troubleshooting problems, make only one change at a time. If it doesn't fix the problem, change it back. Record any changes you make.



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**WORLD**

```
{Indent}{Indent}{Left Mar Rel}
{PAUSE}{Tab}{PAUSE}{Search Left}
{Indent}{Search}
{Home}{Home}{Home}
{Left}{DISPLAY OFF}{Graphics}
fctcsb.12{Enter}.12{Enter}{Exit}
{Home}{Home}{Down}{Enter}{QUIT}
```

**FIGURE 1:** This WordPerfect macro lets you easily insert check boxes into your documents.

Start the macro and enter a number, optionally followed by a period. Press <Enter>, and then type a paragraph. Press <Enter> again, and the macro will create a small graphics box to the left of the number. You can then restart the macro to create another checked item.

*Michael P. Rose  
Spring, Texas*

*Editor's note: I can think of dozens of great uses for this macro. You could use it to prepare multiple-choice tests, opinion polls, or even shopping lists.*

**FIGURE 1** shows the macro commands as they appear in the macro editor. To enter the macro, start WordPerfect, then press <Home><Ctrl>-<F10>. Press <Alt>-C to assign a hot key—or type a file name if you prefer to name your macros—and type a description such as **Check Boxes** followed by <Enter>. This will take you to the macro editing screen. Once you're there, press <Delete> to delete the '{DISPLAY OFF}' command.

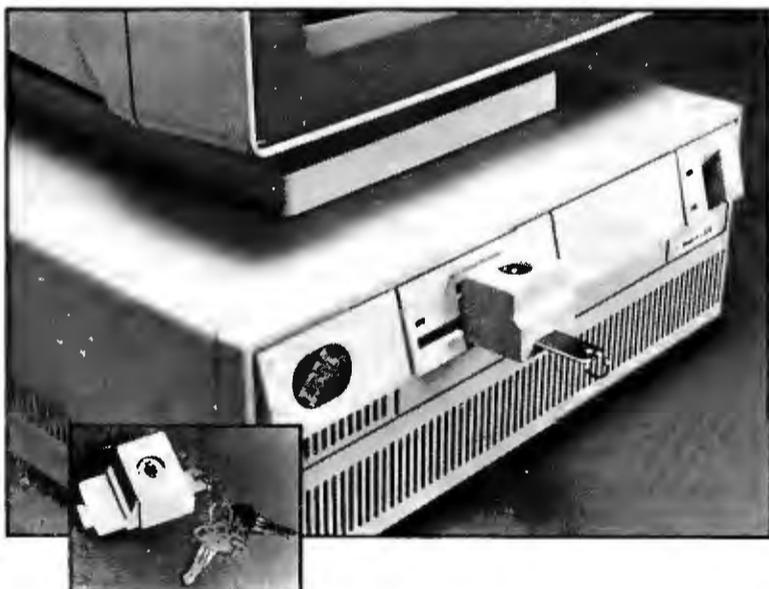
Next, type the macro commands. The commands displayed in uppercase must be selected from the macro-command menu, which you bring up by pressing <Ctrl>-<Page Up>. For others, press the associated key. For example, to enter '{Indent}', press <F4>. To enter '{Left Mar Rel}', press <Shift>-<Tab>. Press <Ctrl>-V before macro-editing keys such as '{Tab}', '{Home}', '{Left}', '{Enter}', '{Down}', and '{Exit}'. Press <F7> to exit the macro editor.

In your document, press <Alt>-C (if that was your choice for a hot key combination) to begin a new check-mark paragraph. If you wish to number your paragraphs, type in a number and press <Enter>. Otherwise, just press <Enter>. Be sure to press <Enter> after the optional number and at the end of each paragraph.

*Tom Swan is the author of Learning C++ and Mastering Turbo Debugger (Howard W. Sams, Carmel, Indiana, 1991, 1990).*

Have a macro, batch file, short program, or general tip you're proud of? Star-Dot-Star pays \$25 to \$200 per tip used. Send your tips to Star-Dot-Star, PC World, 501 Second St. #600, San Francisco, CA 94107; Compu-Serve 74055,412; MCI Mail PC World Editorial; or 415/442-1891 (fax). We cannot acknowledge submitted materials. ☺

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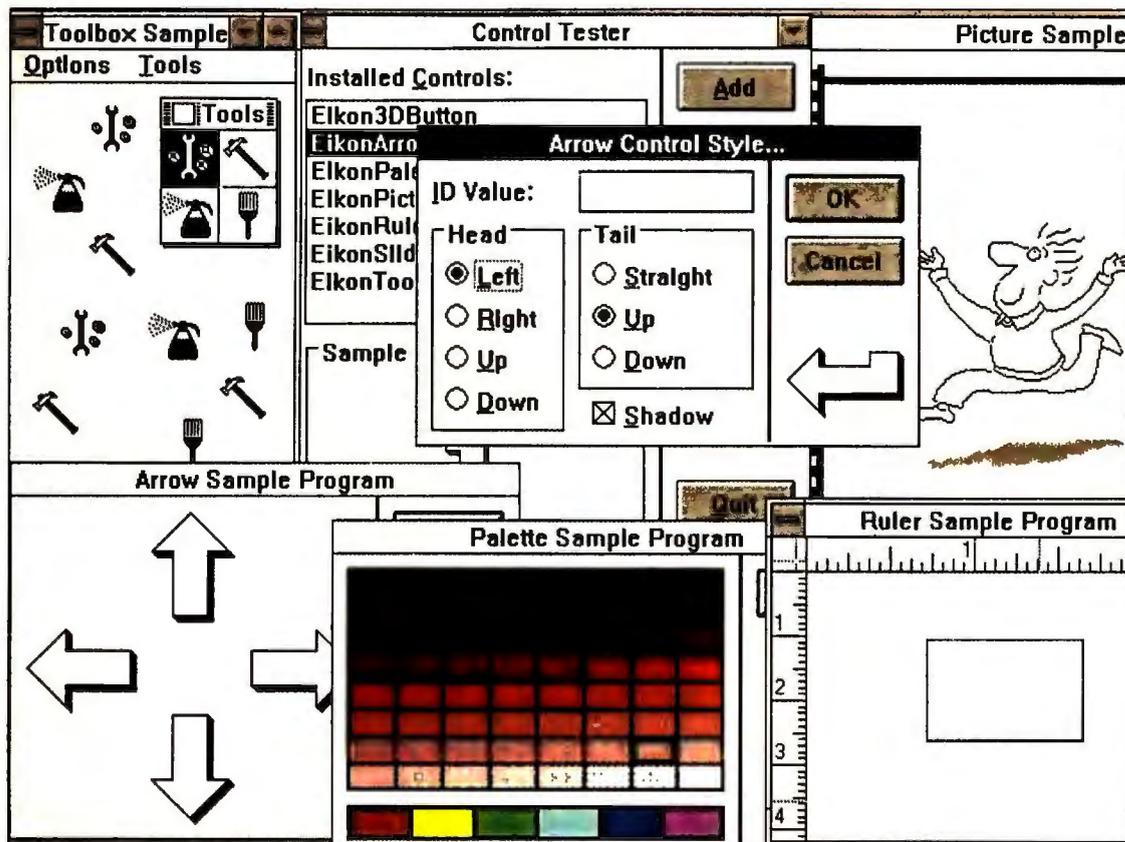
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## DEVELOPER'S TOOLBOX

## Windows Tools Show Faint Promise



Control Pak/W provides a tester and custom controls for Windows developers.

Tom Swan

At Fall COMDEX, I expected to find a flood of *Windows* development tools. But what I saw at the show and what has trickled in since haven't exactly drowned me in goodies. Maybe when Borland releases *Turbo Pascal for Windows*, my spirits will lift. Until then, current *Windows* tools show promise, but many also exhibit glaring flaws.

Consider *Dialog Coder* from The Software Organization. After designing a dialog with an editor or a similar product, you use *Dialog Coder* to create triggers and links between fields. For example, you can set up a Description button that enables additional controls.

This is exactly the kind of tool I need to reduce the amount of hand work in C. But I also need a clearly written manual. *Dialog Coder's* manual is poorly organized, and the step-by-step tutorial is incomplete. The product's interface also needs improvement: After setting up a link between a button and a field, there's

nothing on screen to indicate that a link exists. I should be able to *see* triggers and links as I create them.

Another product I'm trying to like (with better success) is *Control Pak/W*, written by Eikon Systems and sold by Sage Software. The product's manual is superb. In fact, I learned more about custom controls by reading the first few chapters than from any other source.

*Control Pak/W* includes a control tester and several custom controls—buttons, arrows, picture frames, rulers, a color-palette selector, sliders, and a toolbox. The toolbox is nifty; you set up tools in a small window, like a paint program's brush palette.

This product would be great if it had more control styles and an editor for designing new controls. Currently, if the toolbox doesn't have the control you need, you're out of luck. *Control Pak/W* is good, but at \$595, it's overpriced.

On the convention floor, *Object Script* from Matesys caught my eye. Billed as an alternative to Asymetrix's *ToolBook*,

*Object Script* lets you design applications by cutting, pasting, and linking graphical elements. Despite its name, however, *Object Script* lacks *ToolBook's* sophisticated, object-oriented script language, so you can't, for instance, use common OOP techniques like inheritance and encapsulation to build reusable objects. Too bad, because unlike *ToolBook*, *Object Script* is fast.

Some encouraging words came in the mail: Peter Norton and Paul Yao's *Windows 3.0 Power Programming Techniques*, published by Bantam. Yao knows *Windows* inside and out, and his extensive knowledge shows on every page. Good book.

I wish I could say the same about the current wave of *Windows* development tools. But so far, the surge is barely making a ripple.

Let's talk it over. My MCI Mail handle is TSWAN; my CompuServe ID is 73627,3241. ☺

#### WHERE TO BUY

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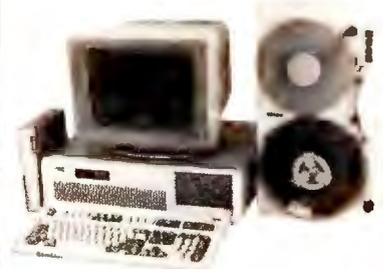


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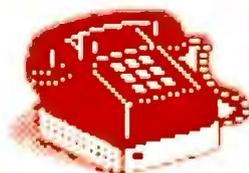
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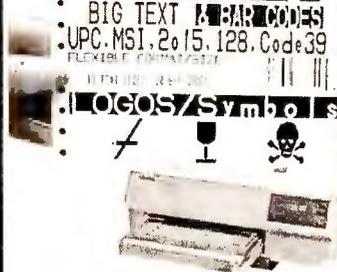
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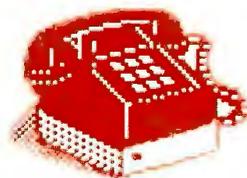


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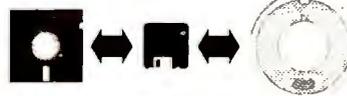
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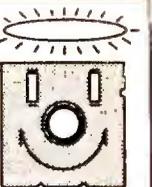
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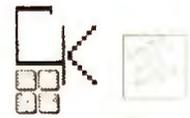
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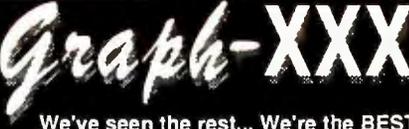
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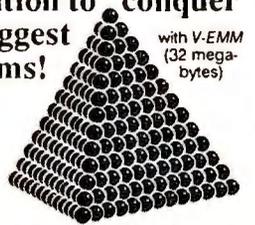
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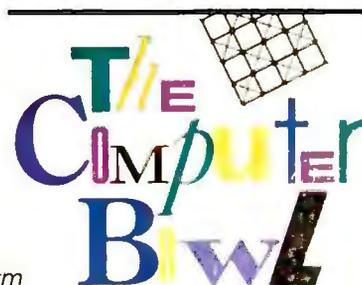
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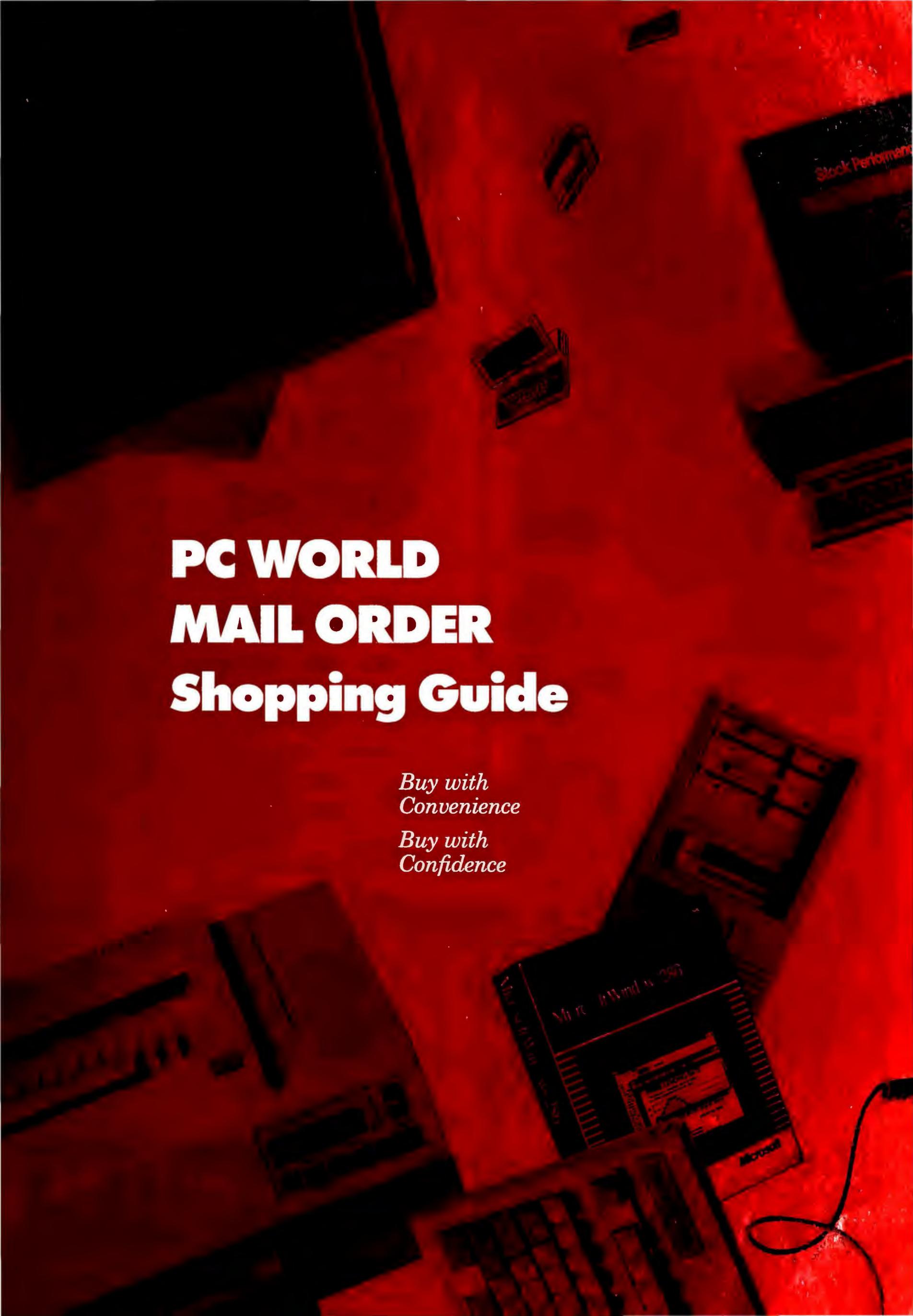
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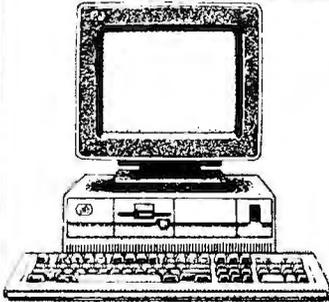
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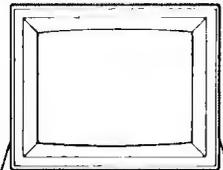
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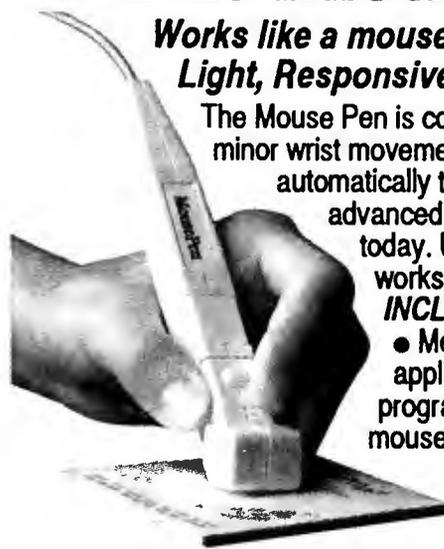
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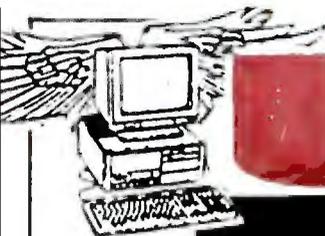
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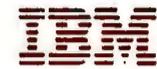
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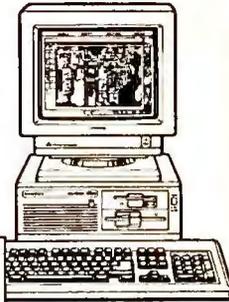
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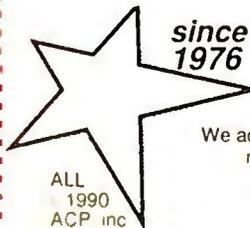
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## Record Control in Record Time

With **The Retail Controller Jr.**, you'll make smarter management decisions because you'll have pushbutton-quick, down-to-the-penny information. Operating at your sales counter, the program captures vital customer and sales data, organizes it, and presents it in neat, accurate reports that eliminate guesswork and improve control.

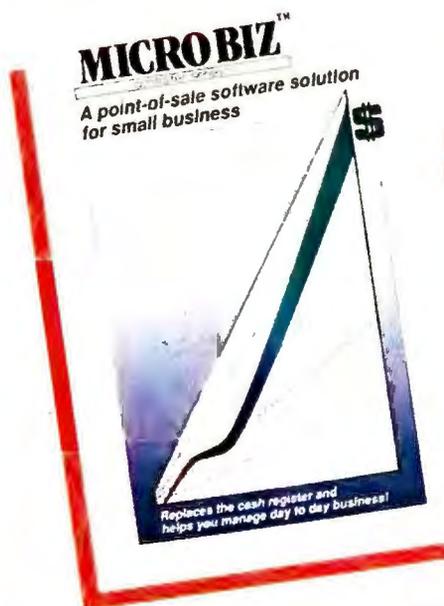
## Bar Code Easy, Feature Packed

**The Retail Controller Jr.** is designed for first-time computer users. Even a brand new clerk can learn how to process transactions in minutes. The speed and efficiency of barcoding (optional) can keep keystrokes to a minimum. Pull-down menus, on-screen help windows, and "point

and select" customer and product lookup all help to make the program almost intuitively easy to use. All transactions are performed from just one Work Screen. Yet it incorporates many of the features you'd expect to find only in systems costing hundreds of dollars more, features like:

- ✓ automatic credit card verification
- ✓ bar code compatibility
- ✓ color/size matrix
- ✓ multiple pricing levels
- ✓ tracks inventory by size/color/style
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- ✓ pop-up windows
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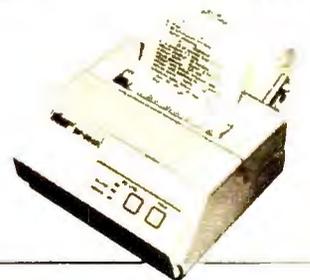
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## TAKING IT HOME

### The practical guide to home/office computing

#### Saving your bacon and CMOS

Steve Bass

"Gusty winds below the foothills" is the weather report I used to dread most. It means that Santa Ana winds are kicking in and a downed power line can knock out the electricity at any time.

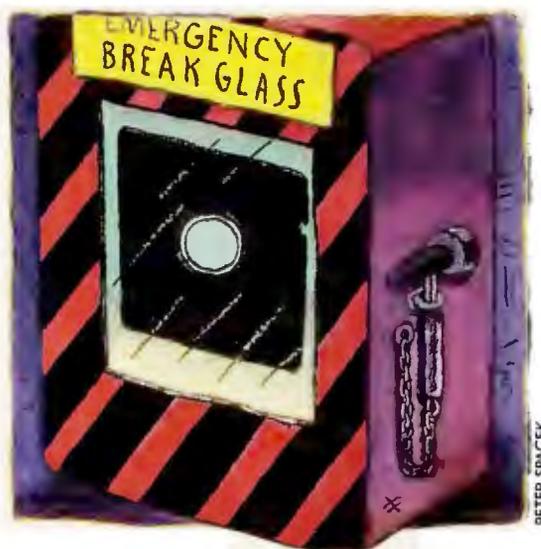
Losing data is bad enough. But what really hurts is if you don't turn your system off before the power company's auxiliary generator kicks in. It's a sickening feeling watching your screen pop off and hearing your hard disk power down, only to see everything jolt back to life again. That'll fry your CMOS memory quicker than anything Kentucky Colonel can whip up—and not even a surge suppressor can save you.

The CMOS chip holds vital configuration specs for all your hardware—information about memory, time, and date, plus the display and disk types entered when you first got your PC. Without that data, the computer is inoperable, and unless you've made provisions, getting it back can take days.

On the other hand, you can restore your CMOS table in about half an hour if you've created a *rescue disk* containing all your essential setup programs and CMOS data. Start by making the disk bootable, using the DOS `format /s` command. Next, copy the values of the CMOS table to a file on the rescue floppy using *The Norton Utilities'* Disk Tools.

If you have a power failure, you can boot off this disk and run Disk Tools to restore these values to your CMOS chip.

In addition to that file, you'll want to put every conceivable tool and device driver you can on your rescue disk. I start with *QEdit Advanced*, a lean shareware text editor with which I can rebuild my CONFIG.SYS and AUTO-EXEC.BAT files as I check the integrity of my devices. Then there are all the drivers I might need for my peripherals, including my Plus Hardcard driver, which lets me access that hard disk even if my C: drive won't boot. I also have *The*



*Norton Utilities'* Disk Tools and Disk Doctor II to fix any damage to my hard disk. Finally, I keep the SETUP program for my computer in case I need to reconfigure the CMOS data.

Even if disaster doesn't strike, the CMOS may go kablooey (a DOS technical term) if the batteries powering its volatile memory run down. Symptoms could include the time and date falling behind or inexplicable read/write errors. I substituted the old batteries with new Rayovac four-year alkalines. Replacement is an easy and satisfying chore.

Finally, since I don't mind putting my

money where my data is, I went one better and outfitted my home and office computers with uninterruptible power supplies instead of surge suppressors. UPS's have fallen in price, and they give you surge protection as well as enough battery power to save files and shut down your system safely.

I chose an inexpensive UPS for home—the Smart UPS-400. It comes with *Power-Doctor*, software that measures the quality of the electric company's power. For the office file server, I selected a more powerful and feature-laden UPS, the Professional Series UPS 7200. Besides providing a network interface and RJ-11 jacks for my modem lines, the 7200 lets me power up my computer for remote access.

That should protect me against most power mishaps. Even in the worst case, though, I can take out my emergency rescue disk and get my equipment back in working order in the time it takes to jog down to the Colonel for a bucket of extra crispy. So can you. ☸

*Contributing Editor Steve Bass is a family therapist and president of the Pasadena IBM Users Group.*

**The Norton Utilities 5.0** \$179; Symantec Corp.; 800/441-7234, 408/252-3570  
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**For more information about all products in this article, circle reader service no. 904.**

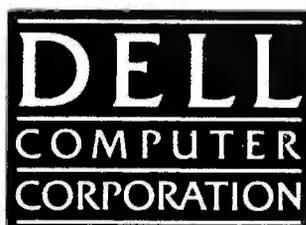
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Fax #: ( ) \_\_\_\_\_

1. Which products are you most interested in?  
 286-based systems       UNIX®-based systems  
 386-based systems       Laptops/Notebooks  
 386SX-based systems       Other: \_\_\_\_\_  
 i486™-based systems

2. Are you interested in computer products for:  
 Home    Business    Resale

3. If for resale, please identify your primary customer:  
 Government    Education    General Business    Medical

4. How many PCs does your company plan to purchase in the next twelve months?  

<u>Quantity</u>	<u>Timeframe</u>	<u>Quantity</u>	<u>Timeframe</u>
_____	Less than 1 month	_____	6-12 months
_____	1-3 months	_____	More than 12 months
_____	3-6 months		

5. What do you plan to use computer products for?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. How many PCs do you have installed now at your company?  
 \_\_\_\_\_

7. Are you interested in leasing?  Yes    No

AD CODE 51D31

Please have a Dell Representative call me.

Name: (M ) \_\_\_\_\_  
Title: \_\_\_\_\_  
Company: \_\_\_\_\_  
Address: \_\_\_\_\_  
City: \_\_\_\_\_ State: \_\_\_\_\_ Zip: \_\_\_\_\_  
Type of Business: \_\_\_\_\_  
Approx. # of Employees in Company: \_\_\_\_\_  
Home Phone: ( ) \_\_\_\_\_  
Business Phone: ( ) \_\_\_\_\_  
Fax #: ( ) \_\_\_\_\_

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_____	3-6 months		

5. What do you plan to use computer products for?  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

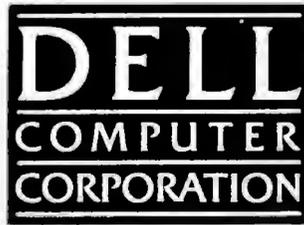
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7. Are you interested in leasing?  Yes    No

AD CODE 51D31

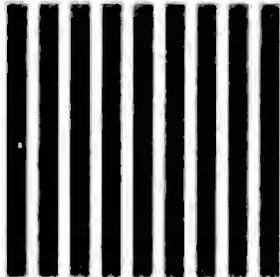
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Dell's New Computers, Send This Card.

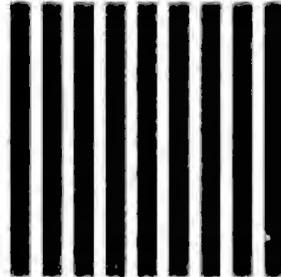


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DEPT DH  
9505 ARBORETUM BLVD  
AUSTIN TX 78759-9860



(continued from back page)

### Can you afford not to buy the Dell® 320N?

At a time when everybody is cutting budgets, can anyone afford to spend up to an extra \$2,950?

More importantly, can you afford to go on the road counting on service from a Compaq dealer you've never heard of?

Especially when every Dell system comes with a full gamut of road services. Like a toll-free technical support line that helps users solve 90% of their problems over the phone.

And if you need help in the middle of the night, just call Dell's innovative TechFax line. It automatically faxes back detailed information on your Dell computer. Even to your hotel.

If that doesn't solve it, call for road service. A trained technician will come to your hotel room, or office,△ the next business day with a replacement system if necessary. And if possible, your hard drive contents will be transferred on the spot.

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#### THE NEW DELL SYSTEM 320N 20 MHz 386SX AND THE NEW DELL SYSTEM 212N 12 MHz 286.

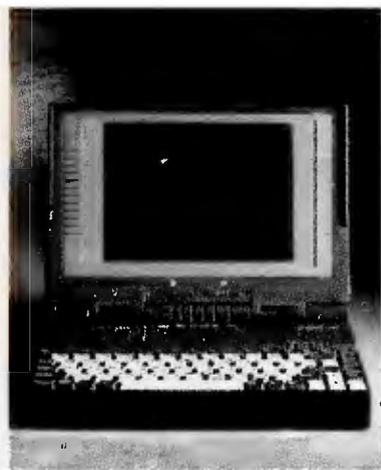
- Intel® 80386SX microprocessor running at 20 MHz: (320N) and the Intel 80C286 microprocessor running at 12 MHz: (212N).
- Standard 1 MB of RAM,\* expandable to 5 MB (on the system board using 1 MB or 2 MB memory modules).
- 640 x 480 VGA LCD with edgelight.
- One expansion slot for Dell Data/FAX modem.
- 6.4 lbs. with battery, dimensions are 8.5" D x 11" W x 2" H.
- 3.5" 1.44 MB diskette drive.
- 85-key keyboard with embedded numeric keyboard.
- 1 serial port and external VGA monitor port.
- Selectable parallel printer or external 5.25" disk drive/tape backup port.
- Connector for numeric keypad or 101-key keyboard.
- Mouse port.
- Removable and rechargeable battery pack utilizing Dell's "Continuous Power Battery System" (patent pending).

212N: 20 MB, 1 MB RAM\*  
40 MB available for the 212N.

\$2,399

320N: 30 MB, 1 MB RAM\*  
60 MB available for the 320N.

\$3,399



All at no additional cost for the first year you own your computer.

#### **It's light weight. But it's no lightweight.**

Dell's notebook weighs just 6.4 pounds. It measures a trim 8½" x 11" x 2". And it fits in your briefcase like a pad of paper. But technically, this is heavy artillery.

The Dell 320N features a built-in 3.5" diskette drive with your choice of high-speed 30 or 60 MB hard drives.

The display is a high quality VGA LCD. There's an optional, built-in Data/FAX modem. And a sliding door that lets you easily insert a math coprocessor, RAM modules or the

modem without major surgery. (Dell also has the 212N, with a 12 MHz 286 and 20 or 40 MB hard drive.)

Even the keyboard shows touches of brilliance. It's a complete 85-key layout. Including the special screen navigation keys (Home, End, Page Up, Page Down and separate Cursor keys) that let you easily navigate even the most spread-out spreadsheet. And every key is engineered for extended travel, to provide the familiar touch of a top-of-the-line desktop system.

#### **Don't worry. Be happy.**

One more thing to consider. When you buy from Dell, you're dealing directly with a company that has won *PC Week's* Corporate Satisfaction Poll for PCs, servers and laptops. Not just once. An unprecedented eight times.

A company that will custom configure any system to meet your needs. And then work with you to custom configure a finance or leasing plan.◊

And we back it all with a 30-day no questions asked satisfaction guarantee.

Call today for either of our new notebook computers. And hit the road, equipped with a Dell.

That'll really give the guys with the Compaqs something to worry about.

TO ORDER, CALL	
<b>800-288-1460</b>	
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<b>DELL</b> COMPUTER CORPORATION	

# TEN TIMES BETTER



THE EISA-BASED  
DELL SYSTEM® 433TE.  
**ONLY \$9,649**

• i486 microprocessor running at 33 MHz with 128 KB external cache.  
\*\*Commercial Lease Plan. Lease for as low as \$348/month.  
330 MB VGA \$9,649  
Monochrome System  
Price listed includes 4 MB of RAM.\* 80, 100, 190 and 650 MB hard drive configurations also available.  
25 MHz systems also available starting at \$6,649.



THE EISA-BASED  
DELL SYSTEM 433E.  
**ONLY \$8,199**

• i486 microprocessor running at 33 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$296/month.  
190 MB Super VGA \$8,199  
Color System (800 x 600)  
Price listed includes 4 MB of RAM.\* 80, 100, 330 and 650 MB hard drive configurations also available.  
25 MHz systems also available starting at \$5,749.



THE NEW  
DELL SYSTEM 433P.  
**ONLY \$4,999**

• i486 microprocessor running at 33 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$181/month.  
100 MB VGA Color Plus System \$4,999  
Price listed includes 2 MB of RAM.\* 190 and 320 MB hard drive configurations also available.



THE  
DELL SYSTEM 333D.  
**ONLY \$4,199**

• Intel® 80386 microprocessor running at 33 MHz with 64 KB external cache.  
\*\*Commercial Lease Plan. Lease for as low as \$152/month.  
100 MB Super VGA Color Plus System (800 x 600) \$4,199  
Price listed includes 4 MB of RAM.\* 40, 80, 190, 330 and 650 MB hard drive configurations also available.  
25 MHz systems also available starting at \$2,749.



THE NEW  
DELL SYSTEM 325P.  
**ONLY \$2,599**

• Intel 80386 microprocessor running at 25 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$97/month.  
40 MB VGA Color Plus System \$2,599  
Price listed includes 2 MB of RAM.\* 80, 100, 190 and 320 MB hard drive configurations also available.  
33 MHz systems also available starting at \$2,649.

If we've said it once, we've said it ten times. You can get a custom-built Dell® computer with better service for \$1,700 to \$16,000 less than a similarly configured Compaq.†

But if you're still not convinced, go to a Compaq dealer and compare what's there with what's here.

**You make the call, then we make the computer.**

After we finish taking your order, we begin building your computer. Everything from the hottest 386SX notebook PCs to workgroup-sized i486™ network servers.

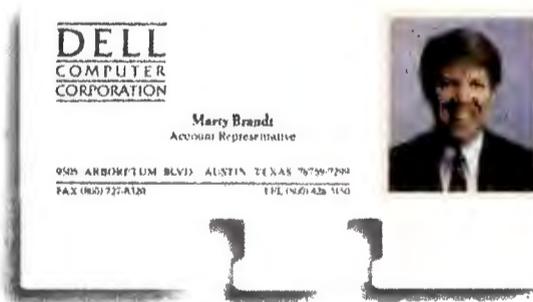
And because we actually manufacture the computers we sell, each one is custom configured to your specifications. With a virtually limitless number of choices of monitors, hard drives, RAM sizes and peripherals.

Then we run a configured systems check, and ship it to you via two-day air standard. With a 30-day money back guarantee and a one-year limited warranty.

**Support that wins awards, and your confidence.**

The Dell service and support package has won an unprecedented 8 *PC Week* Corporate Satisfaction Polls for PCs, laptops and servers. Maybe because the company that supports Dell computers is the same one that makes Dell computers.

Which means you get a technical support staff that can solve 90% of all problems over the phone. Usually in 6 minutes or less. You also get an electronic bulletin board that lets you see other users' questions about Dell systems. And more importantly, Dell's answers.



For Compaq service, you get the dealer that sold the computer. With Dell service, you get the company that designed and built the computer.

§The Dell System includes VGA LCD monitor, 30 MB hard drive, 2 MB RAM. The Compaq System includes VGA LCD monitor, 30 MB hard drive, 2 MB RAM. The Dell System 433TE and 425TE are class 425E, 433E, 425TE and 433TE) of memory is reserved for use by the system to enhance performance. Can be optionally disabled on 333D, 325D, 333P, 325P, 320N, 212N, 316SX and 210. All systems are photographed with optional external lease. Leasing arranged by Leasing Group, Inc. In Canada, configurations and prices may vary. Dell and DELL SYSTEM are registered trademarks, and SmartVu is a trademark of Dell Computer Corporation. Intel is a registered trademark and trade names other than its own. †On-site service provided by Xerox and may not be available in certain locations. Shipping, handling and applicable sales tax not included in the price. For information on and a copy of Dell's 30-day

# BETTER THAN COMPAQ.



THE  
DELL SYSTEM 320LX.  
**ONLY \$2,599**

• Intel 80386SX microprocessor running at 20 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$97/month.  
40 MB VGA Color Plus System \$2,599  
Price listed includes 2 MB of RAM.\*  
80, 100, 190, 330 and 650 MB hard drive configurations also available.



THE  
DELL SYSTEM 316SX.  
**ONLY \$2,099**

• Intel 80386SX microprocessor running at 16 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$79/month.  
40 MB VGA Color Plus System \$2,099  
Price listed includes 2 MB of RAM.\* 20, 80, 100 and 190 MB hard drive configurations also available.



THE  
DELL SYSTEM 316LT.  
**ONLY \$2,899**

• Intel 80386SX microprocessor running at 16 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$108/month.  
20 MB, 1 MBRAM\* \$2,899  
40 and 120 MB hard drive configurations also available.  
20 MHz systems also available starting at \$3,499.



THE NEW  
DELL SYSTEM 320N.  
**ONLY \$3,399**

• Intel 80386SX microprocessor running at 20 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$127/month.  
30 MB, 1 MBRAM\* \$3,399  
60 MB configuration also available.  
12 MHz 286 also available starting at \$2,399.



THE  
DELL SYSTEM 210.  
**ONLY \$1,499**

• 80286 microprocessor running at 12 MHz.  
\*\*Commercial Lease Plan. Lease for as low as \$56/month.  
20 MB VGA Monochrome System \$1,499  
Price listed includes 1 MB of RAM.\*  
80 and 100 MB hard drive configurations also available.

You even have anytime, any day access to Dell's innovative automated TechFax line. Just dial-up, and get detailed information from the Dell technical library faxed back to you. On the spot.

And if your problem can't be solved over the phone, a trained service technician will come to you with a solution the next business day.<sup>△</sup> All this coverage, including the first year of on-site service, is included in the system price.

Either way, the first year of on-site service is included in the system price.

But you don't need to worry too much about all that. Those Customer Satisfaction Polls consistently rank Dell tops in reliability as well.

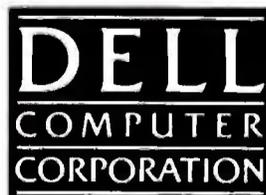
### The right hardware for hard times.

A down economy is not the time for Compaq dealer mark-ups. Which makes Dell computers look even better these days.

And, to loosen those tight budgets even more, you can take advantage of a wide variety of credit, lease and lease-to-buy programs.

For instance, you can lease<sup>◊</sup> Dell computers for as little as \$56 a month. Or use lease-to-buy plans to buy the computer for a \$1 at the end of the lease term. There's even a Dell Direct Advantage MasterCard with up to a \$15,000 credit limit and a way to earn points toward Dell products with everything you buy. Either way, you'll get all the credit you deserve.

So if you were planning to buy a Compaq, take a deep breath, count to ten and call Dell.



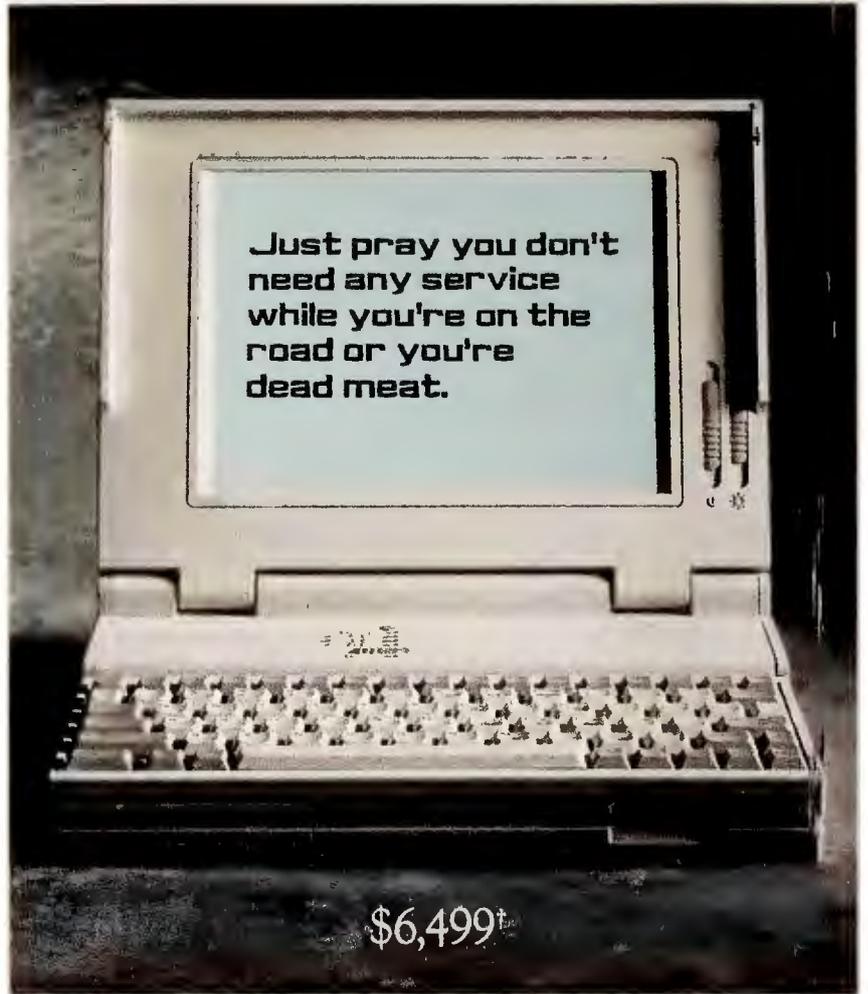
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# ROAD WARRIOR.

# ROAD WORRIER.



Dell System® 320N 386™ SX 20 MHz<sup>s</sup> Lease: \$129/mo.\*\*



Compaq LTE/386s/20 386SX 20 MHz<sup>s</sup> Dealer prices may vary.

There you are, doing battle far from home. Armed with your powerful new notebook computer. As you prep for the next day's conquest, something unexpected happens.

Suddenly you find yourself stranded in some strange hotel room, with your computer down. And no one will come service it.

You wake up in a pool of sweat.

Dreams like this make it very easy to choose Dell's 20 MHz 386SX notebook computer over the remarkably overpriced and underserviced Compaq LTE/386s/20.

Because when you buy the Compaq system, this isn't just a bad dream. It's a real possibility.

For more details, look inside.

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